CHAPTER 5

Quo vadimus?
General Discussion and Outlook

Summary

The phenomenon of prosocial behavior has received much attention in psychology, evolutionary biology and anthropology, and economics. My goal in this dissertation was to integrate these different research traditions and explore what such a comprehensive and interdisciplinary perspective can contribute to our understanding of the ontogenetic development of prosocial behavior. Drawing on the paradigm of economic game theory allowed me to experimentally investigate prosocial behavior of different decision-making agents (individuals and groups) and in different age groups (children, adolescents, adults). Before discussing some the implications of this work and avenues for future research, let me briefly summarize the main findings of the two studies I conducted.

In the first study (Chapters 2 and 3) I investigated the behavior of children from third through eighth grade in a one-shot dictator and ultimatum game. In both games, the proposer player can decide on how to allocate a given sum of money between herself and another player, the responder. Since in the dictator game the proposer can unilaterally determine on how the money is shared, giving even a small sum of money to the responder can be regarded as prosocial behavior. In contrast, since in the ultimatum game the decisions of both players determine the allocation of the money, this game resembles a strategic bargaining situation. Letting individuals and groups of three play these games as proposers and measuring participants' altruistic preferences and moral reasoning abilities allowed me to empirically investigate the influence of these psychological variables on the decisions of individuals and groups, as well as the processes by which three individuals arrive at a common group decision. The results of the quantitative analyses for this study demonstrated that the participants from the three age groups did not differ in their individual allocations in the dictator or the

ultimatum game. As predicted by social psychological theories, moral reasoning ability did not influence the individual offers. However, the analyses showed a marked age difference in the group decision-making process in the dictator game in the way a group combined the individual allocation decisions of the three group members into a unanimous group decision. When groups were composed of a generous majority and a selfish minority, in sixth grade the group decision averaged the three individual offers. On the other hand, in eighth grade, the group decision of such groups corresponded to the majority decision. Thus, a selfish minority was relatively more influential in the group decision making process in sixth grade than in eighth grade. In third grade, a majority of groups was composed of two selfish members and one generous minority. The group decision making process followed here a majority procedure, that is the group offer shifted towards the offer of the selfish majority.

In Chapter 3, I looked at the group decision making process in more detail by analyzing qualitatively the transcripts of the videotaped group discussions. Drawing on the persuasive arguments theory from social psychology, I predicted that in groups, where the decision making process followed an averaging process, the minority group member would introduce new and valid arguments supporting his opinion. I proposed that the validity of a persuasive argument can be determined in two ways: Either by the level of perspective- taking that it employed or whether it utilized a socially rational algorithm. A statement that employed a higher level of perspective-taking should be more regarded as more valid than a statement on a lower perspective-taking level, because higher levels of perspective-taking are thought to be more equilibrated, that is they integrate new information better than lower perspective-taking levels. In contrast, the persuasive power of social algorithms should result from their social rationality: They can be seen as effective solutions to social problems that humans had and still have to face during their evolutionary and ontogenetic development. The results of this qualitative analysis indeed showed that in averaging groups a higher number of different kinds of arguments were used than in majority groups. The minority group member often introduced these new arguments. Arguments that changed others' offers during the group discussion often utilized social algorithms, such as reciprocity, hierarchy, and group membership. On the other hand, arguments using a higher perspective-taking level did not seem to be more persuasive than arguments employing a lower perspective-taking level. However, since these findings are based on a rather small sample, their robustness should be confirmed in future experimental studies.

In Chapter 4, I compared the ability of to two models, social preferences and a prosocial heuristic, to explain the behavior of adults and children from second and sixth grade

in three one-shot game situations, in which the participants interacted with one or two anonymous other players. The social preference model assumed that people have stable internal motivations for certain allocations. The prosocial heuristic model postulates that participants' prosocial decisions are a result of inferences they make based on cues that signify important social information for making socially adaptive decisions. Specifically, I hypothesized that information about past behavior and the group membership of the interaction partner would be important instances of social information, because theoretical research in evolutionary biology has repeatedly identified reciprocal altruism and ingroup favoritism as socially rational strategies that might have led to the evolution of prosocial action towards non-kin in humans. I was interested whether adults as well as children would interpret these social cues as proposed by the prosocial heuristic, or, whether some cues would be more salient in a specific age group than in others. The findings from this study indicated that adults' prosocial decisions are more in line with the predictions of the prosocial heuristic than with the predictions of the social preferences model. For children, on the other hand, I observed that the saliency of the presented social cues increases with age, which is in line with previous developmental research. Among sixth grade participants, the social preference model seems to explain prosocial choices (just) as well as the prosocial heuristic. This study highlights the importance of investigating the ontogenetic development of socially rational decision strategies, because the knowledge of what counts as a salient social information is often acquired in the course of development through instruction, socialization, or interaction with others.

General discussion

What can these results contribute to the previous work on the development of prosocial behavior? Since the implications of the two studies have been discussed in detail in the respective chapters, for the general discussion I want to adopt a broader perspective. Particularly, I want to focus on points that I think are of relevance not just for psychological but also for economic and evolutionary research, thereby opening avenues for future (interdisciplinary) inquiries.

The dominance of the equal split

A very robust finding in the two studies presented above is that almost independent of age, gender, or experimental condition participants tended to share equally with the other player(s) in both the dictator and the ultimatum game. These results are in line with previous empirical research which demonstrated that the modal offer adults and children make in the ultimatum game is the equal split, whereas in the dictator game proposer offers are usually considerably lower (around 30% of the initial endowment, see Camerer, 2003). Thus, in contrast to previous investigations, the adults, adolescents, and children in my studies acted much more prosocially in the dictator game. How can we explain this generosity?

The allocation of resources is clearly connected to norms of fairness. As discussed in Chapter 1, social psychology has differentiated between different fairness norms for allocations: Equality, equity, and need. Whereas allocations according to equity and need require to specify what constitutes an appropriate achievement input or level of neediness (i.e. who achieved or contributed more? Who needs more?), allocations according to equality do not call for such information. Messick (1993) regards equality as a simple and effective decision heuristic for situations in which the goods (or bads) to be distributed are divisible. Sharing equally is a simple rule that does not require identifying specific attributes in the other party; all one needs to know is the number of individuals and then perform a division to calculate a per capita share. Even in situations in which allocations according to equality are seen as inappropriate, splitting equally can be used as an initial anchor from which adjustments can be made. Messick (1993) notes that this equality heuristic is more likely to be used in situations which are novel, unfamiliar, and ambiguous, such as experimental situations. In these situations, splitting equally can be used as a default decision option. This interpretation of equality as a heuristic for allocation decisions draws on the facts that splitting equally is a very salient distributive justice norm (which is also explicitly taught by parents and teachers) and that it is, according to Messick (1993), cognitively less demanding. I found evidence for both interpretations in the transcripts of the group discussions, which were presented and analyzed in Chapter 3.

To my knowledge, there has been no attempt so far to investigate the ontogenetic development of the equality heuristic. On the other hand, studies on the development of distributive justice in children and adolescents have demonstrated that children apply the justice norms of equality, equity, and need appropriately when allocating resources in hypothetical scenarios in which one of these norms was emphasized (e.g. allocating candies among children who helped clean the classroom; the child who helped more should also get

more candies according to the equity principle; see Huntsman, 1984; Sigelman & Waitzman, 1991). This flexibility in children's allocation decisions could both be observed when children made hypothetical allocation decision (i.e. they could not allocate resources to themselves) and when they could also favor themselves. However, sharing according to the equality principle has always been reported as being a dominant allocation mode, and is especially pronounced in younger children (preschool and elementary school). Thus, it seems that also among children and young adolescents, equality is a predominant strategy for determining allocation decisions.

It should be noted that in many studies on the development of distributive justice, allocation according to selfish standards is often not addressed, probably because selfishness is not a justice principle. As a consequence, situations such as the dictator game in which participants are presented with the "dilemma" of pursuing a selfish goal or some fairness norm are not explicitly tested in the majority of studies on distributive justice development. However, Damon (1977), who was one of the first developmental psychologists to address this issue, stated that very young children would allocate resources selfishly. Similarly, researchers investigating the development of moral reasoning (e.g. Kohlberg, 1969, 1984) or prosocial moral reasoning (e.g. Eisenberg et al., 1983, 1986, 1987) proposed that young children (preschool to early elementary school) would refer to selfish or hedonistic reasons when arguing in moral or prosocial dilemmata. Especially in moral reasoning research, moral development has been seen as an increasing internalization of moral norms: Moral norms have to be followed not because people want to avoid punishment or pursue selfish desires, but because they increasingly regard them as values in themselves and integrate them into their (moral) self-concept (Keller & Edelstein, 1993).

From this perspective, the behavior of our participants is unexpected. People share equally in the dictator game, although the experimental situation would give them every reason not to, that is, they will not get punished if they do not share fairly and there will be no opportunity for the responder to reciprocate generous behavior. From the point of view of the moral developmental theory, our participants have internalized the norm of equality, because they follow this norm even in a situation where this behavior is literally costly for them. Our studies show that even 7-year-old children follow this equality norm in their sharing behavior, contrary to the predictions of moral developmental theories which would expect children of this age to act more selfishly. In a recent study, Gummerum, Hanoch, Rust, & Keller (2005) demonstrated that the majority of 3- to 6-year-old preschool children shared sweets equally in the dictator game. Whether this fair behavior is really the result of an internalization of the

equality norm or whether sharing equally is just the (cognitively) easiest allocation strategy (as proposed by Messick, 1993) should be investigated systematically in future studies. One should keep in mind however, that "share equally" is a request that even young children should be very familiar with: Parents and teachers use it frequently to moderate allocations (of goods and bads) between siblings and peers. Empson (1999) demonstrated that children's familiarity with and their acceptance of equal sharing can be used to teach first-grade elementary school children fraction concepts.

A more parsimonious explanation for the predominance of the equal split could be, however, that participants did not want to appear greedy in the eyes of the experimenter(s). Although results from experimental economics concerning the social desirability of proposers' behavior in the dictator game are mixed (Hoffman et al., 1994; Bolton & Zwick, 1995), we cannot rule out this possibility. In both studies reported above, experimenters were not blind to the participants' decisions. Therefore, in future research it would be interesting to investigate children's decisions in the dictator and the ultimatum game in "double blind" conditions, similar to the experiment conducted by Hoffman and colleagues (1994) with adults.

Internalization of norms

Even if an early internalization of a prosocial or fairness norm may not be the correct interpretation for the high prevalence of equal allocations in our studies, in my opinion it is worth reflecting about the significance of this concept for economic and evolutionary theories. In recent economic theories (e.g. Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999) such internalized norms are usually treated as equivalent to social preferences. However, economic theories typically do not ask where these social preferences or norms come from and why it can be reasonable that humans have an inclination to follow these norms. This is because economists usually focus on proximate causes, such as game structures and monetary incentives, as reasons for a particular behavior. Although not explicitly addressed in this dissertation, developmental psychological research can enlighten economists about the ontogenetic origins of social preferences or norms in humans. This is notwithstanding the fact that the exact processes by which children learn or internalize (moral) norms have not fully been unveiled so far by developmental psychology.

Evolutionary biologists and anthropologists investigate the ultimate causes of human and animal behavior that is the processes by which organisms were shaped by natural selection over the course of phylogeny. Although evolutionary theorists have developed

valuable models that can explain the ultimate causes of prosocial or altruistic behavior in humans (e.g. kin selection, reciprocal altruism, and cultural group selection, see Chapter 4), the internalization of norms is not really part of their theoretical models. But in my opinion, the concept of internalization of norms can be an important explanation as to why certain norms are maintained once a group has acquired them. To my knowledge, the only mechanisms that have been shown to sustain norms in a group have been various forms of punishment, either physical punishment of norm violators, or punishment through ostracizing (see Kameda et al., 2003, Panchanathan, 2003). But we know from empirical research, and this study is an example for it, that people follow prosocial norms, even when punishment is unlikely or even impossible. Internalization of norms might be a concept that could explain this "strange" behavior. This does not exclude the possibility that people learn the importance of certain norms by experiencing the negative consequences of norm violations either for themselves (they get punished for a norm violation) or for others (others suffer as a consequence of norm violation). Feelings of guilt and shame on the side of the norm violator, empathy with a victim of norm violation, and (anticipated) anger on the side of the victim may help to act in accord with a norm even in situations with no direct punishment (see Keller, Lourenco, Malti, & Saalbach, 2003; Hanoch, 2002; Muramatsu & Hanoch, 2004). Moreover, there might be some moral norms (for example moral norms that correspond to the four moral modules proposed by Haidt & Joseph, 2004, see Chapter 3) that are more easily internalized than others. Consequently, I believe that evolutionary theory could also benefit from integrating research on the internalization of norms into their theoretical models.

Can we generalize from the experimental situation?

When I presented the studies of my dissertation to other developmental psychologists, I often met with skepticism whether the behavior that was exhibited by the participants in these studies would generalize from the experimental setting to other (prosocial) decision situations. After all, when in our daily life do we have to decide whether to act prosocially towards a completely anonymous other person? Even when we donate money to unknown people in other parts of the world or the homeless person on the street, we still acknowledge their neediness whereas the players in economic games do not have any personal characteristic at all. What is the ecological validity of these experimental game situations?

As was discussed in Chapter 1, an experimental game is supposed to capture all the necessary components (e.g. the number of decision makers or players, the possible actions or strategies, and the outcomes associated with them) that distinguish a specific social situation.

Therefore, a game can be seen as an idealized abstraction of this social situation. Although experimental economists would agree that there is more to real-life social situations than the components described by a particular experimental game, they nevertheless regard these experiments as interesting baseline cases. If a particular behavior, for example prosocial behavior, shows up in such minimal experimental conditions, then one can assume participants would also exhibit this behavior under more realistic circumstances (see Fehr & Henrich, 2003).

To my knowledge, no economic investigation so far has studied the relationship between prosocial behavior in economic games and prosocial behavior "in the real world". So I have to disappoint my developmental colleagues in this respect. However, it would be an interesting future research project to investigate this relationship more thoroughly. Especially for researchers who regard social preferences as the reason for prosocial behavior in economic games, this research avenue would be relevant, because one could investigate how stable social preferences are across many types of social situations.

This dissertation has been a first attempt to integrate previous research in developmental, social, and cognitive psychology, experimental economics, and evolutionary biology and anthropology to allow for a comprehensive and multidisciplinary perspective on the development of prosocial behavior, its possible antecedents (both proximate and ultimate) and correlates. In the past, these disciplines have often worked in parallel when trying to deepen our understanding of this fascinating phenomenon. This work has hopefully shown that a combination of the diverse approaches to prosocial behavior is not only warranted but also possible and beneficial. Economists and evolutionary scientists have used economic games to, among other things, measure the prosocial decisions by real and artificial agents. I demonstrated that these methods can be successfully applied to a developmental context. Research in experimental economics certainly gains from integrating a psychological perspective, and economists have already acknowledged that (see Camerer, 1997, 2003). Psychology can inform economists about whether humans actually possess the abilities they propose for their "ideal" decision-makers in their theoretical models (e.g. adherence to fairness norms, perspective-taking ability). Developmental psychology can furthermore provide useful insights about which of these abilities are inborn, which are acquired over ontogenetic development, and what the role of societal and maturational influences on this acquisition process might be. On the other hand, economic games allow to experimentally investigate some of the, in my view, most pressing questions in psychological research on

prosocial behavior: What is the connection between reasoning and action? What are the common structural features of situations in which adults and children act prosocially? Are there ontogenetic changes in the expression of prosocial behavior? The strength of using a game-theoretical approach to answer these questions is that the same experimental instrument (e.g. a particular game) can be used across age groups and lines of inquiries (e.g. concerning the ontogenetic and phylogenetic roots of prosocial behavior). This maximizes the ability to draw meaningful comparisons across species, across the lifespan, and also across cultures, a task that has rarely been taken on in a unified and systematic manner.

Where there is light there is also shadow. By trying to shed light on previously neglected research areas on the development of prosocial behavior, I consequently left dark other parts or even cast new shadows. Several topics that were brought up in this dissertation will need further investigation in future studies. But I hope that also in the future psychologists, economists, and evolutionary scientists will join forces in trying to understand the phenomenon of prosocial behavior, its development over the life course, and its evolutionary roots.