

Social Value Orientation as a Moral Intuition: Decision-Making in the Dictator Game

Gert Cornelissen^{1,2}, Siegfried Dewitte², and Luk Warlop²

¹ Universitat Pompeu Fabra, Barcelona, Spain

² Katholieke Universiteit Leuven, Belgium

Abstract

We studied the decision making process in the Dictator Game and showed that decisions are the result of a two-step process. In a first step, decision makers generate an automatic, intuitive proposal. Given sufficient motivation and cognitive resources, they adjust this in a second, more deliberated phase. In line with the social intuitionist model, we show that one's Social Value Orientation determines intuitive choice tendencies in the first step, and that this effect is mediated by the dictator's perceived interpersonal closeness with the receiver. Self-interested concerns subsequently lead to a reduction of donation size in step 2. Finally, we show that increasing interpersonal closeness can promote pro-social decision-making.

Key-words: dictator game; social dilemma; decision-making; two stage model; social value orientation; interpersonal closeness

JEL: C91, D81

April 2007

Social Value Orientation as a Moral Intuition: Decision-Making in the Dictator Game

The conception of man as solely driven by self-interest, the *homo economicus* (Etzioni, 1990; Luce & Raiffa, 1957; Schwartz, 1986; Wallach & Wallach, 1983) has been challenged repeatedly over the last 30 years (Camerer, 2003; Fehr & Fischbacher, 2003; Fehr & Gächter, 2000; Haidt, 2001; Henrich *et al.*, 1991; Kolm, 2000; Roth *et al.*, 1981). Most researchers now accept the existence of pro-social motives, such as pursuing the interests of others or the collective, or seeking equality in resource distributions (Frey & Meier, 2004; Mansbridge, 1990; Sober & Wilson, 1998). These motives have been attributed to factors like reciprocity (Van Lange, 1999), empathy (Batson *et al.*, 1988), a justice motive (Lerner, 1977), norms of fairness (Kahneman *et al.*, 1986), a concern for social welfare (Charness & Rabin, 2001), moral intuitions (Haidt, 2001), or the experience of a ‘warm glow’ (Andreoni, 1990). Inter-individual differences in tendencies towards cooperation and defection are captured by the “social value orientation” (SVO) concept (McClintock, 1972; Messick & McClintock, 1968). SVO has been shown to predict several types of pro-social behavior (McClintock & Allison, 1989; Nauta *et al.*, 2002; van Vugt *et al.*, 1996).

In this paper we aim at getting more insight in the decision-making process in the dictator game (DG). We chose the DG because it lacks clear norms specifying “fair behavior”, a feature which we suggest to be characteristic of natural social dilemmas. We argue that SVO represents automatic, intuitive judgments of appropriate behavior (i.e., moral intuitions) in situations characterized by a conflict between personal and collective interests. We also examined the nature of these

intuitive judgments. We argue and show, by means of both mediation and experimental analyses, that the spontaneous effect of SVO operates via perceptions of interpersonal closeness. Further, we argue that decisions in such situations are the result of a two-step process. An automatic process elicits more or less cooperative behavior in a first step, determined by one's moral intuitions. These intuitions are captured by the SVO concept. In the second step, a controlled cognitive process corrects this initial inclination, usually in a self-serving direction. The decision-maker only engages in the second step provided s/he is motivated and has sufficient cognitive resources to do so.

Social Value Orientations

Messick and McClintock (1968; McClintock, 1972) proposed the social value orientation (SVO) concept to describe individual differences in the extent to which people take others' outcomes into account when making decisions in interdependence dilemma's. A SVO describes a relatively stable preference for a certain pattern of outcome distributions between the self and others. Usually three types are distinguished (McClintock, 1972; Messick & McClintock, 1968; Van Lange, 1999; Van Lange & Liebrand, 1989, 1991): cooperators, individualists, and competitors. Cooperators (or pro-socials) prefer to maximize joint outcomes and maximize equality in outcomes. Individualists aim at maximizing personal outcomes with little or no regard for others' outcomes. Competitors prefer to maximize the difference between their and others' outcomes. Individualists and competitors are often treated as one group with a pro-self orientation, because they prefer to maximize their outcomes either absolutely (individualists) or relatively (competitors). We follow the same categorization in this paper.

SVO has shown to predict behavior in social dilemmas (e.g., Kramer *et al.*, 1986; Van Vugt *et al.*, 1995). In a social dilemma, individual outcomes are determined by both the choice the individual makes and those of the others involved. Each person involved experiences a conflict between pursuing the personal and the collective interest. Individual rationality tempts people to make non-cooperative, defective choices, because these result in higher personal outcomes, regardless of what others do. If everyone involved follows this individual rationality, however, individual outcomes will be lower than in the case that everyone behaves according to collective rationality, which prescribes making cooperative choices (Dawes, 1980). Many daily life situations are analogous to this pay-off structure. SVO has shown to predict choices between traveling by public transport and taking one's own car (Van Lange *et al.*, 1998; van Vugt *et al.*, 1996), willingness to pursue the goals of an organization one belongs to at a personal cost (Nauta *et al.*, 2002), willingness to sacrifice in close relationships (Van Lange *et al.*, 1997a), helping behavior (McClintock & Allison, 1989), and intentions to behave pro-environmentally (Gärling *et al.*, 2003; Joireman *et al.*, 2001). In some situations, however, behavior of pro-socials and pro-selfs coincides. We will propose a two-step decision process in interdependence dilemmas that may provide an explanation for this inconsistency.

Fairness and Decision Making in Social Dilemmas

Decision makers in social interdependence situations often rely on cognitively efficient processing and follow simple rules or heuristics to guide their responses (Burger *et al.*, 2004; Cialdini, 2001; De Dreu & Boles, 1998; Messick, 1993; Roch *et al.*, 2000). Most researchers agree that *fairness* is an important concern in such

situations (e.g., Turillo *et al.*, 2002). Some situations, like resource dilemmas or public good games, offer objective indications about the fair contribution of each group member (Harris & Joyce, 1980; Ledyard, 1995; Messick, 1993; Rutte *et al.*, 1987). The instructions of the resource dilemma, for example, frame the endowment as a *common* pool. This provokes participants to calculate their fair share by dividing the size of the pool by the number of participants in the game.

Many N-person real life social dilemmas do not provide such objective guides to decision making, however: How much of the waste I produce should I select so it can be recycled? How often should I take the bus instead of my own car to contribute fairly to a reduction in carbon-dioxide emission? How much money should I donate to charity organizations to be a good citizen? In such situations, other heuristics must play a role. We argue that a Dictator Game (DG) is a better model of real-life social dilemmas than a resource game. In a DG an amount of money is provided to one of two players, named the dictator. He or she decides on the allocation of this endowment between the dictator and the recipient, who does not have any power over that decision at all. In this situation, objective guidelines of how much one should donate to the recipient are absent, like in many real life social dilemmas. Dictators have to rely on another decision principle. Ruffle (1998) showed that dictators are concerned with enhancing their self-concept and hence have to resolve the trade-off between maintaining a positive self-perception as a fair person on the one hand and the pursuit of personal gains on the other hand. Like in resource dilemmas, most researchers agree that dictator giving is largely affected by concerns for a fair distribution of the endowment (Bolton *et al.*, 1998; Ruffle, 1998; Schotter *et al.*, 1996). Dictators appear to decide on an appropriate donation according to how much they think the recipient *deserves* to receive (Eckel & Grossman, 1996; Hoffman *et al.*,

2000; Hoffman & Spitzer, 1985). “Deservingness” might be inferred from a recipient’s personal wealth, or the effort s/he did in a task related to the DG, for example. However, in many real life situations, even this information is lacking or not applicable. We argue that there is a deeper level process that guides people’s decisions in social dilemmas that lack clear norms of conduct, and that do not provide information on the characteristics of the other player. This process is based on the perceived interpersonal closeness with an interaction partner. In the next paragraph, we argue why this process is important in explaining decisions in social dilemmas, and explain how the perception of interpersonal closeness may explain individual differences in SVO.

Social Value Orientations and Interpersonal Closeness

Biologists have suggested that cooperative tendencies have developed because promoting reproductive success of genetically related individuals benefits the proliferation of shared genes (Hamilton, 1964). The degree of shared genes can not be detected directly, so we have to rely on cues that are associated with genetic commonality (Krebs, 1991), like kinship, friendship, similarity, and familiarity (Cunningham, 1986; Rushton *et al.*, 1984). This suggests that we tend to be more cooperative with people we consider to be close to us. Work on social discounting supports this idea (Jones & Rachlin, 2006; Rachlin & Raineri, 1992): People are less willing to forgo a fixed amount of money to benefit the other, with increasing social distance between themselves and the other. Other research has shown that cues affecting perceived interpersonal closeness lead to automatic and spontaneous expressions of interconnectedness (Holland *et al.*, 2004). It is therefore reasonable to

assume that individual differences in SVO are related to stable individual differences in the perception of social distance with other people in general.

We hypothesize that SVO is related to differences in *interpersonal closeness* (Aron *et al.*, 1992; Aron *et al.*, 1991; Aron & Fraley, 1999; Cialdini *et al.*, 1997; De Cremer & Stouten, 2003) with random and anonymous other people, and that this perception mediates the effect of SVO on cooperative behavior. According to Aron *et al.* (1991), close relationships are characterized by the feeling that some of the partner's aspects are partially the person's own. Aron *et al.* (1991) found that people's decisions in a resource allocation task were more fair when their relationship with the interaction partner was closer. When they imagined their partner to be a close friend, they gave more than in the case that the partner was assumed to be friendly acquaintance, and they gave even less when they imagined the partner to be a stranger. We hypothesize that pro-socials chronically perceive "other people" in general as closer to themselves than do pro-selfs, which elicits cooperative behavior in interdependence dilemmas that do not provide further cues to steer their decisions. Giving to the other, in this perspective, equals giving to oneself, to a certain degree (Cialdini *et al.*, 1997), and the group interest becomes interchangeable with the self-interest (De Cremer & Van Vugt, 1999).

We consider this a relevant topic, as N-person real life dilemmas typically involve many anonymous interaction partners. If differences in cooperative behavior are due to how the anonymous interaction partners are perceived, then manipulating these perceptions may be used as a tool to promote cooperative behavior in interdependence dilemmas. We will test this hypothesis and verify whether perceptions of interpersonal closeness mediate the effect of SVO on cooperative behavior. We will do so by means of both mediation analyses and experimental

design. We further argue that the process we outlined (SVO – interpersonal closeness – decisions in social dilemmas) is an automatic one. We first propose a two-step model of decision making in an anonymous DG, describing how dictators deal with the trade-off between self-perception and personal gains. Then we outline how SVO and interpersonal closeness operate within the framework of this two-step model.

Decision Making in the Dictator Game: A Two-step Process

Decision making in interdependence dilemmas usually consists of a two-step process (Roch et al., 2000). In line with dual process models of cognition, an initial heuristic-based automatic anchoring step is followed by a deliberation phase in which these initial action tendencies are adjusted according a systematic analysis of the interaction situation (Chaiken *et al.*, 1989; Chen & Chaiken, 1999). The decision maker only engages in this second phase if he is sufficiently motivated and has sufficient cognitive resources at his disposal to do so.

The social intuitionist model (Haidt, 2001) states that moral decisions, like the one between cooperation and defection, are generally the result of quick, automatic evaluations or intuitions. These intuitions are shaped by social and cultural influences that become internalized during the course of personality development. Van Lange et al. (1997b) provided evidence for SVO being such a socially shaped orientation, developed through experiences with situations of interdependence. This suggests that SVO represents inter-individual differences in moral intuitions. These would result in quick, automatic reactions in interdependence situations, triggering either a tendency to cooperate (pro-socials) or to defect (pro-selfs) in a first step.

In a second step, decision makers engage in a more effortful cognitive analysis of the interaction situation, which leads to an adjustment of these initial inclinations. Immediate self-interested motives are very salient in such an analysis (Roch et al., 2000). This implies that dictators are very sensitive to arguments which allow them to deviate from the distribution proposed by their intuitive system and pursue these self-serving tendencies. They may find several reasons to do so. First, Miller (1999) showed that in Western cultures, a norm prevails that says that self-interest ought to be a powerful determinant of behavior. Dictators might argue they should comply with this norm, which avoids them to become the “sucker” (Orbell & Dawes, 1991). Second, the “I’m no saint”-hypothesis of Bolton, Katok and Zwick (1998) implies that within constraints of personal and social rules dictators do behave in a self-interested manner. They might consider it their right to keep a large share or the full endowment because the rules by which they were assigned as the dictator were fair. Dictators might reason that recipients simply had tough luck that roles were assigned as they were, but it is not the dictator’s responsibility to correct for this situation. Kagel, Kim, and Moser (1996) illustrated this tendency to twist fairness interpretations in a self-serving direction in games with asymmetric information and asymmetric pay-offs. Proposers in a standard ultimatum game¹, where 100 chips were to be divided, offered the usual shares, approaching 50%. When the proposer, but not the responder, knew that chips were worth 30 cents to the proposer but only 10 cents to the responder, the proposer could take 75% of the total outcome and still appear fair, by giving 50% of the chips. That is indeed what the researchers observed. This illustrates that proposers will tend to behave self-interested, if they can justify their decision (Babcock *et al.*,

¹ An Ultimatum Game is similar to the DG, but in this game responders have the power to reject a proposal made. If the proposal is rejected, both the proposer and the receiver get nothing.

1995; Thompson & Loewenstein, 1992). We predict that such a self-serving adjustment phase will influence donation of pro-socials to a larger extent than pro-selfs, because pro-socials' intuitive system anchored on a higher donation size.

Cognitive load

Automatic and systematic reasoning differ in their demand for cognitive resources (e.g., Chen & Chaiken, 1999). Since automatic processes do not require as many cognitive resources, they will be not disrupted by cognitive distractions (Ferreira *et al.*, 2006). Therefore we can test the proposed two-step model by introducing a cognitive load manipulation during decision making. Because we assume that step 1 is the result of a fast, effortless, cognitively undemanding process, it should be unaffected by manipulations that interfere with reasoning capacity (Haidt, 2001; van den Bos *et al.*, 2006), whereas a cognitive load manipulation should interfere with the reasoning process of step 2. Such a manipulation can prevent dictators from proceeding to engaging in the process of finding justifications for non-cooperation after step 1.

We hypothesize that SVO determines allocation decisions when they are made under load conditions. We predict that pro-socials will donate more than pro-selfs in this situation. If sufficient cognitive resources are available to allow further deliberation, in a situation without cognitive load, dictators will adjust their donations in a self-serving direction after finding justifications for doing so. Therefore we expect donations to be lower in situations without load, especially for pro-socials, compared to the donations of those whose cognitive resources are constrained.

Overview of the Studies

We test our two-step model (see Figure 1), in four studies. In a first study we verify the relation between SVO and interpersonal closeness (arrow 1 in Figure 1). In Study 2 we test our model's prediction that SVO-effects will be larger when dictators show low levels of deliberation, compared to high levels of deliberation (arrow 3 in Figure 1). Since the deliberation phase, which is hypothesized to result in self-interested decisions is effortful, we should be able to suppress it with a cognitive load manipulation. We predict that dictators, when under cognitive load, will not proceed further than step 1, and will base their allocations on their SVO. After additional deliberation, however, dictators, especially pro-social ones, will decrease the size of their donations. In Study 3 we examine whether interpersonal closeness mediates the effect of SVO and interacts with deliberation level to influence the size of the donation (arrows 1, 2, and 3 in Figure 1). In a last study we verify whether we can manipulate interpersonal closeness to promote pro-social behavior (arrows 2 and 3 in Figure 1).

Insert Figure 1 about here

Study 1

According to our model, interpersonal closeness mediates the automatic effect of SVO on pro-social behavior. In a first step, we want to verify whether pro-socials and pro-selfs indeed have a chronic different perception of the closeness of their relationship with an anonymous interaction partner. To that end, we measured

participants' SVO and asked them to indicate how close they perceived their relationship with their interaction partner.

Method

Participants and procedure

The participants were 108 undergraduate students (59 male, 49 female), for partial fulfillment of a course requirement. They came to the lab in groups of five to eight and were seated individually in front of a computer screen in semi-closed cubicles. First they completed the Ring Measure of Social Values and a measure of interpersonal closeness. The order of both measures was counterbalanced. This took about 10-15 minutes, after which they continued with other tasks unrelated to this study.

Materials

Ring Measure of Social Values. We measured SVO using the Ring Measure of Social Values (Liebrand, 1984). This measure contains 24 items, each representing two imaginary money distributions between the self and another person. Participants were asked to indicate which distribution they preferred. They were instructed to imagine that they played with an anonymous person who received the same items and that individual outcomes were determined by the choices that both players made. Amounts of money can be positive or negative. Distributions are selected from a circle in the own/other outcome plane defined by two orthogonal dimensions. One

represents the outcomes for the self and the other represents outcomes for the other. The center of the circle is the origin of the outcome plane (of which the coordinates are 0 € for the self and 0 € for the other), and its radius is 150 €². On the circle 24 equidistant points are selected. Each point represents a distribution between the self and the other. Each item in the measure contains two such points, which are located adjacent on the circle. An example of an item is a choice between alternative A: 130 € for the self and 75 € for the other, and alternative B: 145 € for the self and 39 € for the other. After making the 24 choices, we calculated the total amount of money allocated to the self and the other. These two totals can be represented as coordinates on the horizontal (own outcomes) and vertical (other's outcomes) axis, defining a single point in the plane. This point provides an estimate of the direction of the participant's vector in the outcome plane. Each vector reflects a unique pattern of choices.

Participants are classified on the Ring Measure as making choices consistent with one of the social value orientations. Participants with vectors falling between 22.5° and 112.5° are classified as pro-socials and participants with orientation vectors falling between 292.5° (or -67.5°) and 22.5° are classified as pro-selfs. Of the 108 participants, 31 (28.70 %) could be identified as pro-socials and 73 (67.59 %) could be identified as pro-selfs. Such a skewed distribution is not uncommon (Liebrand & McClintock, 1988; Sheldon *et al.*, 2003). Four participants (3.70 %) could not be identified because they had an orientation vector of exactly 22.5° or because the vector was out of range (more than 112.5°). The data on the Ring Measure allow calculating the length of each vector, which is an index for the consistency with which the SVO is manifested (Hertel & Fiedler, 1998). A maximal consistency score implies that the participant's preferred orientation on the Ring Measure remains consistent

² 150 € equals about 180 US \$

across all trials (Liebrand, 1984). The consistency score is expressed as a percentage representing the ratio of the length of a vector, compared to the maximal length a vector can have. Usually, only the data of those participants with a consistency index higher than 60 % are retained for analysis (Liebrand, 1984; Smeesters *et al.*, 2003). Four participants (3.70 %) had a consistency score lower than 60 % and were discarded from further analysis. A total of 100 participants (71 pro-selfs and 29 pro-socials) remained for further analysis.

Inclusion of Other in the Self Scale. We measured interpersonal closeness with the “Inclusion of Other in the Self Scale” (IOS scale; Aron et al., 1992). This is a single-item, pictorial measure of closeness, see figure 2. In the IOS Scale, respondents select the picture, which describes their relationship with an interaction partner best, from a set of Venn-like diagrams, each representing different degrees of overlap of two circles. One circle represents the self (S) and the other represents the other person (O). The figures are designed so that the degree of overlap progresses linearly, creating a seven-step, interval-level scale. The anchors are, at one end, two circles that touch each other, but do not overlap and, at the other end, two circles showing complete overlap.

Insert Figure 2 about here

Results and discussion

We conducted an ANOVA to verify whether pro-socials and pro-selfs have a different perception of the closeness of their relationship with the anonymous interaction partner in the Ring Measure. Results indicated this is the case, $F(1, 98) = 18.32, p < .01$. Pro-socials indicated to feel closer ($M = 4.52, SD = 1.30$) than pro-selfs ($M = 2.99, SD = 1.74$). An alternative, continuous measure for SVO consists of using the vector angle. Higher numbers indicate a larger tendency to be pro-social. Therefore we can calculate a correlation between this vector angle and closeness. That correlation was significant, $r(100) = .48, p < .01$, indicating again that a higher tendency to behave pro-socially is associated with perceiving the relationship with an anonymous interaction partner as closer.

In this study we verified the first part of our model (arrow 1 in Figure 1), and found that SVO indeed represents chronic differences in the perceived closeness with an anonymous interaction partner.

Study 2

In this study we verified whether level of deliberation (manipulated with a cognitive load task) moderates the effect of SVO on DG giving. Our model predicts that when level of deliberation is low (i.e., when choices are based on an intuitive process), people base their donation decisions on their SVO. If level of deliberation is high, however, dictators analyze the situation more elaborately and look for reasons why they can reduce donations and still consider themselves fair and just people. The intuitive system of pro-socials anchors on higher donation sizes, compared to the one of pro-selfs, in step 1. Therefore their decisions will be affected by the deliberation

phase to a larger extent, resulting in an interaction effect between deliberation level and SVO.

Method

Participants and Design

The participants were 160 undergraduate students (64 male, 96 female), for partial fulfillment of a course requirement. The experimental design included two between-subjects factors. These were SVO (pro-social versus pro-self) and level of deliberation (cognitive load versus no cognitive load). The number of 20 cent coins donated in a DG (ranging from 0 to 5) constituted the dependent measure.

Procedure and Materials

Participants came to the lab in groups of eight and were seated individually in front of a computer screen in semi-closed cubicles. After a short introduction to the procedure they were expected to follow in the next hour, they completed the DG.

The instructions for the DG appeared on the computer screen. Participants learned they were to keep any money they gained from these transactions. They were told that randomly paired with an interaction partner. Although the instructions indicated that random drawing would decide which of both partners would be the dictator in and who would be the receiver, all participants were assigned to be dictator. In fact, participants were not paired, but all played against the computer. Then the DG was interrupted for the deliberation level manipulation, for which we

used a cognitive load task. Half of the participants were instructed to remember a random seven digit number (5684524); the others remembered an easier, structured sequence of seven digits (1234567). Subsequently, participants received five coins of € .20 and were asked to divide these between themselves and their interaction partner. Finally, they were asked to reproduce the number they had to remember. Then, after 25 minutes of unrelated filler tasks, they completed the Ring Measure of Social Values.

Results

Seventy participants (43.75 %) could be identified as pro-socials and 85 (53.13 %) could be identified as pro-selfs. The SVO of five participants (3.13 %) could not be identified because they had an orientation vector of exactly 22.5° . Five additional participants (3.13 %) were discarded from further analysis because their consistency score was lower than 60%. This way, 150 observations (70 pro-socials and 80 pro-selfs) remained for further analysis.

An ANOVA revealed a significant main effect of SVO on the number of coins donated ($F(1, 146) = 7.92, p < .01$). Pro-socials ($M = 2.15, SD = .96$) donated more than pro-selfs ($M = 1.68, SD = 1.08$). We did not find a main effect of cognitive load, $F < 1$. The main effect of SVO was, however, qualified by a significant interaction effect of SVO and deliberation level ($F(1, 146) = 7.10, p < .01$). As expected, we found a significant effect of SVO under cognitive load conditions, ($F(1, 146) = 14.52, p < .01$), with pro-socials ($M = 2.45, SD = .95$) donating more than pro-selfs ($M = 1.53, SD = .97$). In the no load condition, we did not observe differences between pro-socials ($M = 1.85, SD = .91$) and pro-selfs ($M = 1.83, SD = 1.20, F(1, 146) < 1$). In

the no load condition, pro-socials donated significantly less than in the condition with cognitive load ($F(1, 146) = 5.91, p < .01$). Donations by pro-selfs did not significantly differ between the load and the no load condition ($F(1,146) = 1.69, p=.20$).

Discussion

The results of this study confirm that SVO represents automatic, intuitive judgments in situations of interdependence. When we imposed a cognitive load, participants did not proceed further than step 1 and followed their moral intuition: Pro-socials donated more than pro-selfs. In the condition without cognitive load, however, participants proceeded to a second phase in which they corrected their initial inclination and reduced the size of donations. This process mainly influences pro-socials, as they anchored on a high amount in step 1. When they deliberated their choice, the effect of their SVO was overruled and they donated as little as pro-selfs. Pro-selfs had anchored their decisions at a low number of coins in step 1. Apparently they did not deem it appropriate to donate even less in the deliberation condition. We attribute this to a floor effect.

Study 3

Our full model states that SVO effects in step 1 are mediated by perceived interpersonal closeness with the anonymous interaction partner. In a second phase, in which the dictator deliberates his or her choice more elaborately, one looks for reasons to reduce the donation (Miller, 1999). In the previous study we showed that in such a case, the effect of SVO is overruled. Therefore, we predict that if we run an

identical design like the one in Study 2, interpersonal closeness should mediate the effects of SVO on donation size in low deliberation conditions but not in high deliberation conditions.

Method

Participants and design

The participants were 107 undergraduate students (36 male, 71 female), for partial fulfillment of a course requirement. The experimental design was identical to that of the previous study. We added an interpersonal closeness measure: the Inclusion of the Other in the Self Scale (Aron et al., 1992).

Procedure and Materials

Participants came to the lab in groups of eight and were seated individually in front of a computer screen in semi-closed cubicles. After a short introduction to the procedure they were expected to follow in the next hour, they completed the DG. The only difference between this version and the one in Study 2 is that participants now received 11 coins of € .10 instead of 5 coins of € .20, to increase the potential variance in the behavior. The manipulation of cognitive load was identical to the one in Study 2.

After 25 minutes of unrelated filler tasks, respondents completed the Ring Measure of Social Values and the IOS scale. Half of the participants completed the Inclusion of the Other in the Self Scale before answering the 24 items of the Ring

Measure, and the other half did so afterwards. We did not find any effect of the position of this measure, so it will not be considered in further analyses.

Results

Of 107 participants, 36 could be identified as pro-social (33.64 %) and 71 as pro-self (66.36 %). Five participants (4.67 %) were discarded from further analysis because their consistency score was lower than 60. This way, 102 observations (34 pro-social, 68 pro-self) remained for further analysis.

Replicating Study 1, an ANOVA indicated that SVO was related to perceived interpersonal closeness, $F(1, 100) = 16.70, p < .01$. Pro-socials indicated to feel closer to an unknown interaction partner ($M = 3.76, SD = 1.76$) than pro-selfs ($M = 2.50, SD = 1.31$). There was no main effect of load on perceived closeness ($F < 1$) and the interaction effect of SVO and load was not significant either ($F(1, 98) = 2.85, p = .09$). Further, we replicated the interaction effect of Study 2 ($F(1, 98) = 5.50, p < .02$). Under load, pro-socials ($M = 5.50, SD = .89$) gave more coins than pro-selfs ($M = 3.56, SD = 2.87, F(1, 98) = 6.87, p < .01$). After deliberation, in the no load condition, we did not find an effect of SVO ($F < 1$). Donations of pro-socials were lower in the no load condition ($M = 3.78, SD = 2.21$), compared to the load condition ($F(1, 98) = 4.31, p < .04$). Donations of pro-selfs did not differ between load conditions ($M_{no\ load} = 4.22, M_{load} = 3.56, F(1, 98) = 1.27, p = .26$). Neither the main effect of SVO ($F(1, 98) = 2.16, p = .15$) nor the one of cognitive load ($F(1, 98) = 1.09, p = .30$) was significant.

To verify our hypothesis that interpersonal closeness mediates the effect of SVO on donations in the load condition, but not in the no load condition, we used the

bootstrapping procedure of Preacher, Rucker and Hayes (2005)³. The OLS regression model indicated that SVO (with 0 for prosocials and 1 for proselves) was related to interpersonal closeness ($t(100) = -4.09, p < .01$). The interaction effect of closeness and load on number of coins donated was significant ($t(97) = -2.78, p < .01$). Under load, the bootstrapped estimate of the indirect effect of SVO on number of coins donated, via interpersonal closeness, was significant ($p < .01$). The correlation between closeness and number of coins donated was significant, $r(48) = .45, p < .01$. In the no load condition, the indirect effect was not significant, $p = .52$. In this case, closeness was not related to the number of coins donated ($r(54) = -.09, p = .54$).

Discussion

We provided evidence for our hypothesis that the automatic effect of SVO is at least partly due to a differential perception of the closeness of one's relationship with an anonymous interaction partner. When we provoked intuitive reactions to the interdependence situation by imposing a cognitive load, participants anchored their decisions according to their SVO. The effect was mediated by the perceived closeness of their relation with the receiver. However, when dictators deliberated their answers more elaborately, pro-socials reduced the size of their donation, to a level equal to that of pro-selfs. In this condition perceived closeness was not related to the number of coins passed through. Apparently, when dictators have sufficient cognitive resources at their disposal to deliberate their decisions, the salience of immediate self-interested

³ We used this procedure instead of the test of mediation proposed by Baron and Kenny (1986) because it allows us to test the predicted mediated moderation directly

concerns motivates them to build a case for pursuing these self-serving tendencies, which overrules the effects of closeness and, by extension, SVO.

Study 4

In this study we want to provide further evidence for our model. Specifically, we will test our hypothesis that perceived closeness influences donation behavior, but only when the decision is made intuitively (i.e., under load). In the previous studies we measured SVO and showed that its influence on donation behavior is mediated by perceived closeness. However, it remains possible that perceived closeness is only a proxy of the process that links SVO to donation behavior (Spencer *et al.*, 2005). To further corroborate the causal role of closeness, we manipulated it. We did so by identifying the receiver in a DG as a person who was either similar or dissimilar to the dictator with respect to the daily activities he or she engages in. We expect participants to feel closer to people who have a similar lifestyle. Further we predict that manipulated interpersonal closeness should influence donation amounts only when deliberation is constrained and choices are made in an automatic and intuitive way. If deliberation level is higher we expect donations of those who feel closer to the receiver to be as low as donations of those who feel more distant to the receiver. Therefore we predict an interaction effect between manipulated closeness and cognitive load, analogous to the interaction effects of Study 2 and 3 between SVO and cognitive load.

Method

Participants and design

The participants were 169 undergraduate students (43 male, 126 female). They were paid 6 € for participating for one hour in a series of studies. The experimental design included two between-subjects factors: interpersonal closeness (distant versus close) and cognitive load (load versus no load).

Procedure and Materials

Participants came to the lab in groups of eight and were seated individually in front of a computer screen in semi-closed cubicles. After a short introduction, they started with a 15-item questionnaire. Items probed how often participants engaged in certain leisure and other activities, like how often they watch the news, go to the movies, go shopping, buy CD's, engage in sports, and how much they spend monthly using their cell phone. After 15 minutes of filler tasks participants played a DG. Instructions were mostly identical to the ones used in Study 3, apart from the identification of the interaction partner. Instead of being explained that they would play with an anonymous other person participating with the same session, they learned that they would play with that participant whose answers on the 15-item questionnaire resembled their own answering profile most (Close condition) or least (Distant condition). Cognitive load was manipulated in the same way as in previous studies.

Results

We conducted a 2 (closeness) by 2 (cognitive load) ANOVA. We found a main effect of the closeness manipulation ($M_{\text{close}} = 4.56$, $M_{\text{distant}} = 3.88$, $F(1, 165) = 6.46$, $p < .01$), but not of cognitive load ($F(1, 165) = 2.77$, $p = .09$). This main effect was qualified by a significant interaction, showing exactly the same pattern as the one in Study 2 and 3 ($F(1, 165) = 7.27$, $p < .01$). In the cognitive load condition, we found a significant effect of our closeness manipulation ($F(1, 165) = 12.06$, $p < .01$), showing that those in the Close condition ($M = 5.15$, $SD = 1.48$) gave more coins than those in the Distant condition ($M = 3.74$, $SD = 1.85$). In the no load condition, there was no effect of Closeness ($M_{\text{close}} = 3.98$, $M_{\text{distant}} = 4.02$, $F < 1$). Those in the Close condition gave significantly less ($M = 3.98$, $SD = 1.84$) after more deliberation (i.e. in the no load condition) than when under load ($F(1, 165) = 9.00$, $p < .01$). We found no effect of deliberation level on participants in the Distance condition, $F < 1$.

Discussion

We provided further evidence for the two step process of decision making in a DG. In a first step, dictators anchor on what they intuitively think is an appropriate amount to give. Manipulating interpersonal closeness influenced the amount they consider to be appropriate intuitively. If dictators have the cognitive resources to do so, they engage in a second, more deliberate step, in which immediate self-interested motives are salient. This only influenced those who feel close to their interaction partner, as those who feel distant anchored on a low number to begin with, and seem not to deem it appropriate to donate even less. This implies that manipulating one's perceived relationship with his or her interaction partner can be an efficient tool to promote pro-social behavior.

General Discussion

In this paper we provided evidence for four facts. First, we showed that SVO represents automatic, intuitive tendencies towards cooperation or defection in social dilemmas. Second, decision making in DGs follows a two-step process. Dictators first anchor their decisions according to their SVO (their moral intuitions), and in a second step they look for justifications to reduce their donations (Miller, 1999). Third, the effects of SVO are mediated by the perceived closeness of one's relationship with an (anonymous) interaction partner. Fourth, it is possible to promote pro-social behavior by manipulating perceived interpersonal closeness.

A Two-Step Decision Model in Anonymous Dictator Games

In line with dual-process theories of cognition (Chaiken and Trope, 1999), we hypothesized and found that when deciding on a donation amount in a DG, dictators engage in a two-step process. First, they anchor their allocations according to their moral intuitions, which are captured by the SVO concept, and driven by perceptions of interpersonal closeness. This perception of social distance is, at least partly, responsible for SVO effects. In a second step, dictators adjust these anchored amounts in a self-serving direction. Imposing a cognitive load will stop them from proceeding further than step 1. If no cognitive load is imposed, predictive effects of SVO and interpersonal closeness are suppressed, because dictators engage in a search for justifications to reduce donation sizes, independent of perceived interpersonal closeness. In this respect, we found that interpersonal closeness was not related to the

number of coins donated in the no load condition of Study 3 and that manipulated closeness did not lead to increased donation sizes when participants were not cognitively loaded in Study 4.

Other two-step models

We decided to use the DG as a measure for cooperation because of its high ecological validity. Most real life social dilemmas do not provide clear indications about what would constitute a fair contribution. Additionally, the benefit resulting from an individual's contribution in real life dilemmas is spread over such a large population that the gain for the self is negligible. These characteristics are present in the DG, unlike in resource or public good games, for example. Therefore we expect the decision process we uncovered in this paper to resemble the one in real life interdependence dilemmas more closely than the process guiding decisions in most other economic games.

For example, Roch et al. (2000) found that in resource games, participants anchor on their fair share in a first step, and adjust their choices according to their SVO in a second step. Another anchor and adjustment process is found in van den bos et al. (2006). These authors found that people judge advantageous inequity to be more satisfying when cognitive processing is reduced, compared with the situation in which it is not reduced. They concluded that judging selfish advantage is automatic (step 1) whereas taking fairness concerns into account requires cognitive resources (step 2). However, they did acknowledge that the relation they found between preferences and fairness might be dependent on specific conditions present in their studies and other models of preferences and their adjustment processes might be applicable in other

situations. In this paper, we have found such an alternative model of automatic preferences and adjustment. Several differences between the decision situation in van den Bos et al. (2006) and ours may be responsible for the alternative decision making process. In their case, participants judged how satisfying a certain resource distribution was, whereas we asked participants to decide on such a distribution. These two judgments are likely to activate different mental concepts and different types of evaluations. Allowing dictators to decide on the distribution provides them with a certain power, which participants in the studies by van den bos et al. (2006) did not have. Our intention was to provide insight into the decision making process in large-scale dilemmas. Two aspects of decision making in N-person real life dilemmas - the absence of objective indications for fair decisions, and the fact that benefits of contributions are negligible for the self - motivated our choice for the DG. We agree with van den bos et al. (2006) that future research should further specify models related to people's preferences and their adjustment processes. It should search for the nature of the moderators that determine which of the models is more appropriate in a certain social dilemma situation.

Generalization to real life dilemmas

In our studies, we introduced an artificial manipulation to provoke intuitive judgments. One could wonder whether the predictive effect of SVO, as a measurement of moral intuitions, generalizes to real life situations. We would argue it does, for several reasons. First, previous research has provided empirical proof, as SVO has been used to predict choices between traveling by public transport and taking one's own car (Van Lange et al., 1998; van Vugt et al., 1996), willingness to

pursue the goals of an organization one belongs to at a personal cost (Nauta et al., 2002), willingness to sacrifice in close relationships (Van Lange et al., 1997a), helping behavior (McClintock & Allison, 1989), and intentions to behave pro-environmentally (Gärling et al., 2003; Joireman et al., 2001). Second, it has been argued that in most situations in our daily lives a large number of stimuli compete for our limited cognitive resources, and behavior is therefore often executed rather automatically (Bargh & Thein, 1985; Bargh *et al.*, 1994; Gilbert & Osborne, 1989). Additionally, in interdependence situations we are often required to react very quickly, which promotes intuitive decision making. The decision whether to stop to talk to a street campaigner who, you know, will ask for a donation for charity, or decisions to comply with a request for a favor from a colleague are usually made in a split second, which precludes people from engaging in a reasoning process. Third, intuitions also guide behavior in an indirect way. They have an effect on information retrieved from memory during more elaborated reasoning (Bower, 1981) and in many cases facts are bended to fit beliefs rather than the other way around (Kunda, 1990; Most *et al.*, 2001). Fourth, the transparent nature of gains and losses in the DG might be an artificial situation which stimulates contemplating the decision at hand. In real life situations pay-off structures might not be as clear, discouraging cognitive analysis.

Public policy implications

Our findings provide some public policy suggestions regarding the promotion of pro-social or socially desirable decision making. Policy strategies could deal with

either or both phases of the decision process. Regarding the intuitive phase, we propose three ways for action.

First, our studies suggest that it is possible to *manipulate people's intuitive judgments* in decision situations. SVO seem to be one such measure of moral intuitions in specific context. We manipulated these intuitions through influencing decision makers' perceived closeness of their relationship with the interaction partner. Future research should examine whether this effect can be generalized to situations in which there is not a single interaction partner, but rather a whole community, like in real life social dilemmas. Furthermore, it should be examined whether SVO as a measure for moral intuitions predicts decisions in other domains. It would be interesting to investigate which are the optimal moral intuitions to trigger in specific areas of behavioral management. For example, in the context of promoting pro-environmental decision making one could use a social labeling technique to favor people to perceive themselves as a pro-environmental person (author, 2007). If it is possible to influence such self-perceptions, they are likely to translate into pro-environmental intuitions which affect subsequent environmental behavior.

Second, policy makers could attempt to influence the type of activated intuitions by manipulating interpretations of the decision situation. Spellman and Holyoak (1992) showed that making people apply a different metaphor to think about a situation is a good persuasion principle to influence moral decisions. For example: If Saddam Hussein is like Hitler, it follows that he must have been stopped. But if Iraq is Vietnam, it follows that the United States should not have become involved (Haidt, 2001). In the case of environmental issues, for example, educating people about the imminence of the threat of global warming could influence their intuitions. If people assume that since global temperature has fluctuated during history, they may conclude

there is no reason for concern, or at least there is nothing we can do about it.

Consequently, they will not develop moral intuitions motivating them to behave pro-environmentally. On the other hand, if these people learn that present CO₂ level in the atmosphere are immensely higher compared to its usual range of fluctuation and that CO₂ levels are positively related to global temperature, they may be convinced that taking measures is urgent and develop an intuition to behave pro-environmentally. Especially if these environmental issues are framed in terms of personal gains and losses, individuals might be more motivated to engage in preservation efforts.

Third, Moore and Loewenstein (2004) argued for setting up education and training methods which encourage strong social values to become internalized. This way moral values, rather than self-interest, would become automatized. These authors recognize, however, that in our Western society, this promises to be an arduous task. Progressively, self-interest has become to be embraced as a worthy goal. Because of confusing *is* with *ought*, the idea that people do maximize self-interest has developed in the idea that they *should* pursue self-interest (Frank *et al.*, 1993). People have become to perceive the pursuit of self-interest as a social norm rather than as egoism, a morally inferior choice (Miller, 1999).

Policy efforts directed at step 2 of the decision process should make it more difficult to find justifications for adjusting one's contribution in a self-serving direction. The use of social norms has shown to be efficient in this respect (Cialdini, 2003; Cialdini *et al.*, 1990). For example, a convenient justification for not following one's intuition to reduce alcohol consumption is the (mis)perception that others drink a lot as well (Lewis & Neighbors, 2006). A solution could be to (over)correct these perceived social norms. By showing that other people do not drink much at all, on average, this justification is removed. By communicating examples of other people

pursuing the collective well-being, the availability of justifications for an individual not to do so is reduced.

References

- Allison, S. T., & Messick, D. M. (1990). Social decision heuristics in the use of shared resources. *Journal of Behavioral Decision Making*, 3(3), 195-204.
- Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal*, 100(401), 464-477.
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, 63(4), 596-612.
- Aron, A., Aron, E. N., Tudor, M., & Nelson, G. (1991). Close relationships as including other in the self. *Journal of Personality and Social Psychology*, 60(2), 241-253.
- Aron, A., & Fraley, B. (1999). Relationship closeness as including other in the self: Cognitive underpinnings and measures. *Social Cognition*, 17(2), 140-161.
- author. (2007). *Whatever people say I am that's what I am: Social labeling as a social marketing tool*: available at SSRN.
- Babcock, L., Loewenstein, G., Issacharoff, S., & Camerer, C. (1995). Biased judgments of fairness in bargaining. *American Economic Review*, 85(5), 1337-1343.
- Bargh, J. A., & Thein, R. D. (1985). Individual construct accessibility, person memory, and the recall-judgment link: The case of information overload. *Journal of Personality and Social Psychology*, 49(5), 1129-1146.
- Bargh, J. A., Wyer, R. S., Jr., & Srull, T. K. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In *Handbook of social cognition, vol. 1: Basic processes; vol. 2: Applications* (2nd ed.). (pp. 1). Hillsdale, NJ, England: Lawrence Erlbaum Associates.

- Batson, C. D., Dyck, J. L., Brandt, J. R., Batson, J. G., Powell, A. L., McMaster, M. R., et al. (1988). Five studies testing two new egoistic alternatives to the empathy-altruism hypothesis. *Journal of Personality and Social Psychology*, 55(1), 52-77.
- Bolton, G. E., Katok, E., & Zwick, R. (1998). Dictator game giving: Rules of fairness versus acts of kindness. *International Journal of Game Theory*, 27(2), 269 - 299.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, 36(2), 129-148.
- Burger, J. M., Messian, N., Patel, S., del Prado, A., & Anderson, C. (2004). What a coincidence! The effects of incidental similarity on compliance. *Personality and Social Psychology Bulletin*, 30(1), 35-43.
- Camerer, C. F. (2003). *Behavioral game theory: Experiments in strategic interaction*. Princeton (N.J.): Princeton university press.
- Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought*. New York, NY: Guilford Press.
- Charness, G., & Rabin, M. (2001). Understanding social preference with simple tests. *The Quarterly Journal of Economics*, 117(3), 817-869.
- Chen, S., & Chaiken, S. (1999). The heuristic-systematic model in its broader context. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology*. New York: Guilford Press.
- Cialdini, R. B. (2001). *Influence: Science and practice*. Boston (Mass.): Allyn and Bacon.

- Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current directions in psychological science*, 12(4), 105-109.
- Cialdini, R. B., Brown, S. L., Lewis, B. P., Luce, C., & Neuberg, S. L. (1997). Reinterpreting the empathy-altruism relationship: When one into one equals oneness. *Journal of Personality and Social Psychology*, 73(3), 481-494.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015-1026.
- Cunningham, M. R. (1986). Levites and brother's keepers: A sociobiological perspective on prosocial behavior. *Humboldt Journal of Social Relations*, 13, 35-67.
- Dawes, R. M. (1980). Social dilemmas. *Annual review of psychology*, 31, 169-193.
- De Cremer, D., & Stouten, J. (2003). When do people find cooperation most justified? The effect of trust and self-other merging in social dilemmas. *Social Justice Research*, 16(1), 41-52.
- De Cremer, D., & Van Vugt, M. (1999). Social identification effects in social dilemmas: A transformation of motives. *European Journal of Social Psychology*, 29(7), 871-893.
- De Dreu, C. K. W., & Boles, T. L. (1998). Share and share alike or winner take all? The influence of social value orientation upon choice and recall of negotiation heuristics. *Organizational Behavior and Human Decision Processes*, 76(3), 253.
- Eckel, C. C., & Grossman, P. J. (1996). Altruism in anonymous dictator games. *Games and Economic Behavior*, 16(2), 181-191.

- Etzioni, A. (1990). *The moral dimension: Toward a new economics*. New York (N.Y.): Free Press.
- Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature*, 425(6960), 785-791.
- Fehr, E., & Gächter, S. (2000). Cooperation and punishment in public goods experiments. *American Economic Review*, 90(4), 980-994.
- Ferreira, M. B., Garcia-Marques, L., Sherman, S. J., & Sherman, J. W. (2006). Automatic and controlled components of judgment and decision making. *Journal of Personality and Social Psychology*, 91(5), 797-813.
- Frank, R. H., Gilovich, T., & Regan, D. T. (1993). Does studying economics inhibit cooperation? *The Journal of Economic Perspectives*, 7(2), 159-171.
- Frey, B. S., & Meier, S. (2004). Social comparisons and pro-social behavior: Testing "conditional cooperation" in a field experiment. *American Economic Review*, 94(5), 1717-1722.
- Gärling, T., Fujii, S., Gärling, A., & Jakobsson, C. (2003). Moderating effects of social value orientation on determinants of proenvironmental behavior intention. *Journal of Environmental Psychology*, 23(1), 1.
- Gilbert, D. T., & Osborne, R. E. (1989). Thinking backward: Some curable and incurable consequences of cognitive busyness. *Journal of Personality and Social Psychology*, 57(6), 940-949.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108(4), 814-834.
- Harris, R. J., & Joyce, M. A. (1980). What's fair? It depends on how you phrase the question. *Journal of Personality and Social Psychology*, 38(1), 165-179.

- Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., et al. (1991). In search of homo economicus: Behavioral experiments in 15 small-scale societies. *American Economics Review*, 91(2), 73-78.
- Hertel, G., & Fiedler, K. (1998). Fair and dependent versus egoistic and free: Effects of semantic and evaluative priming on the 'ring measure of social values'. *European Journal of Social Psychology*, 28(1), 49-70.
- Hoffman, E., McCabe, K. A., Shachat, K., & Smith, V. L. (2000). Preferences, property rights, and anonymity in bargaining games. In V. L. Smith (Ed.), *Bargaining and market behavior: Essays in experimental economics*. New York (NY): Cambridge University Press.
- Hoffman, E., & Spitzer, M. L. (1985). Entitlements, rights, and fairness: An experimental examination of subjects' concepts of distributive justice. *The Journal of Legal Studies*, 14(2), 259-297.
- Holland, R. W., Roeder, U.-R., van Baaren, R. B., Brandt, A. C., & Hannover, B. (2004). Don't stand so close to me the effects of self-construal on interpersonal closeness. *Psychological Science*, 15(4), 237-242.
- Joireman, J. A., Lasane, T. P., Bennett, J., Richards, D., & Solaimani, S. (2001). Integrating social value orientation and the consideration of future consequences within the extended norm activation model of proenvironmental behaviour. *British Journal of Social Psychology*, 40(1), 133-155.
- Jones, B., & Rachlin, H. (2006). Social discounting. *Psychological Science*, 17(4), 283-286.
- Kagel, J. H., Kim, C., & Moser, D. (1996). Fairness in ultimatum games with asymmetric information and asymmetric payoffs. *Games and Economic Behavior*, 13(1), 100.

- Kahneman, D., Knetsch, J. L., & Thaler, R. (1986). Fairness as a constraint on profit seeking: Entitlements in the market. *American Economic Review*, 76(4), 728-741.
- Kolm, S.-C. (2000). A historical introduction to normative economics. *Social Choice and Welfare*, 17(4), 707-738.
- Kramer, R. M., McClintock, C. G., & Messick, D. M. (1986). Social values and cooperative response to a simulated resource conservation crisis. *Journal of Personality*, 54(3), 576-582.
- Krebs, D. L. (1991). Altruism and egoism: A false dichotomy? *Psychological Inquiry*, 2(2), 137-139.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108(3), 480-498.
- Ledyard, J. P. (1995). Public goods: A survey of experimental research. In A. Roth & J. Kagel (Eds.), *Handbook of experimental economics*. Princeton: University Press.
- Lerner, M. J. (1977). The justice motive: Some hypotheses as to its origins and forms. *Journal of Personality*, 45(1), 1-52.
- Lewis, M. A., & Neighbors, C. (2006). Who is the typical college student? Implications for personalized normative feedback interventions. *Addictive Behaviors*, 31(11), 2120.
- Liebrand, W. B. G. (1984). The effect of social motives, communication and group size on behaviour in a n-person mult-stage mixed motive game. *European Journal of Personality*, 14, 139-364.
- Liebrand, W. B. G., & McClintock, C. G. (1988). The ring measure of social values: A computerized procedure for assessing individual differences in information

- processing and social value orientation. *European journal of personality*, 2(3), 217-230.
- Luce, R. D., & Raiffa, H. (1957). *Games and decisions: Introduction and critical survey*. New York: John Wiley and Sons.
- Mansbridge, J. J. (1990). *Beyond self-interest*. Chicago: The University of Chicago Press.
- McClintock, C. G. (1972). Social motivation - a set of propositions. *Behavioral Science*, 17(5), 438-454.
- McClintock, C. G., & Allison, S. T. (1989). Social value orientation and helping behavior. *Journal of Applied Social Psychology*, 19(4), 353-362.
- Messick, D. M. (1993). Equality as a decision heuristic. In B. A. Mellers & J. Baron (Eds.), *Psychological perspectives on justice: Theory and applications*. Cambridge: University Press.
- Messick, D. M., & McClintock, C. G. (1968). Motivational bases of choice in experimental games. *Journal of Experimental Social Psychology*, 4(1), 1-25.
- Miller, D. T. (1999). The norm of self-interest. *American Psychologist*, 54(12), 1053-1060.
- Moore, D. A., & Loewenstein, G. (2004). Self-interest, automaticity, and the psychology of conflict of interest. *Social Justice Research*, 17(2), 189-202.
- Most, S. B., Simons, D. J., Scholl, B. J., Jimenez, R., Clifford, E., & Chabris, C. F. (2001). How not to be seen: The contribution of similarity and selective ignoring to sustained inattentional blindness. *Psychological Science*, 12(1), 9-17.

- Nauta, A., De Dreu, C. K. W., & van der Vaart, T. (2002). Social value orientation, organizational goal concerns and interdepartmental problem-solving behavior. *Journal of Organizational Behavior*, 23(2), 199 - 213.
- Orbell, J. M., & Dawes, R. M. (1991). A "cognitive miser" theory of cooperators' advantage. *American Political Science Review*, 85(2), 515-528.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2005). Suggested procedures for addressing moderated mediation hypotheses, *Working Papers*: University of North Carolina Chapel Hill.
- Rachlin, H., & Raineri, A. (1992). Irrationality, impulsiveness, and selfishness as discount reversal effects. In G. Loewenstein & J. Elster (Eds.), *Choice over time*. New York, NY, US: Russell Sage Foundation.
- Roch, S. G., Lane, J. A. S., Samuelson, C. D., Allison, S. T., & Dent, J. L. (2000). Cognitive load and the equality heuristic: A two-stage model of resource overconsumption in small groups. *Organizational Behavior and Human Decision Processes*, 83(2), 185.
- Roth, A. E., Prasnikar, V., Okuno-Fujiwara, M., & Zamir, S. (1981). Bargaining and market behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An experimental study. *American Economic Review*, 81(5), 1068-1095.
- Ruffle, B. J. (1998). More is better, but fair is fair: Tipping in dictator and ultimatum games. *Games and Economic Behavior*, 23, 247-265.
- Rushton, J. P., Russell, R. J. H., & Wells, P. A. (1984). Genetic similarity theory: Beyond kin selection. *Behavior Genetics*, 14(3), 179-193.
- Rutte, C. G., Wilke, H. A. M., & Messick, D. M. (1987). Scarcity or abundance caused by people or the environment as determinants of behavior in the resource dilemma. *Journal of Experimental Social Psychology*, 23(3), 208.

- Schotter, A., Weiss, A., & Zapater, I. (1996). Fairness and survival in ultimatum and dictatorship games. *Journal of Economic Behavior & Organization*, 31(1), 37.
- Schwartz, B. (1986). *The battle for human nature*. New York: Norton.
- Sheldon, K. M., Arndt, J., & Houser-Marko, L. (2003). In search of the organismic valuing process: The human tendency to move towards beneficial goal choices. *Journal of Personality*, 71(5), 835-869.
- Smeesters, D., Warlop, L., Van Avermaet, E., Corneille, O., & Yzerbyt, V. (2003). Do not prime hawks with doves: The interplay of construct activation and consistency of social value orientation on cooperative behavior. *Journal of Personality and Social Psychology*, 84(5), 972-987.
- Sober, E., & Wilson, D. S. (1998). *Unto others: The evolution and psychology of unselfish behavior*. Cambridge, MA: Harvard University Press.
- Spellman, B. A., & Holyoak, K. J. (1992). If Saddam is Hitler then who is George Bush? Analogical mapping between systems of social roles. *Journal of Personality and Social Psychology*, 62(6), 913-933.
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(6), 845-851.
- Thompson, L., & Loewenstein, G. (1992). Egocentric interpretations of fairness and interpersonal conflict. *Organizational Behavior and Human Decision Processes*, 51(2), 176-197.
- Turillo, C. J., Folger, R., Lavelle, J. J., Umphress, E. E., & Gee, J. O. (2002). Is virtue its own reward? Self-sacrificial decisions for the sake of fairness. *Organizational Behavior and Human Decision Processes*, 89(1), 839-865.

- van den Bos, K., Peters, S. L., Bobocel, D. R., & Ybema, J. F. (2006). On preferences and doing the right thing: Satisfaction with advantageous inequity when cognitive processing is limited. *Journal of Experimental Social Psychology*, 42(3), 273-289.
- Van Lange, P. A. M. (1999). The pursuit of joint outcomes and equality in outcomes: An integrative model of social value orientation. *Journal of Personality and Social Psychology*, 77(2), 337-349.
- Van Lange, P. A. M., Agnew, C. R., Harinck, F., & Steemers, G. E. M. (1997a). From game theory to real life: How social value orientation affects willingness to sacrifice in ongoing close relationships. *Journal of Personality and Social Psychology*, 73(6), 1330-1344.
- Van Lange, P. A. M., De Bruin, E. M. N., Otten, W., & Joireman, J. A. (1997b). Development of prosocial, individualistic, and competitive orientations: Theory and preliminary evidence. *Journal of Personality and Social Psychology*, 73(4), 733-746.
- Van Lange, P. A. M., & Liebrand, W. B. G. (1989). On perceiving morality and potency: Social values and the effects of person perception in a give-some dilemma. *European Journal of Personality*, 3(3), 209-225.
- Van Lange, P. A. M., & Liebrand, W. B. G. (1991). Social value orientation and intelligence: A test of the goal prescribes rationality principle. *European journal of social psychology*, 21(4), 273-292.
- Van Lange, P. A. M., Van Vugt, M., Meertens, R. M., & Ruiter, R. A. C. (1998). A social dilemma analysis of commuting preferences: The roles of social value orientation and trust. *Journal of Applied Social Psychology*, 28(9), 796-820.

- Van Vugt, M., Meertens, R. M., & Van Lange, P. A. M. (1995). Car versus public transportation? The role of social value orientations in a real-life social dilemma. *Journal of Applied Social Psychology, 25*(3), 258-278.
- van Vugt, M., van Lange, P. A. M., & Meertens, R. M. (1996). Commuting by car or public transportation? A social dilemma analysis of travel mode judgements. *European Journal of Social Psychology, 26*(3), 373-395.
- Wallach, M. A., & Wallach, L. (1983). *Psychology's sanction for selfishness: The error of egoism in theory and therapy*. San Francisco: W.H. Freeman & Company.

Figure Captions

Figure 1. The two-step model of dictator decision making: SVO effects are mediated by interpersonal closeness and subsequently moderated by deliberation level.

Figure 2. The Self–Other Merging scale contains seven pairs of circles. One circle represents yourself (S), and the other circle represents the other (O). Indicate which pair of circles reflects the relation between you and person you *just played the game with / will play the game with* best.

Figure 1

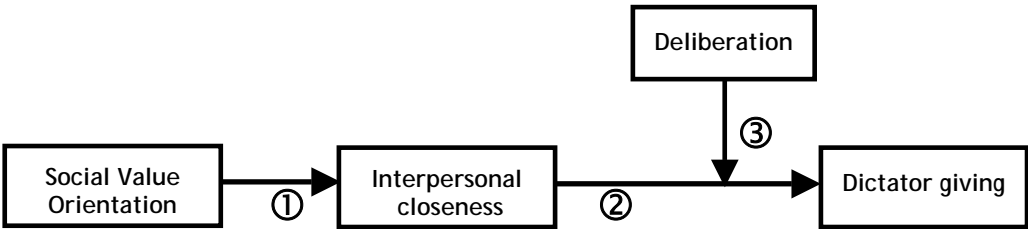


Figure 2

