

# CHAPTER 1

## Everything You Always Wanted to Know About... Prosocial Behavior in Economics and Psychology

### Introduction

Imagine that you find a wallet with €100 on an empty road where no other person is in view. There is an address for the owner in the wallet but otherwise nothing other than the money. What do you do? In your indecision you call a scientist you know who has worked on issues of human decision making. What would she advise you to do, and, most importantly, would her recommendation be of any practical help in this specific situation or would it just be crumbs of wisdom from the ivory tower of science?

Although people's behavior in situations such as this has been extensively studied in the social and life sciences (often with the members of one school not knowing of members of the other), as we shall see below each of these disciplines would give very different recommendations for what to do. Suppose your scientist friend is an economist or game-theorist (see Section 1.1). She would probably give you the most straightforward answer: If you are not likely ever to meet the owner and if nobody can watch and punish your behavior, you should take the wallet. If your friend knows the latest findings in experimental economics though, she would probably add that even in these one-shot and no-punishment situations some people actually return the wallet, but she cannot tell you why they would engage in such economically "irrational" behavior.

Should your friend happen to be an evolutionary biologist or an anthropologist (see Chapter 4), her answer would be somewhat less decided. She would probably want to know first whether there is any chance that the owner of the wallet is (closely) related to you, whether he or she has done something good for you in the past or is likely to do so in the future, or whether you can earn the reputation of "nice guy" in your community if you return

the wallet. If you can faithfully answer “no” to all of these questions, your friend might advise you to spend the money on a night out finding a high-quality mate, or on the education of your children.

If your scientist friend is a psychologist, though (Section 1.2), her recommendation will perhaps be the least satisfying for you. She would probably run you through a collection of different psychological tests (personality, empathy, moral reasoning, etc.) before concluding that there is a high correlation between your profile and returning the wallet to its owner, but that more research is needed to verify this conclusion.

My dissertation deals with the question of how children, adolescents, and adults make decisions in social situations that are very similar to the scenario described above. Defined very broadly, in each of these social situations, people can decide between two choice options: in favor of their own benefit (i.e., take the wallet) or in favor of the other person(s) involved (in this case returning the wallet to its lawful owner). Especially in the social sciences, the first type of behavior has been termed “selfish,” whereas the latter has been termed “prosocial” behavior, and it is this kind of “behavior that benefits others” (Hinde & Groebel, 1991, p. 11) that is more thoroughly investigated in this dissertation project.

Prosocial behavior should be distinguished from altruistic or cooperative behavior. Whereas altruism is referred to when helping others involves costs that are not offset by any rewards, cooperation occurs when two or more individuals assist each other to reach the same end. In the literature I am discussing in this thesis these terms are often used interchangeably. I will stick to the term prosocial behavior, since it captures a wide variety of phenomena that can also be regarded as cooperative or altruistic.

As illustrated in the example above, some disciplines have tried to determine in which (social) situations people should or should not act prosocially so that their behavior is in accordance with rationality principles. Other sciences have focused on describing when and how people act prosocially and have tried to connect this with other well-known (psychological) factors. Research in economics, and more specifically game theory, has until recently predominantly focused on the first approach, whereas psychological studies have dealt with the latter.

Here I will integrate aspects of previous research in both disciplines. This integration can be beneficial for (developmental) psychology, since game theory can provide new research tools for studying “old” psychological questions: What motivates human action—selfish or other-regarding considerations? Why do people help others and act fairly in some situations but not others? Are there developmental phases in which children are more

motivated by selfish or by social concerns, and what might cause such developmental differences? At the same time, psychological research on people's prosocial behavior can be beneficial for economics and the questions studied there: What psychological abilities do agents need to follow the economic models of human decision making? Can normative economic models predict human individual and interpersonal behavior at all, or do the assumptions of these models have to be changed to describe actual choices by people or institutions? Finally, in this dissertation I will present one approach that might help interconnect and yet preserve the individual strengths of the normative-economic and the descriptive-psychological research traditions, namely, the social rationality approach (e.g. Gigerenzer, 1996, 2000). Rather than adhering to the assumptions of classical rationality, this approach maintains that decision mechanisms have evolved that exploit the information in a social environment and solve important adaptive problems quickly with the help of domain-specific heuristics.

This thesis is organized as follows: In this chapter I will first summarize research on human interactive decision making and prosocial behavior from an experimental economics point of view and then review studies on prosocial behavior in social and developmental psychology. I will describe the social-cognitive abilities, put forward in previous research, that humans might need to perceive and understand "prosocial cues" and how they develop. In Chapters 2, 3, and 4, I will present two empirical studies that investigate the development of prosocial behavior in two different social situations. In the first study, individuals and groups had to decide how to allocate resources to an anonymous group. This study deals with the psychological abilities—cognitive and emotional/motivational—people might need to show prosocial and fair behavior in a developmental context. The second study explores prosocial behavior from a social rationality perspective. I introduce a heuristic people might use in an intergroup context when they have to decide whether to act prosocially. In the final chapter further questions will be discussed that should be examined in future research.

### **The economic perspective: Game theory and experimental economics**

As in many other behavioral and social sciences, research in economics has been and continues to be interested in what constitutes a "good" or rational decision. According to Colman (2003), "rational decisions or choices are those in which agents act according to their preferences, relative to their knowledge and beliefs at the time of acting" (p. 141). First

accounts of this *instrumental* or *means–end rationality* can be found in the writings of Hume and Adam Smith; the modern version is called *rational choice theory* in neoclassical economics, political science, and also psychology.

A key to determining whether a decision is rational or not lies in analyzing an agent's preferences. Preferences are thought to be rational if they obey the conditions of completeness, transitivity, and context-free ordering, which is also termed the *weak ordering principle* (McClennen, 1990). In 1947, von Neumann and Morgenstern extended the weak ordering principle to gambles and lotteries among outcomes. They showed that if one assumes an independence principle (see also McClennen, 1990) operating together with the weak ordering principle, it is possible to define a function  $u(g)$  that assigns a numerical expected utility to every outcome and gamble. Agents who maximize their expected utility  $u(g)$  act according to their preferences and are showing instrumental rationality. Further developments of expected utility theory, such as subjective utility theory (SEU; expected utilities are based on subjective probabilities instead of objective relative frequencies; Harsanyi, 1967–1968), tried to make expected utility theory more plausible, also with respect to psychological circumstance/conditions, but such theories still emphasized the importance of acting in accordance with one's preferences as the benchmark of rational decisions (see also, Camerer, 1995).

The logic of interactive decisions, that is, decisions in which two or more decision makers are involved, has been widely investigated in *game theory*. Originally a branch of mathematics, game theory aims to analyze decision making in social situations that are distinguished by the following features: They involve two or more decision makers, called players; each player can choose among two or more ways of acting (i.e. strategies), and the outcome of the interaction depends on the choices of all players; all players have clearly defined preferences across the set of possible outcomes and each outcome can be assigned a numerical payoff, which reflects the preferences of the players (payoff function; for an overview of game theoretical research in the social and biological sciences, see, e.g. Camerer, 2003; Colman, 1995; Kagel & Roth, 1995). A game is supposed to be an idealized abstraction of a specific social situation with explicitly defined basic elements (players, strategies, payoffs) and connecting rules. The rules of the game specify what actions are available for each player, how these actions can be carried out, what players know when they take these actions, and what outcome is connected with each possible combination of decisions by all players. To be scientifically relevant, a game has to include all the important properties of the social situation and model the interaction accurately (Colman, 2003).

Mathematical game theory investigates which strategies rational players should choose to maximize their payoffs. In this sense, mathematical game theory is normative, that is, it does not describe what real players do in an actual interaction. As for individual decision making, game theory postulates players' full rationality in the sense of expected utility theory and common knowledge of all players' strategy sets and payoff functions (see also Binmore, 1994). An empirical test of these assumptions and an investigation of players' actual behavior in various games has been undertaken in the social and biological sciences. Empirical game theory, especially in economics, has been coined behavioral game theory (Camerer, 1997). This blend between the axiomatic (i.e. normative) and behavioral (i.e. descriptive) approaches is an important development, as it might help bridge the gap between economics and psychological research.

Both normative and behavioral game theory differentiate between different sorts of games: games of skill (individual decision making under certainty), games of chance (individual decision making under risk or uncertainty), and games of strategy. In the first type, only one player has absolute control over the outcome, so that each strategy he or she chooses also leads to a certain outcome. The second kind of game, games of chance, are also called one-person games against nature. As is suggested by this name, nature is regarded as a second, fictional player, which chooses its strategies according to the laws of probability. These kinds of games are used in research on individual decision making. Games of strategy model social interactions. There are different subtypes of games of strategy, which can be distinguished by the way players' payoff functions are related to each other: In coordination games, players' preferences coincide, in zero-sum games players' preferences are diametrically opposed to each other, and in mixed-motive games players' motivations lie somewhere between cooperation and competition. From a psychological point of view, the latter offer the opportunity to investigate many real-world phenomena. As it would certainly be beyond the scope of this chapter to review the entirety of game theoretical research, the following sections will offer a summary of the most important research on mixed-motive games, particularly bargaining and social dilemmas (for an overview on economics and psychological research see Camerer, 2003; Carnevale & Pruitt, 1992; Kagel & Roth, 1995; Komorita & Parks, 1995; Messick & Brewer, 1983).

## **Bargaining**

As one would expect, bargaining is of major interest to economists. One game that tries to capture the social situation that real-world bargainers find themselves in is the famous

ultimatum game, introduced by Güth, Schmittberger, and Schwarz (1982). In the simplest, one-shot two-person case, participants are paired with an anonymous opponent. The two players have to negotiate the division of a given sum of money (or other material resources). One of the players, the proposer, makes an offer on how to split the sum; the other player, the responder, rejects or accepts this offer. If the responder accepts, the proposer receives what she proposed and the responder gets the remainder of the sum of money. If the responder rejects, each player receives nothing. According to conventional game theory, the rational strategy for the proposer would be to offer the smallest amount possible to the responder. The responder should accept any offer that is larger than zero. Players of the ultimatum game, however, rarely behave according to the game theoretical solution: Reviews of several studies by Camerer (2003) and Güth and Tietz (1990) show that the modal and median offer for proposers usually lie at 40–50% of the original sum. Responders rarely reject such offers. Nevertheless, responders reject offers below 20% about half of the time.

Dictator games are ultimatum games in which the responder does not have the ability to reject an offer by the proposer, that is, a responder can only accept a proposer's—the dictator's—offer. Thus, the normative game theoretical prediction would be that proposers do not offer anything to the responders but keep the whole sum of money to themselves. Again, proposers in dictator games do not seem to follow this solution: Studies in which proposers offers were not limited to two or more allocation options (e.g. Forsythe, Horowitz, Savin, & Sefton, 1994; Hoffman, McCabe, Shachat, & Smith, 1994) showed that dictators' most frequent offers fell between 20 and 30% of the original sum. Clearly, proposers tended to offer a positive amount to the other player, though not as much as proposers in ultimatum game do.

Researchers have interpreted players' deviations from game theoretic predictions in both games as an indication of their other-regarding or social preferences. That is, players are not only interested in maximizing their own payoff but also take into account the other player's payoff. Because proposers in a one-shot dictator game only interact once with an anonymous other player who cannot reciprocate or punish in a future round of the game, their positive offers have been interpreted as altruistic preferences or have been attributed to their fairness concerns. The comparatively larger ultimatum offers are commonly regarded as being caused both by proposers' fairness concerns and by their fear that the responders might reject small offers. Therefore, in contrast to dictator games, ultimatum offers might be motivated by both other-regarding and strategic considerations. Responders' rejections of small offers in

ultimatum games, on the other hand, have also been attributed to their preference for a fair distribution.

Many studies have varied the conditions of the original one-shot ultimatum and dictator games to explore whether these first findings can be replicated. One major avenue of research has been to look at what change in variables would make players behave more according to the game theoretical predictions, and whether there are differences in how different social groups play these games (see Camerer, 2003). Studies in which participants play ultimatum and dictator games over several rounds, being matched with a new player in every round (e.g. Roth, Prasnikar, Okuno-Fujiwara, & Zamir, 1991; Bolton & Zwick, 1995), show that proposers slightly lower their offers over time. This effect gets stronger when there is feedback about a population's behavior, especially when the population consists of "self-interested" computerized players.

Most experimental studies on dictator and ultimatum game use relatively "low" affordable sums for the players to allocate. Research shows that there are only small differences in offers and rejections for relatively small increases in stakes. Forsythe and colleagues (1994) found no difference between \$5 and \$10 ultimatum and dictator games. In Hoffman and colleagues' (1994) study, offers were slightly lower in a \$100 ultimatum game than in a \$10 game; rejection rates were about the same in both games. Cameron (1995) conducted ultimatum games in Indonesia, and her stakes equaled one day's to one month's wages. Both offers and rejection rates were comparable to Western low-stakes results. Obviously, stake level does not influence proposers' offers and has only little effect on rejection rates, which tend to fall when stakes are very high (Camerer, 2003).

Instead of explaining dictator and ultimatum offers by referring to players' other-regarding preferences, Hoffman and colleagues (1994) proposed that these offers are rather caused by players not wanting to appear greedy in the eyes of the experimenter. Therefore, they investigated how changes in anonymity or "experimenter blindness" would affect dictator offers. In their "double blind" condition, the experimenter did not know which dictator made which decision. Dictator giving in the double blind condition was significantly less than the offers in a condition in which the experimenter could possibly assign offers to proposers. Bolton and Zwick (1995) could not replicate this effect in ultimatum games, although in these game experimenter blindness is even more difficult to arrange because proposers' offers have to be conveyed to a specific responder. Therefore, one can conclude that the influence of anonymity on proposers' offers is not clear-cut.

The effect of demographic variables on the behavior of players in dictator and ultimatum games has recently attracted considerable attention. Of major interest to the study of developmental processes is, of course, the influence of age or age-related variables on dictator and ultimatum game behavior. Murnighan and Saxon (1998) compared the behavior of children from kindergarten, third grade (8 to 9 years old), and sixth grade (11 to 12 years old; Study 1) and from sixth grade, ninth grade (14 to 15 years old), and university undergraduates (Study 2) in ultimatum games with complete and incomplete information. In the incomplete information condition, responders did not know the amount the proposer was dividing; in the complete information condition they did. More than half of the third graders offered exactly half in both conditions and accepted only 50–50 splits as responders, even rejecting offers that gave them more than 50% of the sum. Third graders offered less than sixth graders (in Study 1), and sixth graders also offered more than ninth graders and university students (in Study 2). Interestingly, kindergarteners accepted 70% of the smallest possible offers by proposers, compared to only 30 to 60% of the older children. Harbaugh, Krause, and Liday (2000) studied the bargaining behavior of children from second, fourth/fifth, and ninth grade in ultimatum and dictator games. Second graders as proposers offered less than the older children, but only in the ultimatum game was there a linear increase of offers with age. In the dictator game, the fourth/fifth graders offered more than both second and ninth graders. As responders, second graders rejected offers significantly less often than older children. Taken together, in neither study were consistent general age trends found for proposers. It seems, however, that the youngest children in both studies behaved closer to the self-interest prediction as responders.

## **Social dilemmas**

According to Komorita and Parks (1995), “a social dilemma can be defined as a situation in which a group of persons must decide between maximizing selfish interests or maximizing collective interests” (p. 190). In general it is more advantageous for the individual to maximize self-interest, but if every person in the game does so, everybody will be worse off than if every player had maximized collective interest. So, acting economically rational in a social dilemma can be self-defeating (Parfit, 1979). Here, I want to discuss research on two types of social dilemmas, the two-person prisoner’s dilemma game (PDG) and the public goods game.

The term prisoner’s dilemma comes from one illustration of the game given by Albert Tucker in a seminar in the psychology department at Stanford University (Colman, 2003):



After a serious offense, the police individually questions two criminals. The investigators pose the following dilemma to the two prisoners: If one of them confesses the crime and the other does not, the confessant will get a sentence of 2 years, whereas the non-confessant will get a sentence of 10 years. If both confess, each of them will be sentenced to 6 years in prison. However, if they both remain silent, they will be sentenced to 4 years in prison. What should the two prisoners do? Clearly, the most profitable strategy for the individual, especially in the one-shot case, would be to confess (i.e. defect), especially when one knows that the accomplice will remain silent (i.e. cooperate). However, if both prisoners follow this defection strategy, they are both worse off than if both would have remained silent.

Although defection is the dominant strategy for the one-shot two-person prisoner's dilemma (i.e. the strategy that yields the best payoff whatever the other player does) and mutual defection constitutes a prisoner's dilemma's only equilibrium point, a vast amount of research in both economics and psychology has shown that even in the one-shot case, many players cooperate to their mutual advantage (see e.g. Colman, 1995; Ledyard, 1995; Rapoport, 1989). For the repeated case, Axelrod and colleagues (1984; Axelrod & Dion, 1988; Axelrod & Hamilton, 1981) demonstrated with the help of computer simulations that the simplest strategy they tested, tit-for-tat (TFT), was the most effective compared to a variety of other (also more complex) strategies and creates an evolutionarily stable strategy (i.e. a strategy that, when possessed by an entire population, results in an equilibrium so that any mutation of the strategy can never result in an improvement for the individual). Tit-for-tat involves cooperation on the first trial, followed by the imitation of the other player's move on each succeeding trial. Factors that influence cooperation are, for example, immediate versus delayed reciprocation (Komorita, Hilty, & Parks, 1991), pre-game communication between the players, and shared or different group identity of the players (Orbell, van de Kragt, & Dawes, 1988; Wit & Wilke, 1992).

Public goods games can be conceptualized as the  $n$ -person case of a prisoner's dilemma. A public good is a service that can be provisioned only if group members contribute toward it (with money or effort), but all members can use it equally, no matter if they contributed or not. Therefore, the individually rational action would be to benefit from the public good, but not to contribute toward it, a behavior that is generally known as free riding. However, if every single group member acts like this, there will be no public good to be distributed and all are worse off. Because of its similarity to and relevance for real-life decision problems (e.g. environmental pollution, paying fees for public services), the public

goods game has stimulated increasing research in economics, psychology, sociology, and the political sciences (e.g. Palfry, 1991).

Komorita and Parks (1995) distinguish between two types of public goods games: a linear game, in which the value of the public good varies with the total amount contributed by the players, and a step-level game, in which the value of the public good is fixed. In a linear game each contribution increases the value of the public good, and therefore, it is good for all members to donate. In a step-level game, the public good is provided when the contributions of the players exceed a certain point, otherwise it is not provided. Thus, once this provision point is reached, it is not profitable to contribute additionally to the public good.

Factors that influence contribution behaviors in public goods games are, for example, group size, criticalness of one's own contribution, initial endowment or wealth, and beliefs about the other players. Kerr (1989) and Rapoport (1985) showed that group members are more likely to cooperate when they feel that their contribution is critical for achieving the public good. Obviously, an individual player's contribution is less critical in a large group than in a small one. Also, in large groups, free riding might not be as easily detected as it would be in small groups. Consequently, contributions are higher in small groups.

Participants are more likely to contribute higher amounts to the public good when their wealth or endowment increases (van Dijk & Grodzka, 1992). Bornstein and Rapoport (1988) and Orbell and colleagues (1988) demonstrated that pre-game discussions between group members enhance cooperation in the subsequent public goods game. If a public goods game is played repeatedly over several rounds, cooperation is rarely stable but tends to diminish (Isaac & Walker, 1988; Ledyard, 1995). This breakdown of cooperation can be attributed to the behavior of the free-riding subjects in the group. If the initially cooperating group members realize that some are not contributing, they also decrease their cooperation in the subsequent rounds. Fehr and Fischbacher (2003) and Fehr and Gächter (2000a) showed that the possibility of punishing free riders does not lead to this breakdown of cooperation in repeated public goods games.

### **Theoretical explanations**

The findings summarized above make it difficult to believe that maximizing (selfish) expected utility is the one and only motive in human social interaction. Economists have also acknowledged this perspective. But instead of abolishing the concept of utility maximization, they maintain not only that players in mixed-motive games care for their own utility, but that their actions also reflect social preferences for the payoffs of others. Several theories have

emerged that try to formalize the inclusion of such social utilities in their theoretical models. In the following I will briefly discuss the equity, reciprocity, and competition (ERC) approach of Bolton and Ockenfels (2000), the inequality aversion theory of Fehr and Schmidt (1999), and the fairness equilibrium approach of Rabin (1993). The first two models start from the assumption that players dislike unfair payoffs, whereas the latter takes players' judgments of others' intentions into account<sup>1</sup>.

In their ERC model, Bolton and Ockenfels (2000) assert that players' decisions are motivated not only by their own absolute monetary payoff, but also by their relative payoffs, that is, how their own payoff compares to that of others. Thus, even if one holds a player's payoff constant, players still strictly prefer a relative payoff, which is equal to the average payoff  $1/n$ , where  $n$  denotes the number of players in a game. According to Bolton and Ockenfels (2000), players dislike being treated unfairly (i.e. getting less than average), but they will also sacrifice money to help others if they themselves are above the average. Consequently this "dislike for being ahead" will lead players to refrain from taking too much [an effect that Camerer (2003) describes as resembling reciprocity]. Bolton and Ockenfels (2000) proved several propositions of what would happen in different games if players have ERC preferences; these propositions match many empirical observations, especially from the dictator and ultimatum game literature.

Fehr and Schmidt (1999) also include fairness in their theoretical model. They define fairness as self-centered inequity aversion, that is, some people do not care about inequity in general, but only when they compare their own payoff with the payoff of other people. Thus, Fehr and Schmidt (1999) assume that player populations are heterogeneous: Some players are purely selfishly motivated and some dislike inequitable outcomes. The type of economic environment determines which player type exerts more influence within the course of the

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<sup>1</sup> Note that different researchers have different terms for non-normative, selfish-utility-maximizing behavior. Larger-than-expected allocations (e.g. in bargaining games) are usually attributed either to players' concerns for fairness or to their altruism. Social preferences in social dilemmas are often referred to as cooperation. This terminology slightly differs from the definitions of these concepts in psychological research, where fairness concerns are explicitly connected to fairness norms (e.g. equality, equity, need), altruism denotes positive behavior towards another person with non-selfish motivations, and cooperation is defined as a collaborative behavior of two and more persons to reach a common goal. In the following discussion, I will stick to the terms used by the researchers in their original papers.

game. Further, in their theoretical formulation of inequity-averse players, Fehr and Schmidt (1999) proposed that players suffer more from inequity that is to their disadvantage than from inequity that is to their material advantage. They proved that their model can predict fair behavior in ultimatum game, competitive behavior in market games with responder and proposer competition, and the behavior of people in public goods games with or without punishment. When allowing for a concave utility function, they can also predict offers in dictator and gift exchange games.

In contrast to the models of Bolton and Ockenfels (2000) and Fehr and Schmidt (1999), which take into account players' preferences for different *outcomes* of a game, Rabin's (1993) fairness equilibrium model starts with players' judgments about the reasons for others' behavior. Rabin asserted that people do not uniformly show altruistic behavior, but that they clearly differentiate between those who have been kind to them and those who have been unkind: People are willing to sacrifice self-interest for the nice guys but will punish the unkind ones. According to Rabin (1993), a model designed to explain these stylized facts must include people's beliefs of whether others are kind to them, and these beliefs requires people to judge others' intentions. Thus, players' *expectations* about others' behavior are central to Rabin's (1993) model: "Player 1's payoffs do not depend simply on the actions taken, but also on his beliefs about player 2's motives" (p. 1285). These beliefs create emotional reactions to the actions of the other player(s), which in turn influence people's own (fair) behavior.

For his model, Rabin (1993) adopted the framework of Geanakoplos, Pearce, and Stacchetti (1989; cited in Rabin, 1993), who allowed players' utilities to depend also on their beliefs. In such "psychological games" a player's subjected expected utility when she chooses a strategy depends on the other player's strategies, her beliefs about the other player's strategy choice, and her beliefs about the other player's beliefs about her strategy. Thus, a player's (social) preferences in a game can be formalized as the sum of her concern about her monetary payoff, her perception about whether she is treated kindly by the other player, and the product of the kindness she expects and her own kindness. Camerer (2003) added a weight  $\alpha$  to perceived kindness and the last product term to account also for self-interest as a special case. Players maximize social utility when their beliefs are rational expectations of what actually happens. Rabin (1993) called this equilibrium concept a "fairness equilibrium." According to Camerer (2003), Rabin's (1993) social preference function allows the model to capture reciprocity motives, while at the same time allowing that people's behavior (mean vs. kind) can vary across situations or games.

In sum, conventional economic theory proposes that economically rational agents maximize their expected utility when making both individual and interactive decisions with another rational agent. However, when decision making is studied empirically, “real” people do not seem to follow the assumptions of normative game theory: In social situations, in which people’s decisions can be motivated by both cooperative and competitive considerations, people consistently display behavior that can be interpreted as fair, altruistic, reciprocal—but certainly not “rational” in the classical sense. Recent economic theories have tried to account for these findings by arguing that people in interpersonal decision situations also have concerns for the other players’ payoffs, or so-called social preferences. Thus, these recent economic theories *do not change* the classical concept of utility maximization itself but grant that people can have preference orders different from “more money is always best”.

The economic theories I have discussed above try to integrate empirical findings into standard economic theories by creating models that are more psychologically plausible. From a psychological point of view, it is interesting to tease apart the psychological abilities players need to have in order to fit the theoretical models. Bolton and Ockenfels’ (2000) ERC model and Fehr and Schmidt’s (1999) inequality aversion model assume that people have some “taste for equality,” and consequently some dislike for inequality. Therefore, for players to behave according to the model predictions, they should have some knowledge about fairness rules and the (emotional) capabilities to feel uncomfortable when these rules are violated. Rabin’s (1993) fairness equilibrium model, on the other hand, adopts a more cognitive perspective: He assumes that players’ choices also depend on their beliefs about the other players’ intentions for actions. Thus, players in his model need to have a theory of the other person’s mind in order to show prosocial or fair behavior.

Asking for the necessary psychological components that are (silently) assumed in these economic models brings us directly to research on prosocial (and fair) behavior in psychology. What have psychologists found out about the necessary individual and social conditions for prosocial behavior? Do some people act more prosocially than others, or does this behavior vary across situations? Can developmental patterns of prosocial behavior be identified, and to which abilities could they be connected? The next section tries to answer these questions.

## **The psychological perspective: Social and developmental psychology**

For centuries, philosophers have been interested in the sources of prosocial and moral behavior in humans, and different scholars have come to very different conclusions. Although the *explanations* for human prosocial behavior have been very diverse—from the Hobbesian (Hobbes, 1651/1962) perspective that selfishness produces prosocial action to Rousseau's (1773/1962) position that human nature is basically good and that humans are innately moral to the views of Hume (1748/1975) and Adam Smith (1759/1982) that moral emotions such as sympathy, benevolence, and concern for others are innate human propensities that motivate prosocial actions—none of these scholars would have denied the *existence* of prosocial behavior in humans. However, it was not until the 1970s that prosocial behavior and its development began to be systematically studied in developmental and social psychology, and research on this topic has blossomed since (for a review of research in social psychology see Bierhoff, 1996; Taylor, Paplan, & Sears, 1995; in developmental psychology see Eisenberg & Fabes, 1998). Concerning the development of prosocial behavior, in recent years studies have examined the larger context of social competence, socialization of prosocial motives and behavior, and cognitive, social-cognitive, and personality correlates of prosocial behavior. This section will provide a brief overview of the most important theories and findings from social psychology, which deal mainly with the prosocial behavior of adults. After that, the developmental changes in prosocial behavior as well as the social-cognitive abilities that might be related to them are presented.

### **The social psychology of prosocial behavior**

As in many other disciplines, researchers in social psychology have coined several different terms to describe the same or similar behavior, in this case, prosocial behavior. Here, I define prosocial behavior as a voluntary behavior that benefits others (see also Bierhoff, 1996; Hinde & Groebel, 1991). This definition implies that prosocial behavior can be stimulated by a variety of motives, from egoistic to purely altruistic ones. In this section, I will review some motives that have been brought forward in social psychological research to explain prosocial behavior. These can be roughly classified into individualistic, interdependent, or social-system motives (Bierhoff, 1996), and I will discuss them accordingly.

The individualistic-motive approach to prosocial behavior has investigated the relation between positive and negative affect or mood and prosocial behavior. Participants who were induced into a positive mood by having them remember their own positive events in the past,

by positive feedback, or by imagining feelings of another person unrelated to a potential prosocial action before the experimental manipulation showed higher helping behavior than participants in a neutral mood (Isen, Horn, & Rosenhan, 1973; Carlson, Charlin, & Miller, 1988). Prosocial behavior was highly correlated with imagining another person's distress but not with imagining one's own distress (Thompson, Cowan, & Rosenhan, 1980), whereas imagining one's own joy, in contrast to imagining another's joy, was highly associated with helping (Rosenhan, Salovey, & Hargis, 1981). Schwarz (1990) explained this correlation between mood and prosocial behavior in his feeling-as-information theory: when making a decision, people use their current mood as a cue for the safety of a situation. Good mood implies that the situation is not dangerous and should therefore increase the probability for altruistic behavior, whereas negative mood functions as a cue for danger, stimulating a focus on one's own needs (see also Forgas, 1992).

Research in the interdependence approach takes into account that prosocial behavior is inherently a part of interpersonal situations. Since relationships between people can differ both qualitatively and quantitatively, in different types of relationships prosocial behavior is more or less likely. A common differentiation in social psychology is the classification of relationships into exchange relationships and interdependent or socially motivated relationships (e.g. Kelley & Thibaut, 1978; Mills & Clark, 1982). In exchange relationships, people are motivated to maximize their individual payoff, whereas in interdependent relationships people care for the concerns of others. Consequently, behavior in exchange relationships is motivated by egoistic motives. Nevertheless, people act prosocially by (directly) reciprocating past benevolent behavior by others. In contrast, in interdependent relationships, people tend to help even if they cannot expect later reciprocation. Moreover, they are more attentive to the needs of their interaction partner and to his or her distress cues. Clark, Oullette, Powell, and Milberg (1987) hypothesized that people help more in interdependent relationships because they pay more attention to the other's state and experience more empathy when the other is distressed.

The relation between empathy and prosocial and altruistic behavior has been a major topic of investigation in psychological research (e.g. Batson, 1987, 1991; Hoffman, 2000), and this interest dates back to the work of Hume and Adam Smith, who debated the role of emotions, and particularly empathy/sympathy, in moral action. Empathy has been defined in various terms, from the cognitive ability to understand the affective or cognitive status of another person, to a person's vicarious matching of another's affective state (see also Eisenberg & Miller, 1987; Zhou, Valente, & Eisenberg, 2003). Batson, whose research on

empathy and altruism is reviewed here, referred to empathy as sympathy and defined it as concern for another person's situation that leads to an affective response congruent with the other's well-being (Batson & Coke, 1981). Much of Batson's research centers on the differentiation of empathy/sympathy on the one hand and personal distress on the other. Whereas sympathy involves feelings of concern for the other and a desire to alleviate the other's negative emotion, personal distress is associated with self-oriented feelings (e.g. anxiety and worry about one's own welfare), which lead to reactions that help the person to reduce her own aversive emotional arousal. Therefore, only feelings of sympathy but not personal distress should lead to a prosocial or altruistic reaction.

Batson's (1987, 1991) studies support this connection between empathy and prosocial behavior. However, as diverse as the definitions of empathy are, so too are the methods of measuring it. Eisenberg and Miller (1987) conducted a meta-analysis on the relation of empathy and prosocial behavior in adults and children, including studies measuring empathy with picture stories, self-report questionnaires, self-reports in simulated experimental situations, other-reports, physiological indices, facial, gestural, and vocal indices, and empathic induction procedures. They found an overall positive but moderate relation between empathy and prosocial behavior, which was strongest when self-reports in simulated experimental situations, physiological indices, and some empathic induction procedures were used. Moreover, this relation was stronger for adults than for children.

A social-system approach to prosocial behavior asserts that not only are people part of interpersonal relationships, but these relationships are also embedded in a wider socio-cultural context. In a social system, there might be rules, norms, and social institutions that regulate the behavior of its members when engaged in situations in which one should act prosocially as well as regulate how a violation of rules should be reacted to. Examples for such kinds of rules are justice norms. Lerner (1977, 1980) regarded justice as one of humans' primary motives and an aim in itself. Although people's concern for justice seems to be a ubiquitous phenomenon, one can differentiate several domains of social life in which different "justices" apply (Montada, 2001): distributions, social exchanges, and retribution. But even within these justice domains, people can have divergent views about what is just, and these different conceptions can lead to conflicts (Montada, 2001).

Within the domain of distributions, that is, the allocation of material resources or symbolic goods, three major norms of distributive justice have been identified: *equality*—equal shares for all people in the same position, *equity*—allocation according to achievements or contributions, and allocation according to *needs*. According to Deutsch (1975), the choice



of one of these distributive justice principles depends on the goals of the decision maker. If people are trying to achieve economic productivity, they should use equity as an allocation principle, because this would motivate recipients to give their best. However, if people are pursuing the goal of harmonious social relationships, they should refer to equality, whereas people who aim to foster personal growth and welfare should consider other people's needs. More recent studies, for example, by Barret-Howard and Tyler (1986) and Schmitt and Montada (1981), have lent support to Deutsch's conceptions.

Justice principles also pertain in social relations, especially with respect to exchanges between people, groups, or institutions. Social exchanges are usually regarded as just when they follow the principles of reciprocity and equity, and this is true for both positive and negative exchanges. Some of these social exchange relationships are explicitly governed by legal regulations (e.g. contracts between organizations, marriage partners, the relationship between the state and its citizens) that specify the rights and duties of the exchange partners. Laws, however, do not regulate exchange in the majority of social relations, which instead are regulated by (conventional) social norms or social roles, which define rights and obligations and also strongly influence the normative expectations of the actors. As has been discussed above, social relationships differ with respect to which normative expectation they imply: only in exchange relationships do partners keep track of the costs they paid and compare them to the benefits they receive from their interaction partner. In communal or interdependent relationships, such bookkeeping is not important; one's own inputs are not viewed as costs but as self-rewarding opportunities to meet the partner's needs (Clark & Mills, 1979).

To summarize, prosocial behavior in humans can be triggered by individual states and moods. In some social relationships, prosocial behavior is more likely than in others. Social norms, institutions, and roles, for example, justice norms, regulate in which social relationships people should act prosocially and in which they can refrain from such actions. Violations of these (shared) norms can lead to empathic feelings with the victims of the violation, which in turn can induce (prosocial) actions to re-establish justice or for compensation.

### **The development of prosocial behavior**

According to Eisenberg and Fabes (1998), "there has been little consensus on whether or not there are age-related changes in the development of prosocial tendencies" (p. 744). Developmental theories of prosocial behavior often investigate factors used by social psychology to explain prosocial action (e.g. the relation between empathy and prosocial

behavior) and the social-cognitive and cognitive abilities that are necessary for this relation to emerge. Early cognitive-structural theories in the tradition of Piaget (1932) and Kohlberg (1984) attested, for example, that moral behavior would not develop until middle childhood when the child is capable of socio-cognitive processes, such as perspective taking. Although these theories with their emphasis on verbal justifications for moral or prosocial decisions could not account for empirical and anecdotal evidence showing that even young children act prosocially toward others, most researchers studying the development of prosocial behavior would still agree that the development of social-cognitive abilities is the primary source for changes in prosocial behavior across age. In the following section, I will present two attempts by Hoffman (1982, 2000) and Eisenberg and Fabes (1998; Fabes & Eisenberg, 1998) that tried to integrate the numerous empirical findings on prosocial behavior in children and adolescents into a general theoretical model.

#### *The Development of Empathic Distress*

The first theory, by Hoffman (1982, 2000), proposes four levels for the development of empathic distress, which he regards as an effective motive for prosocial behavior. These developmental levels result from an interaction between the social-cognitive development of a sense of self and other and empathy with a victim, which can be aroused through various, also automatic and unconscious, mechanisms. In contrast to the cognitive-developmental theories on moral development, in Hoffman's (1982, 2000) theory even newborns and infants can show rudimentary forms of empathic distress.

Level 1 of Hoffman's theory, *the newborn reactive cry*, is based on the observation that even 2- and 3-day-old babies start to cry when they hear another infant cry (e.g. Simner, 1971; Sagi & Hoffman, 1976). Newborns are believed to experience distress through one or more automatic forms of empathy, such as mimicry, conditioning, and early forms of imitation. As they cannot differentiate between self and other neither as physiological nor as psychological entities, Hoffman (2000) hypothesizes that infants regard the distress of others as their own distress.

At level 2, *egocentric empathic distress*, which begins at the end of the first year of life, children start having their first awareness of self and other as separate physical identities. However, in cases of another's distress, these early self-boundaries can break down and lead the child to confuse her own distress with the other's. Thus, children seek comfort in behavior that is designed to reduce their own distress (e.g. hugging themselves, seeking comfort with their mother).

Level 3, *quasi-egocentric empathic distress*, begins to appear early in the second year. Children now try to comfort a distressed person by establishing tentative physical contact (e.g. patting, touching) with him and later by differentiated physical interventions (e.g. hugging, physical assistance, getting help, etc.). According to Hoffman (1982, 2000), children are able to see the other as a separate physical entity from themselves, realize his discomfort, and engage in actions that are designed to help him. Nevertheless, children do not understand that others can have inner states that might be different from their own. Therefore, they often use comforting and helping strategies they themselves would find comforting (e.g. they bring their own mother to comfort the other child).

Level 4, *veridical empathic distress*, starts around the middle of the second year when children are able to recognize themselves in the mirror. Later in this year, children develop awareness that others have inner states (thoughts, feelings, desires, etc.) and that these inner states may at times differ from their own. This understanding makes children react to other's empathic distress with more accurate means and leads to a more effective comfort. According to Hoffman, children at this stage already have all the basic elements of mature empathy, and these abilities continue to grow through life.

The developmental level of veridical empathic distress depicts an important developmental achievement, since the child for the first time is able to differentiate the (psychological) perspectives of self and other. All developments of empathic distress beyond this point are connected to an improved ability to coordinate these perspectives. The development of the differentiation and coordination of social perspectives has been described by both Hoffman (2000) and, in a more cognitive-structural tradition, Selman (1980).

Hoffman (2000) has exemplified this growing coordination of perspectives for the development of the understanding of other's feelings. As has been pointed out above, empathy can be defined both as the cognitive ability to understand the affective or cognitive status of another person and as a person's vicarious matching of another's affective state. According to Hoffman (2000), in early childhood toddlers come to understand the causes, consequences, and (behavioral) correlates of others' emotions and also know that feelings affect a person's facial expression. Preschoolers comprehend emotions that are more subtle or ambiguous, for example, because they do not come with a clear facial expression (e.g. missing somebody). Preschoolers also begin to realize that the same event can produce different emotions in different people and they understand that people can control the expression of certain emotions. In middle childhood, children develop an even more sophisticated understanding of the connection between their own feelings and the feelings of

others: they know that the communication of their own emotional state can make others happy or sad and they also show a self-reflective meta-cognitive awareness of their own empathic distress—that is, children know why they feel distressed and can verbalize it. Toward the end of middle childhood (around age 9/10), children can integrate background information about another person into their judgment of this person's feelings and behavioral expression. Adolescents can connect the way a person is feeling in a certain situation to the feeling that would normally be expected, that is, they include normative expectations in the judgment and understanding of others' emotions. Young adults, finally, can respond with empathic distress to what they imagine to be the other's life conditions, especially when the other's situation is falling short of what they consider to be minimal socially determined standards of well-being.

The levels of perspective differentiation and coordination that underlie these developmental changes have been described by Selman (1980). Influenced by the writings of Mead, Piaget, and Kohlberg, Selman offers a structural-developmental approach to social perspective taking (or social perspective coordination), proposing that children's social concepts develop in an invariant and universal sequence of stages, each of which presents an unmistakable way of understanding and coordinating social experience.

At first, children cannot differentiate between their own and others' psychological points of view (Level 0: *undifferentiated and egocentric perspective taking*), but they understand variations in perspectives as differences in perceptual perspectives. Level 1, *differentiated and subjective perspective taking*, also underlies Hoffman's veridical empathic distress. Children differentiate between the physical and psychological attributes of people and realize that every person has an individual subjective psychological life (e.g. feelings, thoughts, opinions). At Level 2 (*self-reflective/second-person and reciprocal perspective taking*), a child can reflect on her own thoughts and actions and understands that others can do so as well. Self and others are perceived as having dual social orientations: there are visible acts and expressions but also hidden feelings and thoughts. A child can take the other's point of view and realizes that the other can do so as well (reciprocity of perspectives). At Level 3 (*third-person and mutual perspective taking*), a person can view the self and others simultaneously as actors as well as objects of an action. This generated notion is called third-person perspective; it leads to the ability to simultaneously reflect upon and coordinate the points of views of all parties from a generalized other perspective. Finally, at Level 4 (*societal-symbolic perspective taking*), the generalized-other perspective is broadened to a societal, legal, and moral point of view, which all individuals should be able to share.

Empirical studies on the development of prosocial behavior and empathy do support some of Hoffman's (1982, 2000) assumptions, especially for young children. As noted above, Simner (1971) showed that infants react with crying to another infant's cry but not to a synthetically produced cry at the same volume. Although reactive crying is not found in all infants and not in all situations (Hay, Nash, & Pederson, 1981), there is no doubt that from birth onward, infants are responsive to emotional expressions of others. Even in their first months of life, children can discriminate between their mother's different emotions and match them under some conditions (Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). Reactive crying seems to decrease around six months (Hay et al., 1981), which is in tune with Hoffman's (1982, 2000) theory. Around this time infants begin to realize that self and other are separate beings, show a growing interest in the (physical) world around them, and are better able to regulate their emotions. According to Hoffman, infants now require more prolonged signs of another's distress before being distressed themselves.

True empathy seems to emerge at 12 to 18 months of age. Zahn-Waxler and colleagues (1992, Zahn-Waxler & Radke-Yarrow, 1982) found that 38- to 61-week-old children tend to respond to another's distress, which they did not cause themselves, with orientation reactions and sometimes distress cries. In their longitudinal study, more than half of the children made at least one prosocial response shortly after their first birthday and by 23 to 25 months, almost all children had prosocial reactions in their behavioral repertoire (Zahn-Waxler et al., 1992). Early (13–15 months) prosocial reactions to another person's distress are mainly physical (hugging, patting) but in the middle of their second year of life, children already show a wide range of prosocial behaviors, such as verbal comforts and advice, direct and indirect helping, sharing, distraction from distressing cause, and protection or defense.

As hypothesized by Hoffman (1982, 2000), self-recognition is correlated with prosocial behavior, self-referential behavior, and empathic concern at 23 to 25 months. Research also provides evidence for the emergence of helping, sharing, and cooperative behavior in the second year of life (Hay, 1979; Zahn-Waxler & Radke-Yarrow, 1982), and children show more prosocial behaviors as they grow older (Zahn-Waxler et al., 1992). Also, prosocial behaviors that are not likely to be motivated by empathy with another person's distress occur by 12 months, and these unprompted helping and sharing behaviors become even more prevalent during the second year of life (West & Rheingold, 1978).

As noted above, Hoffman (1982, 2000) believes that the rudimentary forms of mature empathy are already acquired in the third year of life and they continue to develop and become more refined throughout life. Mature empathy is distinguished by a meta-cognitive

awareness of oneself responding empathically, a sense of how most people would feel in the victim's situation, an understanding that outward expressions can mask internal feelings, and knowledge of another's distress. Concerning the general developmental patterns of prosocial behavior beyond age 3, research supports the notion that children act more prosocially when they get older (Eisenberg & Fabes, 1998). According to Radke-Yarrow, Zahn-Waxler & Chapman (1983), age trends concerning children's comforting, care giving, and sympathy after age 2 are inconsistent; helping is either positively related or unrelated to age; and sharing behavior increases with age, particularly when participants are sharing with hypothetical others. Hay (1994) showed that prosocial behavior decreases in frequency after the second year of life. However, Caplan and Hay (1989) attributed these low rates of prosocial responding to children's beliefs that they are not supposed to help others when adults are present rather than to a lack of capacity or motivation of not-helping.

Fabes and Eisenberg (1998) conducted a meta-analysis of 155 studies on age differences in children's and adolescents' prosocial behavior. In this analysis, age-related changes in the prosocial behavior of infants (less than 3 years of age), preschool children (3 to 6 years), children (7 to 12 years), and adolescents (13 to 17 years) were investigated. Their results show overall positive mean effect sizes when these age groups were compared, indicating that the older age groups show more prosocial behavior. The largest effect size (i.e. the greatest difference) was found in comparisons of adolescents with preschoolers, with moderate effect sizes for comparisons of older with younger infants, children with preschoolers, and comparisons of older with younger children. Small effect sizes were obtained for comparisons of preschoolers with infants, adolescents with children, and comparisons within the adolescent group. The magnitude of these age differences in prosocial behavior also varied as a function of the type of prosocial behavior measured. Effect sizes were relatively high when prosocial behavior was measured as helping. In contrast, effect sizes for helping were relatively low in adolescent-child and adolescent-adolescent comparisons. For the two youngest age groups, type of prosocial behavior was not significantly different.

#### *A comprehensive developmental model of prosocial behavior*

Eisenberg and Fabes (1998; Fabes & Eisenberg, 1998) formulated a theoretical model that can help account for these developmental trends and integrate empirical findings on prosocial development beyond age 3. They attested that three socio-cognitive processes can account for the increase in prosocial behavior across age: attentional processes (attending to the needs of

others), evaluative processes (evaluating behaviors and situations in terms of moral standards), and planning processes. I will especially discuss the first two processes here.

*Attentional processes.* As has been shown by Hoffman (1982, 2000), throughout infancy and childhood, children are increasingly able to differentiate between self and other, as both physical and psychological entities. They develop an attention for others' needs, are better able to comprehend others' emotional states, and also learn to decode others' emotional cues. Moreover, children increasingly understand which emotion might be appropriate in a given situation and feel empathy with a victim, even when the other does not openly show how he or she feels. With age, children also learn that different relationships require different sorts of behavior, for example, that one should act more prosocially in interdependent relationships with family or friends than in relationships with mere acquaintances. Thus, the social situation and social relationship one finds oneself in can act as cues triggering prosocial behavior. Finally, in evaluating the costs and benefits of prosocial behavior change with age, younger children seem to weigh the costs to themselves more than do older children when deciding whether to help, and they tend to underestimate the benefits of prosocial behavior (Eisenberg, 1986; Lourenco, 1990, 1993).

*Evaluative processes.* According to Eisenberg and Fabes (1998), evaluative processes are reflected in children's prosocial moral reasoning, that is, their reasoning in dilemmas in which one person's desires conflict with those of others in a context in which the role of prohibition, authorities' dictates, and formal obligations is minimal. Eisenberg and colleagues (1986; Eisenberg, Lennon, & Roth, 1983; Eisenberg, Miller, Shell, McNalley, & Shea, 1991; Eisenberg, Shell, Pasternack, Lennon, Beller, & Mathy, 1987; Eisenberg, Carlo, Murphy, & Van Court, 1995; Eisenberg-Berg, 1979) identified age-related changes when children, adolescents, and young adults reason about prosocial moral dilemmas: Young preschool children predominantly use hedonistic or (primitive) needs-oriented reasons, older children (late elementary school) increasingly refer to stereotypic reasons for being a good or bad person, or to pragmatic or approval-oriented reasons. Internalized affective reasons (e.g. guilt, positive affect when helping), self-reflective sympathy, role taking, and reasons referring to internalized norms and values only emerge in late childhood, whereas reasons for prosocial behavior that deal with generalized reciprocity, concerns with society, rights, and justice are only used by adolescents. Eisenberg and colleagues grouped these content categories of reasons for prosocial behavior into six levels (hedonistic orientation; needs-of-other

orientation; approval/interpersonal and stereotyped orientation; self-reflective and empathic orientation, a transitional level; strongly internalized orientation) and showed that with age, higher levels were used more frequently, whereas the use of lower-level reasons decreased. However, these levels of prosocial moral reasoning cannot be regarded as structured wholes in the sense of Kohlbergian or Piagetian stages. Therefore, individuals' performances can "regress" to lower levels, even when a person has exhibited higher-level reasoning at an earlier point in time.

Principles that might also help evaluate the appropriateness of potential prosocial behavior are justice norms. Damon (1977) suggested that age and the developmental level of perspective taking would influence which mode of resource sharing children will adopt. He proposed a hierarchy of six qualitatively different stages: Four-year-old children think of fairness as reflecting their own self-interest (level 0A). For 4- to 5-year-old children, being fair requires some outside criteria, which—from the point of view of an adult—does not seem to justify how things are shared (e.g. "because we are girls"; level 0B). Five- to 7-year-olds think of justice as strict equality (level 1A), whereas for 6- to 9-year-old children fairness is interpreted in terms of what is earned or deserved (i.e. equity; level 1B). Seven- to 10-year-old children require that special needs of people be considered in a just distribution (level 2A), and from 8 years onward, children try to coordinate different modes of justice and pay attention to particularities of a given situation.

However, this qualitative change in the justice principles used has been called into question by further research. Huntsman (1984) showed that even though preschoolers might use more level 0 reasons for justifying their allocation behavior, nevertheless even the youngest children could flexibly apply different justice principles (i.e. equality, equity, need) in accordance with the situational demands. Moreover, in Huntsman's (1984) study, equality also seemed to have a strong influence on older children's allocation decisions. Siegelman and Waitzman (1991) also investigated whether children of different age groups use different allocation principles in different situations. In their study, only fourth- and eighth-grade children applied different justice principles in different situations, whereas preschoolers tended to use an equality principle in all situations.

Of course, behaviors and situations can be judged from the viewpoint of general moral standards and principles. Kohlberg's theory of the development of moral reasoning (e.g. Colby & Kohlberg, 1987; Kohlberg, 1969, 1984) offers a unique body of theoretical and empirical work about how children, adolescents, and adults reason about and evaluate moral issues and how this reasoning develops ontogenetically. Although Kohlberg viewed principles



of justice and fairness as the moral foundations for his concept of morality, in his later work he tried to include principles of caring and empathy in his theoretical framework by defining them as vital components of a morality of justice (e.g. Colby & Kohlberg, 1987). Thus, the concept of moral reasoning, at least as defined in Kohlberg's later work, would include both prosocial and justice considerations as they were studied by, for example, Eisenberg, Damon, and Keller and colleagues (Keller, 1996; Keller, Eckensberger, & von Rosen, 1989).

For Kohlberg, morality is concerned with the questions of how people reason in situations in which several moral principles conflict with each other, and to what degree the solutions for these situations take into account the perspectives of all those concerned. Hence, the ideal process by which people should find a solution to moral problems is to take the perspective of all participants and to find a solution that is equally just for all of them. As was discussed above, this role-taking or perspective-taking ability follows a developmental pattern: Whereas young children egocentrically focus on their own perspective, in the course of development, children, adolescents, and adults become more and more able to differentiate and coordinate the perspectives of self and other. Kohlberg regards perspective-taking ability as the impetus and underlying deep structure for his developmental stages of moral reasoning ability. According to his theory, moral reasoning development can be captured by six stages, which are structured hierarchically. Moral reasoning is thought to develop in an invariant way; people cannot miss a stage, and regression from a higher to a lower stage is theoretically not possible, since each higher stage is a more differentiated and equilibrated version of the lower ones. Each of these stages presents an organized whole, which dominates reasoning at this particular point in ontogenetic development; that is, moral judgments should show consistency in moral reasoning ability independent of the situation.

Each of the six developmental stages of moral reasoning can be distinguished by different forms of perspective differentiation and coordination and different justice operations that try to balance the claims of those involved (see also Keller, 1996). The differentiation of social perspectives is a necessary precondition for a Stage 1 pre-conventional moral reasoning. For a moral judgment at Stage 2, people need the ability to coordinate perspectives of self and other in a concrete reciprocal way; that is, it is necessary to view one's own action from the perspective of a concrete other. Both at Stage 1 and at Stage 2 what is just is determined by self-interests: Whereas Stage 1 moral reasoning follows the principle of avoiding punishment and seeking selfish benefits, at Stage 2 people view justice from a concrete reciprocal, or tit-for-tat perspective. Moral reasoning at Stage 3 is characterized by a third-person observer perspective; that is, the actions of both self and other can be simultaneously judged. What is

just is defined by the normative standpoints of concrete others in one's social networks. At Stages 4, 5, and 6, moral judgments are based on the ability to take a generalized social-system perspective. People regard themselves as part of a society and can judge more principles and actions from the perspective of normative, societal standards. Whereas people at Stage 4 would define justice from the perspective of the society they live in (i.e. what is just is defined by societal standards), only at Stages 5 and 6 do people define justice according to objective and deontological principles.

*Relation to prosocial behavior.* The relationship between these attentional and evaluative processes and actual behavior is less clear-cut. In general, one should assume that as soon as children can understand that different social situations and relationships also call for different (prosocial) behaviors, they should adjust their prosocial actions accordingly. Moreover, factors that make prosocial behavior more likely in adults should have a similar effect for children. Similar to that in adults, there exists a moderate relationship between empathy and prosocial action in children (Eisenberg & Miller, 1987). Research on the development of prosocial moral reasoning by Eisenberg and colleagues has shown that people with higher-level moral reasoning also exhibit more prosocial behaviors. Especially needs-oriented moral reasoning is positively related to prosocial action, whereas hedonistic reasoning is negatively related. However, this relationship between prosocial moral reasoning and prosocial behavior is mediated by the cost of the prosocial behavior: relatively high-cost behavior is significantly correlated to higher-level reasoning in middle childhood to late adolescence (Eisenberg et al., 1987, 1995), and this relationship has also been shown in cross-cultural comparison (Eisenberg, Boehnke, Schuhler, & Silbereisen, 1985). These findings make sense if one considers that many prosocial behaviors are often performed in accordance with social scripts or norms without much conscious consideration. One should therefore expect that prosocial moral reasoning abilities especially play a role in situations in which the choice between a prosocial and an egoistic option creates a conflict for the decision maker (Eisenberg, Pasternack, Cameron, Tryon, 1984; Karniol, 1982).

This interaction between "emotional" (i.e. empathic) and "cognitive" (i.e. prosocial moral reasoning) motives, and prosocial action also seems to follow a characteristic developmental pattern. According to Hoffman (1990), empathic responding precedes moral reasoning, and empathic feelings and moral principles do not become linked until late childhood. Miller, Eisenberg, Fabes, and Shell (1996) proposed that the likelihood of prosocial actions might increase when both other-oriented empathic emotions and other-

oriented moral reasoning are activated in a given situation. They showed that even preschoolers acted more prosocially toward peers when they were high in needs-oriented moral reasoning and sympathetic affect, but not when they showed personal distress reactions.

Considerable research has also been devoted to the relationship between moral reasoning ability and moral behavior. In the Kohlbergian tradition, two major strategies can be differentiated (for a review, see Blasi, 1980). First, researchers investigated the relationship between stages of moral reasoning and delinquent behavior with the hypothesis that delinquents should show lower levels of moral reasoning (i.e. focus more on concrete self-interests as is characteristic for the lower stages 1 and 2) than a matched non-delinquent sample. Of the 15 studies with this objective reviewed by Blasi (1980), 10 showed statistically significant differences in moral reasoning ability between the two groups in the expected direction and 5 yielded non-significant results. However, Blasi noted that if the moral reasoning measure was Kohlberg's moral judgment interview instead of any other measure of moral reasoning, in 9 of 11 cases a significant difference in moral reasoning between the delinquent and the non-delinquent groups was found.

A second line of research directly investigated the relationship between moral reasoning ability and prosocial/altruistic behavior. In general, a monotonic relationship between developmental stages and altruistic behavior was expected. From a theoretical point of view, young children who cannot differentiate their own from others' perspectives should not be able to recognize others' needs when those needs are in conflict with their own and should therefore show less altruistic behavior than children who can differentiate perspectives. Stage 2 children are expected to be less prosocial when the situation offers a perspective of concrete returns, whereas Stage 3 children can be expected to act prosocially only when this promises to bring social approval of significant others as a reward. Individuals at higher stages should also act prosocially toward generalized others, such as strangers. According to Blasi's (1980) review of the literature, out of 19 studies that investigated this topic, 11 offered clear confirmation that moral cognition is related to altruistic behavior, whereas 4 studies presented negative and 4 mixed results. Thus, taken together, the empirical evidence demonstrates a moderate relationship between moral reasoning and moral action. It should be noted, however, that psychologists from other research traditions, particularly from the social learning perspective, judge this relationship more pessimistically (e.g. Aronfreed, 1976; Mischel, 1969). From their perspective, moral reasoning is regarded as a post hoc rationalization rather than a preparation for people's actions. A more recent account of this view by Haidt (2001) is elaborated in the next chapter.

In sum, research on the development of prosocial behavior suggests an interplay of emotional and social-cognitive factors as possible causes for *early* prosocial behavior (birth until the third year of life). Young children's prosocial actions seem to be triggered when their own emotional state matches the (negative) emotional state of a possible beneficiary. As we have seen, these empathic reactions can be activated by simple, often unconscious mechanisms, such as mimicry, conditioning, and imitation, which have been observed in even weeks-old babies. At the same time, the social-cognitive ability to differentiate between self and other, first in a literal physical sense (the other is not an extension of my body, but a different physical entity), then in a psychological sense (the other has thoughts, feelings, and intentions different from my own), increasingly helps children to adjust their prosocial actions to the needs of the recipient.

Also beyond age 2, emotions and (social) cognitions might play a role in children's and adolescents' prosocial actions. The relation between empathy and prosocial action also holds for older children and adolescents, and the early forms of empathic arousal are complemented by more cognitive ones: Feeling sorry for a disadvantaged person and imagining how oneself would feel in his situation is something a 3-year-old child would not be able to do (see also Hoffman, 2000). When growing up, children increasingly become acquainted with institutional and social rules (particularly moral and fairness rules) that regulate behavior toward other people. They learn that one should help one's friends, do what one has promised, reciprocate beneficial behavior, and share equally with a younger brother. As has been demonstrated by Keller and Edelman (1993), such institutional and societal standards are only directives for one's own behavior if they are part of the child's (moral) self-concept. Violations of such standards, on the other hand, lead to reactions of emotional outrage and empathy with the victims of a violation, both leading to prosocial actions (Hoffman, 2000).

### **Summary and outlook**

Both experimental economists and psychologists have intensively examined if people will sacrifice their own benefit for the sake of others when no instrumental benefit is expected, and they have arrived at the conclusion that people do make such sacrifices. The economic theories accounting for such findings have introduced the concept of social preferences: Instead of preferring outcomes that strictly maximize their own expected utility, players of economic games are thought to care for equal outcomes and show aversion to unequal/unfair

payoffs (Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999); they seem to take other players' intentions into account (Rabin, 1993). However, these theories have been relatively silent concerning the psychological abilities players would need to possess to show such social preferences. What psychological abilities does a player need to show an aversion to unfair outcomes? From a psychological point of view, such a player should minimally have some knowledge about what counts as a fair or unfair allocation and should feel some (emotional) discomfort when these fairness rules are broken. What psychological abilities does a player need to judge others' intentions? Psychological research suggests that a player would need some kind of perspective-taking ability, that is, some insight about the desires and intentions of the other players in order to interpret their behavior correctly. These economic models thus emphasize different psychological abilities of the players: adherence to fairness rules and (emotional) discomfort when they are broken on the one hand, and a social-cognitive understanding of others' minds on the other. However, the question of what kind of (psychological) abilities players in economic games might need in order to show social preferences has only rarely been pursued in economic research.

In this chapter I also discussed the development of prosocial behavior from childhood to adulthood, and we have learned that both emotion-based empathy and the differentiation and coordination of perspectives, which includes the evaluation of one's actions according to social, fairness, and moral rules of when and toward whom prosocial behavior is appropriate, might play an important role in triggering prosocial action. As we have seen, emotion-based empathy is already shown by neonates, whereas the understanding of social, fairness, and moral rules undergoes significant transformations in ontogenetic development. These transformations are thought to be connected to the ability of perspective differentiation and coordination (i.e. the ability to realize that others have thoughts, feelings, and intentions different from one's own) as well as learning processes, imitation of others, and explicit socialization. Unfortunately, the connection between these empathic and reasoning processes and prosocial behavior is still not clear-cut.

I think that a further connection between economic and (developmental) psychological research seems warranted. From an economic point of view, investigating children's and adolescents' behavior in mixed-motive games would provide an interesting test of the (unspoken) assumed psychological abilities in the proposed models of social preferences. Since we know that, for example, conceptions of what is a fair allocation change in the course of development, we would not expect inequality aversion in children, who do not think that an equal allocation is a fair (and therefore desirable) allocation. Similarly, if children do not have

the ability to judge others' intentions and desires, the predictions of Rabin's fairness equilibrium model should not hold in this age group. From a psychological point of view, experimental game theory seems to be an interesting extension of some of the methods used in developmental research. Rather than asking children about their hypothetical decisions, for example in prosocial dilemma situations, many economic games represent an actual dilemma for the players: Do I pursue my self-interest or should I be kind to the other player(s)? Additionally, since experimental games represent an idealized abstraction of common social situations, they may serve as an interesting base-line condition for experimentally identifying factors that might lead to prosocial behavior in one age group but not in another. Moreover, economic games model real social interaction; that is, in the game situation, players usually interact with each other—albeit anonymously. To my knowledge, no developmental psychological study has so far investigated the development of prosocial behavior in interactive decision situations.

In the remainder of this thesis I will present two empirical studies that tried to answer the question on the psychological foundation of social preferences or, more generally, the development of prosocial behavior and its possible determinants. In the first study, the allocation decisions of elementary and early secondary school children in dictator and ultimatum games were examined and connected to psychological variables that have been shown to matter in the development of prosocial behavior. An interesting twist of this study was that we not only investigated the allocation decisions of individuals but also of groups. These groups were playing these games as “one” player and were expected to come to a unanimous group decision. From the point of view of classical experimental economics, whether the player of an economic game consists of an individual or a group should not matter, since both are assumed to maximize their expected utility and therefore to behave in the same way. From a psychological point of view, however, the type of decision maker matters, as is explained in the next chapter. This study is presented in two parts: The first part (Chapter 2) discusses the quantitative results of the study; in the second part (Chapter 3) a qualitative analysis of the group discussions is presented.

The second study deals with the issue of social preferences or prosocial behavior from a slightly different angle. As was indicated above, the introduction of the concept of social preferences does not change the criterion for determining what counts as a “rational” action or decision, namely maximizing (subjective) expected utility. Thus, the notion of social preferences can be seen as a kind of “repair program” to save rational choice theory. But does utility maximization have to be the criterion for judging what is a good decision and what is

not? In the second study, I introduce a different explanation for prosocial behavior that draws on research from the social rationality approach. Briefly, this approach assumes that rather than judging decisions or actions in relation to utility maximization they should be evaluated according to whether they help the decision maker to adaptively solve recurring social problems that humans were and are faced with in the course of their phylogenetic and ontogenetic development.