On the role of bonding, emotional leadership, and partner choice in games of cooperation and conflict

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Summary

Human behavior is difficult to capture in simple and elegant models. In similarly looking environments different people show opposite behaviors and small changes in these environments can radically change the behavior of some, while huge changes might be completely ignored by others. The explanations for these behaviors have traditionally been approached from two different angles. In economics and (behavioral) game theory an individual is reduced to a set of beliefs, preferences and possible actions, whereby the, not always rational, mind rules over the body. On the other hand, in psychology and neurosciences, hormones, emotions and other direct physical impulses control humans with rationality playing a much smaller part . This thesis tries to harmonize both views to a certain extent, as it tries to show that both rational and emotional elements can be modeled together, investigates the role of emotions in leadership and studies the effect of partner choice, based on only physical characteristics, on the level of cooperation.

One of the behaviors that is hard to explain by the more traditional economic line of reasoning is repeated costly destructive behavior hurting others. Although this behavior is bad for everyone involved we find it in the spread of computer viruses, vandalism and ongoing vendettas. Destructive behavior, however, has been understudied for a long time in (experimental) economics. Recently, though, there has been more attention for dynamic situations where agents seem to develop preferences that make them gain utility by hurting others, not just out of fairness considerations, whereby an agent gives up a higher payoff in order to diminish the payoff of another player. Examples of studies are Zizzo (2003), Nikofarakis and Engelmann (2011), and Bolle et al (2013). Often, though, games have been used where the least (or the most, for instance as the in the ultimatum game) cooperative decision an agent could make was equal to the Nash equilibrium action. A new element in our studies is the introduction of the Fragile Public Good (FPG) game. The game is a two-player non-linear public good game with a constant increase of the marginal cost in contribution. Next to contributing to a common account, both players can also take from the common account. This has the same, detrimental, effect on the taking player as contributing does, but instead of helping the other player is hurts the other player. The game thus has the interesting feature that it is a non-linear public good game that gives as much room for cooperative as for destructive behavior.

In Chapter 2 we investigate the dynamics of negative bilateral relationships and the effects of framing on such relationships in an experimental setting. In a two-player FPG game in a partner setting, we find that individuals in fact make destructive decisions. More striking, though, is that very subtle changes in the environment could lead to much more destructive behavior. In a game where the Nash equilibrium contribution is negative, but not destructive, twice as many destructive decisions (around 20% of the total decisions) are made and the length of the feuds, situations where both players make repeated destructive

decisions, increases accordingly. Furthermore, we find support for the affective ties model of van Dijk and van Winden (1997). This model plays a central role in chapters 3 and 4. Describes the development of interpersonal preferences between two individuals. In short it states that player a player that has been treated nicely develops a positive tie towards the one treating him or her nicely and thus assigns a higher weight to the other's payoff. The model also allows for negative ties, in such instances players are willing to reduce their own payoff in order to reduce the payoff of the other. In our experiment, dyads that make repeatedly destructive decisions spiral into a sour relationship and find it increasingly difficult to get out of them. This is in line with negative emotional ties being created and then strengthened by the mutual destructive decisions.

In chapter 3 the possibilities and explanatory power of the aforementioned ties model are tested and forward-looking agents are introduced to the model. We investigate a linearized version of the van Dijk and van Winden model. Chapter 3 is based on the same series of experiments as those researched in Chapter 2. In this chapter, however, we focus on the predictive power and estimation of the tie model. Furthermore, we build on the work done on this model by Bault et al. (2016). We find that the ties model predicts behavior of subjects out-of-sample significantly better than a model of standard interpersonal preferences as well as an established learning model.

Another addition to the van Dijk and van Winden model was allowing for a dichotomy between the strength of positive and negative impulses. At the start it was not clear whether positive or negative emotional impulses would have a stronger effect on behavior. However, there was no reason to believe that these impulses should be equally strong. On one hand, there is evidence by Baumeister et al. (2001) and Baumeister and Leary (1995) that negative emotions affect behavior stronger. On the other hand there are studies by Rand et al. (2009) and King-Casas et al. (2005) who find that positive signals are better picked up than negative signals. In our study we find that the positive impulses have a stronger effect on behavior than negative impulses. Finally, the third chapter also shows that the seemingly ad-hoc strategy shifts in a repeated prisoner's dilemma, as described by Dal Bo and Frechette (2011) and Fudenberg et al. (2012), can be largely explained by a simple ties model.

Chapter 4 investigates the effect of emotion and leadership in a group conflict game. In our game, two groups of 4 players interacted for 12 rounds, always in the same composition. In every round all players were endowed with 20 tokens they could either keep or invest in the conflict. The members of the winning group got the tokens they held for themselves and got one-fourth of the tokens kept privately by the other group. Every group had a leader. The selection of the leader was decided by an auction. In all treatments the leader contributed to the game before the others, this contribution was visible only for his group members. We study the effect of leading-by-example as well as emotional leadership. In order to give the

leader the possibility to effectuate both forms of leadership, he or she was not only allowed to contribute to the conflict first but could in one treatment also choose a basic emotion that was evoked in his or her followers by specially selected and tested movies. The study shows that followers tend to follow the contribution of the leaders rather closely and that although the selected emotions do have an effect on followers, leaders are unable to make use of this fact effectively. In general, leaders do not make use of their advantage of moving first in such a setting by free-riding on the contributions of the followers, unlike in the Nash equilibrium in which they contribute zero, but instead contribute more than their followers. Other behavioral models, like the ties model, do predict this behavior and are overall better in predicting the contribution level than the standard Nash model.

Chapter 5studies partner choice in a linear public good game. One of the crucial differences between the lab and the outside world, the environment we also as experimenters ultimately want to study, is that outside the lab people know and often choose with whom they interact. In the experiments participants play a one-shot linear public good game with one partner as their main task. In one of the two treatments half of the subjects in one laboratory (so one fourth of the total subjects) was allowed to choose a partner from two potential partners. This created four types in the *Choice* treatment: Choosers, Chosen, Passives (those who are not able to choose, nor able to be chosen) and Leftovers. The differences between those types, except for the Choosers, in behavior are by and large insignificant when compared to each other or when compared to the *Baseline* treatment, where all participants were randomly matched. The general results from the fourth chapter are mostly inconclusive. I find that both affective as well as rational channels play an important role in the decision to contribute to a public good game. The effect of the ability to choose a partner, however, is not clear. Because, although participants in the treatment that are allowed to choose their partner contribute around 10% more to the public good than participants in baseline, this difference is not significant at the 5% level. In the decision for a partner, not only the initial interpersonal preference for the potential partner (or initial tie, in terms of the ties model) and the expected contribution of the other (or belief) play an important role, but also attractiveness. Attractiveness, however does not seem to effect the eventual contribution decision. Indicating that attractiveness might mediate the beliefs about the contribution of the potential partners.