Experimenting with new combinations of old ideas

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1. Introduction

As the title suggests this dissertation has two unifying themes. The first is the use of laboratory experiments which form the core of each of the four main chapters. The second theme is combining old ideas to gain new insights in human behavior. Specialization has greatly increased our understanding of human behavior. As a result behavioral models provide accurate predictions in many situations. However their predictive power is often limited to the type of situations for which they were developed.

For example we have excellent models for decision making under risk and for the influence of the earnings of others on people preferences, but no model to predict behavior in situations where both risk and the earnings of others are relevant. Questions like: "How does the wealth of a neighbor influence a person's investment decisions?" or "Is career choice influenced by the salaries of your peers?" are therefore left unanswered.

Chapters 2 and 3 both report on experiments that try to fill this gap by examining decision making under risk in situations where social comparison is possible. These two chapters also combine theoretical ideas from decision making under risk and social comparison as a starting point and show that straightforward combinations of models do not describe the observed behavior.

Chapter 2 takes an important concept from theories on decision making under risk, the reference point, and asks whether a social reference point, the earnings of a relevant other, influences behavior in the same way. The reference point forms an important part of (cumulative) prospect theory (Kahneman & Tversky, 1979 and Tversky & Kahneman, 1992), the most successful descriptive theory on decision making under risk. We examine one specific effect of a reference point called the reflection effect: risk attitudes for gains are the opposite of those for losses. Risk aversion is the most common behavior when all possible outcomes are gains relative to the reference point, while risk seeking is the norm when outcomes are losses.

To examine whether a social reference point has the same effect on risk attitudes we experimentally investigate the simplest possible situation with both social comparison and risk: participants choose between two lotteries while a referent faces a fixed payoff. Participants are more risk averse when they can earn at most as much as their referent (loss situation) than when they are ensured they will earn at least as much as their referent (gain situation). Prospect theory with a social reference point would predict the exact opposite behavior. This result shows that social comparison can affect risk attitudes and that straightforward extensions of existing theories to allow for social comparison do not provide accurate predictions.

Chapter 3 examines an other way in which social comparison can influence risk attitudes. Social preference models assume that people care not only about absolute earnings, but also about their earnings relative to those of others. In contrast to most experiments that test these models we develop an experiment where participants take decisions that only influence their own earnings. Nevertheless several social preference models predict a treatment effect. In the social (individual) treatment participants do (not) observe the earnings of others. In the social treatment decisions therefore not only affect absolute but also relative earnings so social preferences can affect decisions in that treatment but not in the individual treatment. This experiment not only examines the importance of taking social preferences into account when analyzing decisions under risk, but also provides a novel test of social preference models. These models were originally constructed to explain why people spend money to affect the earnings of others and the influence of the income of others on reported happiness. However, all outcome-based social preference models also predict a treatment effect in our experiment.

We find that decisions are generally the same in both treatments. This suggests that ignoring social preferences when one is interested in decisions under risk may be harmless. However it also means that outcome based social preference models do not provide an accurate description of behavior in these situations. Rule-based social preference models such as procedural fairness on the other hand did not predict any difference in behavior between treatments. These types of models may therefore allow for a more general model that provides accurate predictions in situations where people can or can not affect the earnings of others.

Besides specialization with regards to the type of decision situations examined researchers also specialize in terms of the methods they use. Chapter 4 combines two different research methods. We use a well-known experimental economics method, the strategy method, to provide input to the evolutionary analysis of the minority game.

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The minority game is a very stylized depiction of many relevant decision situations such as congestion problems, market entry decisions or financial markets. An odd number of players choose each period between two actions. Players who choose the action chosen by a minority of the players earn a point, the others earn zero points. A common analogy is N people choosing between two roads, both of which get congested with more than $N/2$ travelers. So far this game has mainly been studied with evolutionary simulations but the strategies used in these simulations depended on the subjective choices of the researchers involved. For the relevance of these simulations it is important to know how the strategies chosen by these researchers compare to strategies used by real people. Some laboratory experiments have been run, but because of the enormous strategy space and the limited amount of rounds played it is impossible to deduce from these experiments which strategies people actually use. We therefore use an internet based strategy method experiment. Participants explicitly program a strategy which plays on their behalf. A website provides participants with ample opportunity to develop and test their strategies.

We find that the strategies people use are very heterogeneous. Many of the strategies participants use do not to fit in the set of strategies used in simulations so far. For example many participants use explicit randomization and condition their actions on more precise outcomes than simply winning or losing. Despite the heterogeneity of the strategies simulations yield aggregate outcomes that closely resemble the symmetric Nash equilibrium and therefore low levels of coordination. However, strategies that survive in evolutionary competition achieve much higher levels of coordination than the complete pool of strategies. The surviving strategies are in general reluctant to change but they will change, with a small probability, when they lose for too long in a row.

Chapter 5 studies libertarian paternalism; the idea that known behavioral biases can be used to overcome other biases and so improve decisions without limiting people's choices. There is ample evidence that libertarian paternalism can indeed help people improve their decisions. So far however researchers have only looked at the decisions they attempted to influence. We study subsequent decisions in situations without libertarian paternalism. We compare people who have experienced libertarian paternalism to people who have not. The policy we study is one of the most popular forms of libertarian paternalism: a helpful default option.

We find that participants who faced a helpful default in the past continue to rely on the default even when it is no longer helpful. As a result they make worse decisions than

participants that did not face a helpful default. Our results provide a note of caution for people implementing libertarian paternalistic policies.

In conclusion chapters 2 and 3 combine two prominent research areas in behavioral economics, social comparison and decision making under risk. Chapter 4 does not combine different theories, but two different research methods, a strategy method experiment and simulations. Chapter 5 applies the idea that previous experiences can affect decisions to libertarian paternalism.

Combining old ideas from different fields goes against a long trend towards specialization in science in general and economics in particular. In behavioral economics in particular specialization has an excellent track record. Human decision making is a complicated business. That is what makes behavioral economics fascinating but also what makes it challenging. Leaving the safety of traditional homo economics models one enters the wilderness of bounded rationality with all its treacherous tricks and turns. Indeed in my own experience, and I believe in that of many others, human behavior is always more complex than anticipated. Behavior is influenced by a myriad of factors, each of which takes clever research methods to uncover and sophisticated models to understand. It is not surprising that as a consequence behavioral economics has branched out in numerous specializations. Specializations both in terms of methods used and the type of situations studied.

In an ideal situation specialization leads to a toolbox of behavioral models (Camerer & Loewenstein, 2004). The applied economist faced with a particular decision situation can dip into this toolbox, take out the appropriate models and make predictions or policy recommendations. In practice however things often turn out to be more difficult. Many real world situations are multifaceted and it is unclear how models can be combined to deal with those types of situations. New research therefore explicitly has to examine multidimensional situations to aid the development of more general behavioral models. The four papers presented in this dissertation aim to contribute to this goal. Of course that does not mean that the "old" specialized research was useless. More specific models can form the basis for both new hypotheses and more general models and research methods can be adapted to include new elements as the papers in this dissertation show.