



KATHOLIEKE  
UNIVERSITEIT  
LEUVEN

# DEPARTEMENT TOEGEPASTE ECONOMISCHE WETENSCHAPPEN

RESEARCH REPORT 0148

**DO NOT PRIME HAWKS WITH DOVES: THE IMPACT  
OF DISPOSITIONS AND SITUATION-SPECIFIC  
FEATURES ON THE EMERGENCE OF COOPERATIVE  
BEHAVIOR IN MIXED-MOTIVE SITUATIONS**

by

**D. SMEESTERS  
L. WARLOP  
E. VAN AVERMAET  
O. CORNEILLE  
V. YZERBYT**

D/2001/2376/48



**Do Not Prime Hawks With Doves: The Impact of Dispositions and  
Situation-Specific Features on the Emergence of Cooperative Behavior in  
Mixed-Motive Situations**

**Dirk Smeesters, Luk Warlop, Eddy Van Avermaet**

Katholieke Universiteit Leuven

**Olivier Corneille**

Université Catholique de Louvain at Louvain-la-Neuve and Belgian Fund for Scientific  
Research

**Vincent Yzerbyt**

Université Catholique de Louvain at Louvain-la-Neuve

This research was supported by OSTC grant HL/DD/24 to Luk Warlop. We are grateful to Mario Pandelaere and Tim Smits for their help in conducting the experiments. This research was presented at the 18<sup>th</sup> SPUDM Conference in Amsterdam (August 2001) and at the 3<sup>rd</sup> European Social Cognition Network in Houffalize, Belgium (September 2001). Correspondence concerning this article should be addressed to Dirk Smeesters, Katholieke Universiteit Leuven, Department of Applied Economics, Naamsestraat 69, B-3000 Leuven, Belgium. Electronic mail may be sent to Dirk.Smeesters@econ.kuleuven.ac.be.

## Abstract

In four experiments, we examined the impact of the nature and consistency of people's social value orientations on the emergence of cooperative behavior in conditions of neutral, morality or might priming. In line with Van Lange (2000), we expected social value orientations to have a greater impact in ambiguous (neutral priming) than in unambiguous (morality and might priming) situations. We also expected the later moderation to be higher among participants low in consistency (see also Hertel and Fiedler, 1998). Overall, participants' behavior shifted in prime-consistent ways. However, cooperation was reduced among high consistent pro-selfs primed with morality concepts. Experiments 2-4 replicate and generalize these findings, and reveal that high consistent pro-selfs exploited partners believed to be cooperative as a result of morality priming. Implications of these results are discussed in the wider context of interdependence theory, and in the context of automatic behavior effects.

## **Do Not Prime Hawks With Doves: The Impact of Dispositions and Situation-Specific Features on the Emergence of Cooperative Behavior in Mixed-Motive Situations**

In interdependence dilemmas, individuals are faced with a conflicting choice between the collective interest and self-interest. Their outcomes do not only depend on their own choices but also on the choices of others. An individual is often tempted to make a non-cooperative, self-interested choice, because it yields higher outcomes to the individual than a cooperative, collectively interested choice, irrespective of what others may do. However, if all interested parties choose to follow their self-interest, they are all worse off than if they had acted in a cooperative manner (Dawes, 1980). Therefore, mutual cooperative behavior is better for all parties than mutual defection.

It is largely assumed that individuals do not necessarily follow their immediate self-interest in mixed-motive interdependence situations. Individuals may also behave according broader preferences of outcomes for self and others (Kelley & Thibaut, 1978). Behaving more or less cooperatively depends on whether individuals relinquish self-interested preferences to pursue broader preferences like enhancing the outcomes of a collective or enhancing equality in outcomes (Van Lange, 1999). Interpersonal dispositions (embodied in social value orientations) and situation-specific features may both drive cooperative behavior. Social interaction in mixed-motive interdependence situations is best predicted by a disposition x situation interaction (Van Lange, 2000; Van Lange, Agnew, Harinck, & Steemers, 1997a), such that the influences of social value orientations on cooperative behavior should be larger in ambiguous than in unambiguous situations. In the latter situations, cooperative behavior may rather follow from individuals' susceptibility to situation-specific features.

Our objective is to extend and test this perspective. We will test whether susceptibility of individuals to disambiguating situation-specific features depends not only on the nature, but also on the consistency of one's own social value orientation. We also examine whether subtle situation-specific features may be strong enough to disambiguate a situation. We test our view by unobtrusively confronting our participants with either morality-related features or with might-related features.

### Interdependence Theory

Behaving cooperatively towards others involves departure from the individual's self-interested preferences (i.e., given preferences). Movement away from given preferences results from transformation of motivation, a process that may lead individuals to relinquish their immediate self-interest and to act on the basis of broader goals (Kelley & Thibaut, 1978; see also Rusbult & Van Lange, 1996). Transformation of motivation yields a re-conceptualized, effective set of preferences, which are assumed to directly guide cooperative behavior.

Several transformation processes have been identified (see Allison & Messick, 1990; Griesinger & Livingston, 1975; MacCrimmon & Messick, 1976; McClintock, 1972; Messick & McClintock, 1968). They are often categorized into two broad categories. A first category of transformation processes is a pro-social transformation, including cooperation (MaxJoint, i.e., maximizing joint outcomes), equality (MinDiff, i.e., minimizing absolute differences between one's own and others' outcomes) and altruism (MaxOther, i.e., maximizing the others' outcomes with little or no consideration about one's own outcomes). Recently, Van Lange (1999) found evidence for an integrative model of pro-social transformations. He established that cooperation and equality are positively associated with each other, i.e. individuals engaged in pro-social transformations assigned greater weight to both outcomes for self and others and to equality in outcomes. This means that if individuals want to enhance joint outcomes, they also want to enhance equality in outcomes. A second category of transformation processes is a pro-self transformation, including individualism<sup>1</sup> (MaxOwn, i.e., maximizing one's own outcomes with little or no consideration about others' outcomes) and competition (MaxRel, i.e., maximizing the difference between one's own and others' outcomes). Both individualism and competition can be conceptualized as pro-self transformations, because they both focus on enhancing outcomes for the self (e.g., Van Lange & Liebrand, 1989, 1991a, 1991b).

Individuals repeatedly encounter patterns of interdependence and therefore the transformation process may occur automatically. It has been found that transformational tendencies may be shaped by social dispositions, often referred to as social value orientations. However, transformation may also depend on situation-specific features: in some situations (e.g., a communal environment) individuals may routinely engage in pro-social transformation; whereas in other situations (e.g., a business environment) individuals may typically behave individualistically.

Cooperative behavior, through the activation of transformation processes, is therefore assumed to result from both dispositional and situational influences.

### Impact of Social Value Orientations and Situation-Specific Features on Cooperative Behavior

A large body of research has focused on individual differences in preferences for particular types of transformations, reflecting the way in which outcomes for self and others are evaluated<sup>2</sup>. These individual differences have been referred to as social value orientations (Messick & McClintock, 1968; McClintock & Liebrand, 1988). Some individuals (called pro-socials) are more inclined to behave in a pro-social manner, whereas others (called pro-selfs) are more inclined to behave in a pro-self manner. Social value orientations have been found to predict fairly accurately cooperative behavior in all kinds of mixed-motive situations (e.g., De Dreu & Van Lange, 1995; Liebrand & Van Run, 1985; McClintock & Allison, 1989; Van Lange & Liebrand, 1989; Van Vugt, Meertens, & Van Lange, 1995). Pro-socials always tend to behave more cooperatively than pro-selfs.

Social value orientations have also been found to influence perceptual and cognitive processes. Whereas pro-selfs believe that most others will behave non-cooperatively, pro-socials assume that other individuals are more heterogeneous in this respect, some behaving cooperatively and others behaving non-cooperatively (Kelley & Stahelski, 1970). Social value orientations are also linked to differences in the way others' behavior is perceived. Pro-socials tend to judge another person's behavior in terms of morality: Someone who behaves in a cooperative manner will be judged as a moral and honest person whereas someone who behaves in a non-cooperative manner will be judged as immoral and dishonest. Pro-selfs tend to judge another person's behavior more in terms of might/competence: someone who acts cooperatively will be judged as a strong and competent person whereas someone who acts non-cooperatively will be judged as weak and unintelligent. This difference in the way pro-socials versus pro-selfs judge other individuals' behavior is called the might-versus-morality phenomenon (e.g., Liebrand, Jansen, Rijken, & Suhre, 1986; McClintock & Liebrand, 1988; Sattler & Kerr, 1991; Van Lange & Kuhlman, 1994).

Cooperative behavior may also be contingent upon situation-specific features, such as information about the partner (De Bruin & Van Lange, 1999) or specific features of the interpersonal relationship (e.g., Rusbult, Verette, Whitney, Slovik, &

Lipkus, 1991; Van Lange, Rusbult, Drigotas, Arriaga, Witcher, & Cox, 1997c; Wieselquist, Rusbult, Foster, & Agnew, 1999). Furthermore, activation of social norms can also have strong effects on the emergence of cooperative behavior in mixed-motive situations. Hertel & Kerr (2001) showed that priming a 'loyalty norm' led to greater in-group favoritism in a resource allocation task than priming an 'equality norm'. Studies such as these show that even subtle situation-specific features may significantly affect cooperative behavior in mixed-motive situations.

#### The Combined Role of Social Value Orientations and Situation-Specific Features

To be sure, one should not expect behavior to be influenced in an additive manner by individuals' social value orientation or the features of the situation. Indeed, Van Lange (2000) argued that it would be dysfunctional for individuals to always approach interdependent others in the same manner. He suggested that influences of social value orientations should only be large in ambiguous mixed-motive situations. Because mixed-motive situations are by definition ambiguous, lacking relevant cues to guide one's own cooperative behavior, dispositional influences should likely affect social interaction. However, situation-specific features may disambiguate situations and provide cues to guide preferences and cooperative behavior. Under such circumstances, dispositional influences should be substantially weaker and, instead, individuals should be highly susceptible to situation-specific features. Assuming that participants encounter situations of non-correspondent outcomes with regularity, cooperative or non-cooperative behavior may become automatically associated with situation-specific features (Van Lange, 2000; Van Lange et al., 1997c; Wieselquist et al., 1999). Bargh (1997; Bargh, Chen, & Burrows, 1996) also argued that social behavior should be capable of becoming directly and automatically activated by the presence of subtle features in the environment.

Therefore, comparing ambiguous with unambiguous situations, one should expect a disposition x situation interaction to emerge (Van Lange, 2000; see also Van Lange et al., 1997a). Generally speaking, Van Lange et al. (1997a) argued it is more useful to consider interactions between social value orientations and situational features in addition to additive models focusing on either dispositional influences or situation-specific influences.

A study conducted by Kramer, McClintock, and Messick (1986) provides a clear illustration of this view. These authors studied the impact of social value orientations in

two types of resource dilemma situations: a situation in which a common resource depletes rapidly and a situation in which a common resource is sustained through replenishment. Social value orientations only predicted cooperative behavior in the rapid depletion condition: pro-selfs took more for themselves than pro-socials. In the rapid depletion condition the conflict between self-interest and collective interest was most acute because feedback given about the rate of the common resource indicated that the future of that source was seriously threatened. In contrast, in the sustained use condition, the cooperative behavior of pro-socials and pro-selfs was highly similar across trials. Pro-socials and pro-selfs appeared to convert the given situation according to the same transformation processes. Kramer et al. (1986) argued that individuals in this condition were highly susceptible to implicit group norms promoting conformity activated by the sustained character of the situation. These activated norms might have functioned as disambiguators.

#### Individual Differences in Susceptibility to Situation-Specific Features: The Role of Consistency of Social Value Orientations

In a recent study, Hertel & Fiedler (1998) argued that susceptibility to situation-specific features in mixed-motive situations may well depend on the consistency of one's social value orientation. Participants were confronted with subtle situation-specific features (i.e., primes) related to cooperation or competition. The effect of primes was assessed on allocation behavior in the Ring Measure of Social Values (Liebrand, 1984). The Ring Measure is a technique that allows assessing a person's social value orientation along with its consistency (e.g., Liebrand, 1984; Liebrand & McClintock, 1988). Hertel & Fiedler (1998) used the consistency of choices in the Ring Measure as an individual difference variable and found that only low consistent individuals were highly susceptible to the primes. Specifically, the behavior of these individuals assimilated to the primes with more cooperative behavior in cooperative priming conditions and less cooperative behavior in competitive priming conditions. Hertel & Fiedler (1998) argued that a low consistent individual's social value orientation is not strong enough to resist priming influences. High consistent individuals were less influenced by the cooperative or competitive primes, supposedly because in their case priming influences may be overridden by strong individual dispositions. On the basis of these findings, Hertel & Fiedler (1998) suggested that consistency of one's social value orientation may moderate the interaction between the

nature of social value orientation (pro-social vs. pro-self) and the impact of situation-specific features. Because Hertel & Fiedler (1998) did not use a standardized technique for measuring social value orientations before the priming phase, their results do not allow making specific predictions for pro-socials and pro-selfs separately and it may be assumed that the impact of relevant situational features (i.e., primes) was similar for both pro-socials and pro-selfs.

### The Purpose of the Present Experiments

Building upon the work by Hertel and Fiedler (1998), we decided to further examine the combined impact of dispositional and situational factors on people's cooperative behavior. We conducted four experiments to test the interaction between the consistency and nature of social value orientations and situation-specific features. In so doing, we in fact adapted van Lange's (2000) view by predicting that the disposition x situation interaction only occurs for low consistent individuals but not for high consistent individuals.

Our four experiments had all the same structure. In a first phase, we measured each participant's social value orientation and the consistency of that orientation. In a second phase, participants were confronted with 'morality' primes, neutral primes or 'might' primes using supraliminal or subliminal priming techniques (Bargh, 1997; Bargh & Chartrand, 2000). Finally, we observed the priming effects on cooperative behavior in one-trial mixed-motive games.

The heart of our predictions concerned a three-way interaction involving the nature of participants' social value orientation, its consistency, and the direction suggested by the primes. That is, we expected to find the interaction between the dispositional and situational factors only in the group of low consistent individuals. For this group of individuals, we expected only a significant impact of social value orientations in ambiguous situations (i.e., the neutral priming condition) but not in unambiguous situations. We expected a situation with morality features to elicit more cooperative behavior than an ambiguous situation, and a situation with might features to elicit less cooperative behavior than an ambiguous situation. Because high consistent individuals should not be susceptible to disambiguating situation-specific features, we predicted only a main effect of social value orientations indicating that high consistent pro-socials act more cooperatively than high consistent pro-selfs in ambiguous

situations as well as in situations with morality or might features. In other words, high consistent individuals' cooperative behavior should not be influenced by primes<sup>3</sup>.

## EXPERIMENT 1

Some features of this study deserve attention. First of all, unlike Hertel & Fiedler (1998), we conducted the Ring Measure of Social Values (Liebrand, 1984), as a measure of social value orientations and consistency of these orientations, before the priming phase. Second, we used a one-trial simultaneous 2-person give-some game (e.g., Van Lange & Kuhlman, 1994). Participants had to make one choice without having any information about their partner. We wanted to observe priming effects as purely as possible, and we wanted to rule out that our participants used their partner's choice as a basis for making their own choice. Third, following the might-versus-morality effect (see Liebrand et al., 1986; Sattler & Kerr, 1991), we used morality primes to activate cooperative behavior and might primes to activate non-cooperative behavior.

We predicted only a main effect of social value orientations for high consistent individuals. High consistent pro-socials should behave more cooperatively than high consistent pro-selfs (Hypothesis 1). Furthermore, we expected a main effect of primes on cooperative behavior for low consistent individuals. We predicted morality primes to elicit more cooperative behavior than neutral primes and we predicted might primes to elicit less own cooperative behavior than neutral primes (Hypothesis 2). Finally, we predicted a significant interaction between social value orientation and primes for low consistent individuals. Low consistent pro-socials were expected to behave more cooperatively than low consistent pro-selfs only in the neutral priming condition (Hypothesis 3).

## Method

### Participants and design

The participants were 203 undergraduates at the Katholieke Universiteit Leuven, as a partial fulfillment of course requirements. All were native Dutch speakers. The experimental design included three between-subjects factors. These three factors were social value orientation (pro-social versus pro-self), consistency (high versus low), and primes (morality versus neutral versus might). The dependent variable was participants' own cooperative behavior in a prisoner's dilemma game.

### Procedure and materials

Upon entering the laboratory, participants were welcomed by a male experimenter. They were told that they would participate in a number of unrelated experiments, and brought to individual soundproof cubicles. They were requested to perform a sequence of four tasks: (a) the Ring Measure of Social Values; (b) a filler task; (c) the priming procedure and (d) a simultaneous, single-trial prisoner's dilemma task. After participants completed all these tasks, they were requested to fill out a post-experimental questionnaire. Finally, they were thanked for their participation and debriefed.

### Measuring Social Value Orientations and Consistency

The experiment started by assessing each participant's social value orientation and consistency, using the Ring Measure of Social Values (Liebrand, 1984). The Ring Measure is a computerized task that confronts participants with 24 choice trials. Each trial presents a pair of imaginary money distributions among the self and another person. Amounts of money for the self and for the other person can be either positive or negative. An example of a pair is the choice between Alternative A: 1450 BEF for the self and 300 BEF for the other and Alternative B: 1500 BEF and 0 BEF for the other. The 24 pairs of outcomes lie on a circle in the own/other outcome plane defined by two orthogonal dimensions: a horizontal dimension representing the outcomes for the self and a vertical dimension representing the outcomes for the other person. Specific own/other outcomes are defined as points in the plane. The center of the circle coincides with the origin of the outcome plane, i.e., the origin denotes 0 BEF for the self and 0 BEF for the other person. The radius of the circle is 1500 BEF (1 US dollar is about 45 BEF). Each pair consists of two equidistant own/other outcome distributions that are located next to each other on the circle. For each of the 24 pairs, participants were instructed to choose their most preferred alternative.

After the participants made all their 24 choices, we calculated the total amount of money allocated to the self and the total amount of money allocated to the other person. 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 orientation vector in the outcome plane. The vector represents the participant's social value orientation. Each orientation reflects a unique pattern of choices. Participants are classified on the Ring Measure as making choices consistent with one of the orientations. Participants

with orientation vectors falling between  $22.5^\circ$  and  $112.5^\circ$  were classified as pro-socials and participants with orientation vectors falling between  $292.5^\circ$  (or  $-67.5^\circ$ ) and  $22.5^\circ$  were classified as pro-selfs. Of the 203 participants, 101 could be identified as pro-socials and 98 could be identified as pro-selfs. Four participants could not be identified because they had an orientation vector of exactly  $22.5^\circ$ .

We used the Ring Measure not only to determine each participant's social value orientation but also to determine the consistency of each orientation. A maximal consistency score implies that the participant's preferred orientation on the Ring Measure remains consistent across all trials (Liebrand, 1984). This consistency score will decrease when participants follow another orientation on some trials. We decided to label participants who obtained a consistency score of at least 90% as individuals with a high consistent social value orientation and participants who obtained a consistency score of at most 85% as individuals with a low consistent social value orientation. Participants who scored between 85% and 90% were discarded from the analysis. We did not perform a common median split on the consistency scores because we really wanted to create a clear distinction between participants who displayed a very high consistency score and participants who yielded a lower consistency score. We wanted to make this distinction even more clearly by omitting participants who fell in between our two criteria (i.e., between 85% and 90%). The average level of consistency was 88.3%. Of the remaining 199 participants, 110 could be labeled as high consistent individuals and 86 could be labeled as low consistent individuals<sup>4</sup>. Three additional participants were discarded from the analysis because they exhibited a consistency score between 85% and 90% or because they had a consistency score that was less than 60%. This means that a total of 196 participants remained for the analysis. Fifty-three participants were classified as high consistent pro-socials, 45 participants were classified as low consistent pro-socials, 57 participants were classified as high consistent pro-selfs, and 41 participants were classified as low consistent pro-selfs<sup>5</sup>.

After the Ring Measure, all participants took part in a filler-experiment that took 15 minutes. Participants had to categorize several objects into different color categories (e.g., a banana into the yellow category), and were later asked how many objects they could remember.

### Priming manipulation

We used the Scrambled Sentence Test (Srull & Wyer, 1979) as a supraliminal priming technique. The task was introduced to the participants as a "language skill"

test. We used of 30 items, each requiring the participant to form a grammatically correct sentence out of four words from five words presented in a scrambled sentence. Word primes were embedded in 15 of the 30 items. We created three versions of the Scrambled Sentence Test, each with 15 different prime words. A first version used words related to morality (e.g., honest, trustworthy, fair). A second version used words related to might/competence (e.g., determined, smart, autonomous). A third version existed of words that were neutral and unrelated to any possible disambiguating feature (e.g., old, curved, silent).

#### Measuring cooperation in a one-trial simultaneous 2-person give-some game

We introduced the mixed-motive game in the form of a decision task. Each participant was told that s/he was paired with another participant in the laboratory. The game was adopted from prior research (e.g., Van Lange, 1999, Study 3; Van Lange & Kuhlman, 1994). Each participant was given four chips and was told that the partner also received four chips. For both players in the game, each chip had a value of 10 BEF to themselves and a value of 20 BEF to the partner. Participants had to decide how many chips (none, one, two, three, or four) they would give to the partner. They were also told that the partner also had to decide how many chips s/he would give to the participant. Each chip the participant would receive from the partner would also be worth 20 BEF. Maximal cooperation was to give four chips and maximal non-cooperation was to give zero chips<sup>6</sup>. Participants could end up with a total amount between 0 BEF and 120 BEF. Participants did not receive any information about the partner. In reality, this 2-person give-some game was a fictitious game. All participants understood the task structure and, therefore, no additional data were excluded. After participants made their decision, they were requested to fill out a post-experimental questionnaire, which probed their suspicion about any relatedness among tasks and on the priming procedure. None of the participants indicated any suspicion. Finally, students were thanked for their participation and debriefed.

#### Results

A 2 (social value orientation: pro-social vs. pro-self) x 2 (consistency: high vs. low) x 3 (primes: morality vs. neutral. vs. might) between-subjects ANOVA was conducted on cooperative behavior. This analysis revealed the presence of two significant main effects. First, we obtained a main effect of social value orientation,

$F(1, 184) = 23.10, p < .001$ . Pro-socials ( $M = 2.16$ ) showed more cooperation than pro-selfs ( $M = 1.48$ ). Second, a main effect of primes,  $F(2, 184) = 36.50, p < .001$  revealed that morality primes ( $M = 2.48$ ) produced significantly more cooperation than neutral primes ( $M = 1.95$ ), which in turn produced significantly more cooperation than might primes ( $M = 1.04$ ).

---

Insert Figure 1 about here

---

Furthermore, we obtained a significant three-way interaction between social value orientation, consistency, and primes,  $F(2, 184) = 6.99, p < .01$ . The means for this three-way interaction are shown in Figure 1. To further analyze this interaction, we conducted separated 2 (social value: pro-social vs. pro-self) x 3 (primes: morality vs. neutral vs. might) between-subjects ANOVAs for high consistent participants and for low consistent participants.

For high consistent participants, the analysis unexpectedly revealed two significant main effects. First, we obtained the predicted main effect of social value orientation,  $F(1, 104) = 32.99, p < .001$ . High consistent pro-socials ( $M = 2.26$ ) displayed greater cooperation than high consistent pro-selfs ( $M = 1.19$ ). Second, the analysis showed also a main effect of primes,  $F(2, 104) = 12.07, p < .001$ . Might primes ( $M = 1.08$ ) elicited significantly less cooperation than morality primes ( $M = 2.05$ ) and neutral primes ( $M = 2.04$ ). However, these main effects were qualified by a significant two-way interaction between social value orientation and primes,  $F(2, 104) = 9.92, p < .001$ . Post-hoc comparisons using Tukey HSD showed indicated that high consistent pro-socials cooperated more than high consistent pro-selfs in the neutral priming condition ( $M = 2.41$  vs.  $M = 1.68$ ) and in the morality priming condition ( $M = 3.16$  vs.  $M = 0.94$ ), but not in the might priming condition ( $M = 1.22$  and  $M = 0.95$ ). Post-hoc comparisons also revealed that high consistent pro-socials showed greater cooperation in the morality priming condition ( $M = 3.16$ ) than in the neutral priming condition ( $M = 2.41$ ) and showed less cooperation in the might priming condition ( $M = 1.22$ ) than in the neutral priming condition. Additional post-hoc comparisons indicated that high consistent pro-selfs showed less cooperation in the morality priming condition ( $M = 0.94$ ) and in the might priming condition ( $M = 0.95$ ) than in the neutral priming condition ( $M = 1.68$ ). There was no significant difference between high consistent pro-

selves in the morality priming condition and those in the might priming condition. These results disconfirm Hypothesis 1.

Turning to the low consistent participants, the analysis only revealed the presence of a significant main effect of primes,  $F(2, 80) = 28.85, p < .001$ . As predicted by Hypothesis 2, morality primes ( $M = 2.90$ ) elicited greater cooperation than neutral primes ( $M = 1.86$ ),  $F(2, 80) = 16.71, p < .001$ , whereas might primes ( $M = 0.99$ ) elicited less cooperation than neutral primes ( $M = 1.86$ ),  $F(1, 80) = 11.17, p < .01$ . In order to test Hypothesis 2, we calculated a planned comparison between low consistent pro-socials and low consistent pro-selves in the neutral priming condition. This marginally significant contrast revealed that low consistent pro-socials exhibited more own cooperative behavior than low consistent pro-selves in the neutral priming condition ( $M = 2.23$  vs.  $M = 1.50$ ),  $F(1, 80) = 3.87, p < .06$ . Additional planned comparisons revealed no significant differences between low consistent pro-socials and low consistent pro-selves in the morality priming condition ( $M = 2.88$  and  $M = 2.92$ ),  $F(1, 80) < 1, ns$ , and in the might priming condition ( $M = 1.06$  vs.  $M = 0.92$ ),  $F(1, 80) < 1, ns$ . Hypotheses 2 and 3 were supported.

### Discussion

These results of Experiment 1 only partially supported our predictions. Although we did not obtain a statistically significant disposition x situation interaction pattern for low consistent individuals, the pattern clearly showed that social value orientations only affected cooperative behavior in the neutral priming condition and not in the morality and might priming conditions. Furthermore, cooperative behavior of low consistent individuals shifted in prime consistent directions. Our predictions for high consistent individuals were not supported. Instead of only a main effect of social value orientation, we obtained a disposition x situation interaction, which indicated that, contrary to Hertel & Fiedler (1998), high consistent individuals were in fact sensitive to the primes. High consistent pro-socials' cooperative behavior clearly assimilated to the primes. This pattern suggests that they may remain sensitive to the context and behave cooperatively or non-cooperatively depending on situation-specific features. High consistent pro-selves' behavior however assimilated to the primes in the might priming condition only. Indeed, high consistent pro-selves actually behaved less cooperatively in the morality than in the neutral priming condition.

How can we explain why high consistent pro-selfs exhibited the same degree of (non-) cooperative behavior in might and morality priming conditions? Is it possible that morality features directly lead high consistent pro-selfs to behave selfishly? An explanation may be offered by referring to earlier work by Herr (1986; see also Neuberg, 1988). Herr (1986) suggested that in mixed-motive interdependence situations beliefs about partner's cooperation likely play a central role in connecting situation-specific features with cooperative behavior. It might be that, in Experiment 1, our participants engaged in some sort of a spontaneous expectation formation process. Previous social dilemma research already demonstrated that expectations of partner's cooperation serve as an important ingredient in an individual's decision (e.g., Van Lange & Kuhlman, 1994; Kuhlman & Wimberley, 1975). Interdependence theory and related perspectives (Kelley & Thibaut, 1978; McClintock, Kramer, & Keil, 1984; Messick & Cook, 1983) also stated that cooperative behavior may be shaped by expectations or beliefs regarding pro-social intentions and behavior by the partner. Research also indicated that the extent to which expectations serve as an ingredient for behaving in dilemmas may depend on one's social value orientation. Pro-socials are found to follow a 'behavioral assimilation' principle (Kelley & Stahelski, 1970). These individuals desire reciprocity: they act cooperatively as long as they expect the other to cooperate but act selfishly if they expect the other be a non-cooperative individual. Pro-selfs are less guided by considerations of reciprocity and rather exhibit tendencies to exploit cooperative behavior of interdependent others.

Building upon this analysis, we suggest that participants in Experiment 1 engaged in some expectation formation process, and that the resulting expectations were influenced by the presence of the primes. In the neutral priming condition, lacking a situation-based direction, participants' expectations may have been influenced by their social value orientation. Kuhlman & Kimberley (1976) indeed found that pro-socials expected more cooperation from other individuals than pro-selfs in an ambiguous mixed-motive setting. In situations with more explicit indications (e.g., the morality and might priming conditions), individuals may rely on the nature of the primes to form expectations. Morality features being linked to cooperative persons (Deutsch, 1982; Liebrand et al., 1986; Van Lange & Kuhlman, 1994), they could have encouraged participants to expect a high degree of cooperation from the partner. Might features being linked to non-cooperative persons (Liebrand et al., 1986; Sattler & Kerr, 1991; Van Lange & Liebrand, 1989), they could have induced participants to expect a low

degree of cooperation from the partner. In turn, these expectations regarding the level of partner's cooperation may have triggered specific behavioral tendencies.

The above rationale can easily account for the fact that high consistent pro-socials as well as low consistent individuals showed behavioral assimilation to the primes (Kelley & Stahelski, 1970). More importantly, such an explanation also clarifies why high consistent pro-selfs did not always show behavioral assimilation. As a matter of fact, they acted in a non-cooperative manner in the neutral priming condition and played more competitively after their confrontation with might primes. However, they also played more non-cooperatively in case of morality primes. If morality primes caused these individuals to perceive their partner as a cooperative person, than their non-cooperative reaction could be typified as 'exploitation'. In other words, because high consistent pro-selfs likely judge cooperative others as rather weak and stupid persons who are very exploitable, they are tempted to adopt a non-cooperative strategy.

Our next experiments were undertaken in order to test the intriguing hypothesis that expectations are spontaneously formed in a mixed-motive situation. We predicted that dispositional and situation-specific features would influence participants' expectations of their partner's cooperation, depending on the ambiguity of the situation. Next, we expected these expectations to be used by participants to determine their own cooperative behavior. Clearly, the way such expectations would serve as an ingredient for making decisions was expected to be moderated by the nature and consistency of the social value orientation.

## EXPERIMENT 2

The purpose of this experiment was to replicate the findings of Experiment 1 and to assess the viability of our interpretation. For Experiment 2, we hypothesized a main effect of primes on expectations of partner's cooperation: morality primes should elicit more expected cooperation of the partner than neutral primes and might primes should elicit less expected cooperation of the partner than neutral primes (Hypothesis 1). We also predicted a main effect of social value orientation on expectations of partner's cooperation: Generally speaking, pro-socials should expect more cooperation from their partners than pro-selfs (Hypothesis 2), but the effect should be larger in the neutral priming condition than in the morality and might priming conditions (Hypothesis 3). As far as cooperative behavior is concerned, we hypothesized that (high and low consistent) pro-socials should behave more cooperatively than (high and

low consistent) pro-selfs in the neutral priming condition (Hypothesis 4). We expected high consistent pro-socials and low consistent participants to act more cooperatively in the morality priming condition than in the neutral priming condition and less cooperatively in the might priming condition than in the neutral priming condition (Hypothesis 5). High consistent pro-selfs should behave less cooperatively in the morality and might priming conditions than in the neutral priming condition (Hypothesis 6). Finally, we expected correlations between expectations of partner's cooperation and own cooperative behavior to be positive and to be negative for high consistent pro-selfs in the morality priming condition (Hypothesis 7).

## Method

### Participants and design

In total 193 students at the Katholieke Universiteit Leuven participated in the experiment as partial fulfillment of course requirements. All were native Dutch speakers. The experimental design included the same three between-subjects factors as in Experiment 1. We assessed expectations of partner's cooperation as well as each participant's own cooperative behavior.

### Procedure and materials

The procedure was, except for the assessment of participants' expectations of partner's cooperation, identical to the procedure in Experiment 1. The experiment started by assessing each participant's social value orientation and consistency. Of the 193 participants, 98 could be identified as pro-socials and 94 could be identified as pro-selfs. One participant could not be identified because of an orientation vector of exactly 22.5°. The average level of consistency was 85.6%. Of the remaining 192 participants, 98 could be labeled as high consistent individuals and 88 could be labeled as low consistent individuals. Six additional participants were discarded from the analysis because they exhibited a consistency score between 85% and 90% or because they had a consistency score that was less than 60%. This means that a total of 186 participants remained for the analyses. Fifty participants were classified as high consistent pro-socials, 45 participants as low consistent pro-socials, 48 participants as high consistent pro-selfs, and 43 participants as low consistent pro-selfs.

After finishing the filler-experiment, participants were randomly assigned to one of three priming conditions (morality vs. neutral vs. might primes). Immediately after

resolving the thirty sentences of the Scrambled Sentence Test, participants took part in the same fictitious 2-person give-some game as in Experiment 1. In addition to the procedure of Experiment 1, we asked each participant the following question: “How many chips do you expect the other will give to you?” Whereas one half of the participants received this question before making their own decision; the other half received this question after making their own decision<sup>7</sup>. All participants understood the task structure and, therefore, no additional data were excluded. Afterwards, participants also had to fill out a post-experimental questionnaire. None of the participants indicated any suspicion on the priming procedure or on any relatedness among the different tasks of the experiment. Finally, after making their decisions, participants were thanked for their participation and debriefed

## Results

### Expectations of partner’s cooperation

We conducted a 2 (social value orientation: pro-social vs. pro-self) x 2 (consistency: high vs. low) x 3 (primes: morality vs. neutral vs. might) between-subjects ANOVA on expectations of partner’s cooperation. This analysis revealed two significant main effects. We obtained the predicted main effect of primes,  $F(2, 174) = 61.39, p < .001$ . In line with Hypothesis 1, planned comparisons revealed that morality primes elicited higher expectations of partner’s cooperation than neutral primes ( $M = 2.93$  vs.  $M = 2.26$ ),  $F(1, 174) = 20.86, p < .001$ , and that might primes elicited lower expectations of partner’s cooperation than neutral primes ( $M = 1.30$  vs.  $M = 2.26$ ),  $F(1, 174) = 41.64, p < .001$ .

There was also a significant main effect of social value orientation,  $F(1, 174) = 7.74, p < .01$ , which revealed that pro-socials ( $M = 2.33$ ) expected significantly more cooperation from their partners than pro-selfs ( $M = 1.99$ ). A planned comparison revealed that there was a significant difference between pro-socials and pro-selfs at the neutral priming level ( $M = 2.56$  vs.  $M = 1.96$ ),  $F(1, 174) = 8.08, p < .01$ . No such difference emerged at the morality priming level ( $M = 2.96$  and  $M = 2.90$ ),  $F(1, 174) < 1, ns$ , and only a marginally significant difference was found at the might priming level ( $M = 1.48$  and  $M = 1.13$ ),  $F(1, 174) = 2.84, p < .10$ . In line with Hypothesis 3, the difference between pro-socials and pro-selfs was significantly larger at the neutral priming level than at the morality priming level,  $t(123) = 3.89, p < .001$ , and than at the might priming level,  $t(122) = 1.74, p < .05$ . The difference between pro-social and pro-

selfs was also significantly larger at the might priming level than at the morality priming level,  $t(121) = 2.09, p < .05$ .

#### Own cooperative behavior

We conducted a 2 (social value orientation: pro-social vs. pro-self) x 2 (consistency: high vs. low) x 3 (primes: morality vs. neutral vs. might) between-subjects ANOVA on own cooperative behavior in the give-some task. This analysis revealed the presence of two significant main effects. First, a main effect of social value orientation,  $F(1, 174) = 35.59, p < .001$ , indicated that pro-socials ( $M = 2.22$ ) cooperated more than pro-selfs ( $M = 1.38$ ). Second, a main effect of primes,  $F(2, 174) = 30.99, p < .001$ , revealed that morality primes ( $M = 2.37$ ) elicited significantly more own cooperative behavior than neutral primes ( $M = 1.98$ ), while might primes ( $M = 1.06$ ) elicited significantly less own cooperative behavior than neutral primes.

---

Insert Figure 2 about here

---

Replicating the pattern found in Experiment 1, we also obtained a significant three-way interaction between social value orientation, consistency, and primes,  $F(2, 174) = 9.72, p < .001$ . The means of this interaction, together with the expectation means, are represented in Figure 2. To test Hypothesis 4, we conducted two planned comparisons at the neutral priming level. A first planned comparison revealed that high consistent pro-socials behaved more cooperatively than high consistent pro-selfs in the neutral priming condition ( $M = 2.47$  vs.  $M = 1.75$ ),  $F(1, 92) = 4.35, p < .05$ . A second planned comparison revealed that low consistent pro-socials behaved more cooperatively than low consistent pro-selfs in the neutral priming condition ( $M = 2.20$  vs.  $M = 1.48$ ),  $F(1, 80) = 4.28, p < .05$ . As a consequence, Hypothesis 4 is clearly supported.

To test Hypothesis 5, we performed two planned comparisons. A first planned comparison revealed that high consistent pro-socials and low consistent individuals cooperated more in the morality priming condition than in the neutral priming condition, ( $M = 2.96$  vs.  $M = 2.06$ ),  $F(1,174) = 20.95, p < .0001$ . A second planned comparison revealed that high consistent pro-socials and low consistent individuals cooperated less in the might priming condition than in the neutral priming condition, ( $M = 1.10$  vs.  $M = 2.06$ ),  $F(1,174) = 22.74, p < .0001$ . These results provide unambiguous

support for Hypothesis 5. A planned comparison of morality and might primes versus neutral primes for high consistent pro-selfs also confirmed Hypothesis 6. High consistent pro-selfs cooperated less in the morality and might priming conditions than in the neutral priming condition, ( $M = 0.78$  vs.  $M = 1.75$ ),  $F(1, 174) = 11.00$ ,  $p < .01$ .

#### Relationship between expectations of partner's cooperation and own cooperative behavior

Correlations were calculated to explore the relationship between expectations of partner's cooperation and own cooperative behavior (see Table 1). All correlations, except the correlation for high consistent pro-selfs in the neutral priming condition,  $r = -.16$ , ns,  $N = 16$ , were significant. The correlation between expectations and behavior for high consistent pro-selfs in the morality priming condition was strongly negative,  $r = -.81$ ,  $p < .0001$ ,  $N = 16$ . All the other correlations were strongly positive and ranged between .58 and .93. Such a pattern is highly supportive of Hypothesis 7.

---

Insert Table 1 about here

---

#### Discussion

With respect to participants' cooperative behavior, we replicated the results of Experiment 1. Moreover, we extended the results of Experiment 1 by showing that social value orientation and situation-specific features combined to influence participants' expectations of partner's cooperation. Specifically, the effect of social value orientation on expectations was only significant at the neutral priming level but not at the morality priming level or the might priming level. In these conditions, the situation-specific features simply overrode the dispositional influences on expectations.

A remarkable finding is that expectations of partner's cooperation assimilated to the primes for all subjects. This highlights an important result of our study: Whereas expectations held by high consistent pro-selfs assimilated to morality primes, their behavior did not. A strong negative correlation between the expectations and the behavior of high consistent pro-selfs also corroborated this contrast reaction. This means that the more high consistent pro-selfs believed their partner to be cooperative the more they exploited him or her.

High consistent pro-socials and low consistent individuals all showed strong positive correlations between expectations of partner's cooperation and own cooperative behavior. This confirms that for these individuals expectations are an important ingredient for regulating behavioral assimilation<sup>8</sup>. High consistent pro-selfs in the neutral priming conditions are less affected by expectations and generally behaved in a non-cooperative manner. High consistent pro-selfs are more affected by expectations in the morality and might priming conditions. The strong positive correlation in the morality priming condition and the strong negative correlation in the might priming condition showed that these individuals were strongly inclined to, respectively, compete with non-cooperative others and exploit cooperative others.

The results of Experiment 2 thus provide encouraging support for our explanation of the results of Experiment 1 in terms of an expectation formation process. In the remaining experiments, we investigated whether this pattern could also be replicated when subliminal rather than supraliminal priming is used (Experiment 3) and when a N-person dilemma game is proposed (Experiment 4).

### EXPERIMENT 3

In Experiment 3 we wanted to investigate whether the priming effects on expectations of partner's behavior could also be obtained in a context that relies on unconscious priming. This would dispel possible doubts about the impact of demand characteristics and the conscious or strategic nature of the obtained priming effects (Bargh & Chartrand, 2000). We tried to replicate the results of Experiment 2 using subliminal priming. Compared to Experiment 2, we omitted the neutral primes and only used morality and might primes.

#### Method

##### Participants and design

One hundred forty students at the Katholieke Universiteit Leuven participated in the experiment as partial fulfillment of course requirements. Two participants were nonnative Dutch speakers and their data were excluded from all subsequent analyses. The experimental design included three between-subjects factors: social value orientation (pro-social vs. pro-self), consistency (high vs. low), and primes (morality vs. might). As in Experiment 2, we assessed our participants' expectations of partner's cooperation and their own cooperative behavior in a 2-person prisoner's dilemma game.

### Procedure and materials

The same procedure as in previous experiments was followed. Of the 138 participants, 64 could be identified as pro-socials and 68 could be identified as pro-selfs. Six participants could not be identified because of an orientation vector of exactly 22.5°. The average level of consistency was 86.1%. Of the remaining 132 participants, 67 were labeled as high consistent individuals and 61 were labeled as low consistent individuals. Four additional participants were discarded from the analysis because they exhibited a consistency score between 85% and 90% or because they had a consistency score that was less than 60%. A total of 128 participants remained for the analyses. Thirty-two participants were classified as high consistent pro-socials, 30 participants as low consistent pro-socials, 35 participants as high consistent pro-selfs, and 31 participants as low consistent pro-selfs.

After performing the filler-task, participants were confronted with a subliminal priming experiment. Participants were randomly assigned to one of two priming conditions (morality vs. might primes). They were seated in front of a computer screen and told that they were going to perform a lexical decision task. A series of letters strings was going to be presented on the screen and participants had to indicate after each presentation of a letter string whether this string was an existing word or not. The participants were informed that each presentation would be very brief. The lexical decision task started with 6 practice trials, followed by 30 experimental trials. On each trial, a fixation point first appeared on the computer screen. Participants had to press the key '2' to start the presentation of a letter string. This letter string remained on the screen for 27 ms. and was immediately replaced by a mask ('XQFBZRMQWGBX'), which remained on the screen for 225 ms. After each trial, participants faced a blank screen and were asked to indicate their decision by pressing a key on the keyboard ('1' for an existing word, '3' for a non-word). Once the answer was given, a new fixation point appeared on the screen after a 1500 ms. pause. The same morality and might primes as in Experiments 1 and 2 were used. All these words were used once. Hence, the thirty experimental trials consisted of fifteen prime-words and fifteen non-words. The six practice trials and the thirty experimental trials were randomized for each participant.

After participants completed the lexical decision task, they took part in the same fictitious 2-person give-some game as in Experiments 1 and 2. Counterbalanced with the question about own choice, we also asked each participant about his/her

expectations of their partner's cooperation. All participants understood the task structure and, therefore, no additional data were excluded. A post-experimental questionnaire ascertained that participants could not retrieve any of the presented primes. Finally, after making their decisions, participants were thanked for their participation and debriefed.

## Results and discussion

### Expectations of partner's cooperation

A 2 (social value orientation: pro-social vs. pro-self) x 2 (consistency: high vs. low) x 2 (primes: morality vs. might) between-subjects ANOVA on expectations of partner's cooperation was conducted. This analysis revealed the presence of two significant main effects. First of all, a main effect of social value orientation,  $F(1, 120) = 8.32, p < .01$ , indicated that pro-socials ( $M = 2.01$ ) had higher expectations of partner's cooperation than pro-selfs ( $M = 1.59$ ). Subsequent planned comparisons revealed that this main effect was due to a significant difference between pro-socials and pro-selfs at the morality priming level, ( $M = 2.96$  vs.  $M = 2.31$ ),  $F(1, 120) = 9.46, p < .01$ , while there was no significant difference at the might priming level ( $M = 1.06$  and  $M = 0.88$ ),  $F(1, 120) < 1, ns$ . Second, a main effect of primes,  $F(1, 120) = 126.05, p < .001$ , revealed that morality primes ( $M = 2.63$ ) elicited higher expectations of partner's cooperation than might primes ( $M = 0.97$ ).

### Own cooperative behavior

We conducted a 2 (social value orientation: pro-social vs. pro-self) x 2 (consistency: high vs. low) x 2 (primes: morality vs. might) between-subjects ANOVA on own cooperative behavior. This analysis revealed three significant main effects. First of all, we obtained a main effect of social value orientation,  $F(1, 120) = 27.30, p < .0001$ . Pro-socials ( $M = 1.95$ ) displayed more cooperation than pro-selfs ( $M = 1.14$ ). Second, a main effect of consistency,  $F(1, 120) = 7.01, p < .01$ , revealed that low consistent participants ( $M = 1.75$ ) displayed more cooperative behavior than high consistent participants ( $M = 1.34$ ). Primes showed a third significant main effect,  $F(1, 120) = 81.89, p < .001$ , indicating that morality primes ( $M = 2.24$ ) elicited more own cooperative behavior than might primes ( $M = 0.85$ ).

---

Insert Figure 3 about here

---

There was also a significant three-way interaction between social value orientation, consistency, and primes,  $F(1, 120) = 18.43, p < .001$ . Figure 3 presents the means of this interaction, together with the expectation means. A planned comparison revealed that high consistent pro-socials and low consistent individuals cooperated more in the morality priming condition ( $M = 2.77$ ) than in the might priming condition ( $M = 0.88$ ),  $F(1, 120) = 111.04, p < .001$ . Another planned comparison revealed that there was no significant difference for high consistent pro-selfs between the morality and the might priming condition, ( $M = 0.64$  and  $M = 0.77$ ),  $F(1,120) < 1, ns$ .

#### Relationship between expectations of partner's cooperation and own cooperative behavior

As in Experiment 2, we calculated correlations between expectations of partner's cooperation and own behavior. All these correlations were statistically significant. The correlation between expectations and behavior for high consistent pro-selfs in the might priming condition was strongly negative,  $r = -.74, p < .001, N = 17$ . All the other correlations were strongly positive and ranged between .66 and .89. Correlations are presented in Table 2.

---

Insert Table 2 about here

---

In Experiment 3, we again obtained evidence showing that expectations of partner's cooperation assimilated to the primes, even if participants were unaware of the priming influence. Low consistent pro-selfs showed strong behavioral assimilation to beliefs of the partner, as did both groups of pro-socials. High consistent pro-selfs however displayed the same degree of own cooperative behavior in the morality and might priming conditions. The strong correlations showed that expectations of partner's cooperation were an important ingredient in their decisions, either to compete with a non-cooperative partner (positive correlation) or to exploit a cooperative partner (negative correlation).

## EXPERIMENT 4

In Experiment 4, we tried to obtain further support for the idea that expectations are spontaneously formed and play an important role in mixed-motive interdependence situations. To obtain additional evidence we investigated whether this expectation formation process also occurs in a N-person mixed-motive game context. There is a lot of evidence that expectations play an important role in a 2-person game (e.g., De Bruin & Van Lange, 1999; Kelley & Stahelski, 1970; Van Lange & Kuhlman, 1994). We raised the question whether individuals in a N-person game also spontaneously form expectations of other persons' cooperation. There is not much evidence regarding whether expectations have an important information function in a N-person game just like in the 2-person game (for some evidence see Kuhlman & Wimberley, 1976). Research also remains silent as to how expectations of others' cooperation in a N-person game affect own cooperative behavior. In the present experiment, we investigated whether participants spontaneously create expectations of other individuals' cooperation and whether one's own cooperative behavior is strongly related to these expectations.

We told our participants that they would participate in a 10-person divisible public-good game. Apart from the number of individuals involved in the game, there is another difference with the game used in previous experiments. In a 2-person game, one has to give to the partner and vice versa. Given chips are considered as a loss. In the 10-person game, participants were told that they had to give to the group as a whole (the value of what they gave would be doubled). Afterwards, the monetary value of the group total would be divided by the number of individuals involved in the game (i.e., 10). This means that every participant would receive back one fifth of the original value of every own given chips. This game had every characteristic of a dilemma game (Dawes, 1980): non-cooperation always yields higher outcomes than cooperation and mutual cooperation is always better than mutual non-cooperation.

### Method

#### Participants and design

One hundred sixty-seven students at the Katholieke Universiteit Leuven participated in the experiment as partial fulfillment of course requirements. All were native Dutch speakers. The experimental design included the same three between-subjects factors as in Experiments 1 and 2. We also assessed expected cooperation of

all the other participants in the 10-person game and the participant's own cooperative behavior.

### Procedure and materials

We followed the same procedure as in the previous experiments. Of the 167 participants, 86 could be identified as pro-socials and 76 could be identified as pro-selfs. Five participants could not be identified because of an orientation vector of exactly 22.5°. The average level of consistency was 87.1%. Of the remaining 162 participants, 78 were labeled as high consistent individuals and 77 were labeled as low consistent individuals. Seven additional participants were discarded from the analysis because they exhibited a consistency score between 85% and 90% or because they had a consistency score that was less than 60%. This means that a total of 155 participants remained for the analyses. Of those remaining participants, 40 were classified as high consistent pro-socials, 41 as low consistent pro-socials, 38 as high consistent pro-selfs, and 36 as low consistent pro-selfs.

After performing the filler-experiment, participants were instructed to resolve the same Scrambled-Sentence Test as in Experiments 1 or 2. Participants were randomly assigned to one of three priming conditions (morality vs. neutral vs. might primes). After completing the priming procedure, they took part in a one-trial simultaneous 10-person give-some game. Participants were informed that they were members of a 10-person group, but they would not receive any information about the identity of their fellow group members. All group members were given four chips, which could be used to invest. The chips one did not invest would accrue totally to oneself. Each chip invested, however, would result in a group pay-off of two times the value of that chip. The total group pay-off would be divided equally among all group members. Each own chip had a value of 10 BEF. to the person himself or herself and a value of 20 BEF. to the group. Participants were told that their task was to decide how many chips (none, one, two, three, or four) they would give to the group. Maximal cooperation was to give four chips and maximal non-cooperation was to give zero chips. Participants were also told that all the other participants had to make the same decision. In reality, this game was fictitious.

We also asked each participant about his/her expectations of the other members' cooperation ("How many chips do you think the other nine members will give collectively to the group?"), which was again counterbalanced with the own choice. All

participants comprehended the task structure and, therefore, no additional data were excluded. Participants also did not indicate any suspicion on the priming procedure or on any relatedness among the different tasks of the experiment. After making their decisions, participants were thanked for their participation and debriefed.

## Results and discussion

### Expectations of partners' cooperation

A 2 (social value orientation: pro-social vs. pro-self) x 2 (consistency: high vs. low) x 3 (primes: morality vs. neutral vs. might) between-subjects ANOVA on expectations of partners' cooperation was conducted. This analysis revealed two significant main effects. A main effect of social value orientation,  $F(1, 143) = 12.31$ ,  $p < .001$ , indicated that pro-socials ( $M = 21.11$ ) expected more cooperation of the other members than pro-selfs ( $M = 18.60$ ). There was also a main effect of primes,  $F(2, 143) = 95.37$ ,  $p < .001$ . Morality primes ( $M = 25.76$ ) elicited higher expectations of partners' cooperation than neutral primes ( $M = 20.21$ ) and might primes ( $M = 13.60$ ) elicited lower expectations of partners' cooperation than neutral primes.

These two main effects were qualified by an interaction between social value orientation and primes,  $F(2, 143) = 3.50$ ,  $p < .05$ . Planned comparisons clarified this two-way interaction by showing that pro-socials had higher expectations of their partners' cooperation than pro-selfs in the neutral priming condition ( $M = 22.78$  vs.  $M = 17.61$ ),  $F(1, 143) = 17.27$ ,  $p < .0001$ , and not in the morality priming condition ( $M = 26.60$  vs.  $M = 24.92$ ),  $F(1, 143) = 1.90$ , *ns*, or in the might priming condition ( $M = 13.96$  vs.  $M = 13.25$ ),  $F(1, 143) < 1$ , *ns*. Differences in means between pro-socials and pro-selfs were larger in the neutral priming condition than in the morality priming condition,  $t(103) = 3.66$ ,  $p < .001$ , and in the might priming condition,  $t(100) = 5.31$ ,  $p < .001$ . Differences in means between pro-socials and pro-selfs did not differ between the morality priming condition and the might priming condition,  $t(101) = 1.14$ , *ns*.

### Own cooperative behavior

A 2 (social value orientation: pro-social vs. pro-self) x 2 (consistency: high vs. low) x 3 (primes: morality vs. neutral vs. might) between-subjects ANOVA was conducted on own cooperative behavior in the fictitious 10-person game. We found three significant main effects. First of all, we obtained a main effect of social value orientation,  $F(1,143) = 51.54$ ,  $p < .0001$ , which indicated that pro-socials ( $M = 2.55$ )

cooperated more than pro-selfs ( $\underline{M} = 1.65$ ). Second, we obtained a main effect of consistency,  $\underline{F}(1,143) = 9.22$ ,  $p < .01$ , showing that low consistent participants ( $\underline{M} = 2.29$ ) cooperated more than high consistent participants ( $\underline{M} = 1.91$ ). Third, we obtained a main effect of primes,  $\underline{F}(2,143) = 45.74$ ,  $p < .0001$ . Morality primes ( $\underline{M} = 2.73$ ) elicited significantly more own cooperative behavior than neutral primes ( $\underline{M} = 2.29$ ), and might primes ( $\underline{M} = 1.29$ ) elicited significantly less own cooperative behavior than neutral primes.

---

Insert Figure 4 about here

---

The three-way interaction between social value orientation, consistency and primes reached a conventional level of significance,  $\underline{F}(2, 143) = 3.94$ ,  $p < .05$ . The means for this three-way interaction, together with the expectations means, are shown in Figure 4. The exact nature of this interaction was examined by means of a series of planned comparisons.

Planned comparison calculated at the neutral priming level revealed that high consistent pro-socials cooperated more than high consistent pro-selfs ( $\underline{M} = 2.84$  vs.  $\underline{M} = 1.53$ ),  $\underline{F}(1, 143) = 18.32$ ,  $p < .001$ , and that low consistent pro-socials cooperated more than low consistent pro-selfs, ( $\underline{M} = 2.71$  vs.  $\underline{M} = 2.08$ ),  $\underline{F}(1, 143) = 4.24$ ,  $p < .05$ . For high consistent pro-socials and low consistent individuals, a planned comparison revealed that there was more own cooperative behavior in the morality priming condition ( $\underline{M} = 3.22$ ) than in the neutral priming condition ( $\underline{M} = 2.54$ ),  $\underline{F}(1, 143) = 16.34$ ,  $p < .001$ . Another planned comparison revealed that high consistent pro-socials and low consistent individuals cooperated less in the might priming condition ( $\underline{M} = 1.39$ ) than in the neutral priming condition ( $\underline{M} = 2.54$ ),  $\underline{F}(1, 143) = 42.35$ ,  $p < .001$ . Finally, we computed a planned comparison for high consistent pro-selfs comparing the morality and might priming conditions with the neutral priming conditions. This comparison was significant,  $\underline{F}(1, 143) = 3.00$ ,  $p < .05$ , and showed that high consistent pro-selfs once again cooperated less in the morality and might priming conditions ( $\underline{M} = 1.07$ ) than in the neutral priming condition ( $\underline{M} = 1.53$ ).

### Relationship between expectations of partners' cooperation and own cooperative behavior

Correlations between expectations and behavior were calculated and were all statistically significant (see Table 3). There was a negative expectation-behavior correlation for high consistent pro-selfs in the morality priming condition,  $r = -.72$ ,  $p < .01$ ,  $N = 13$ . All the other expectation-behavior correlations were positive and ranged between .59 and .85.

---

Insert Table 3 about here

---

The results of Experiment 4 clearly replicated those of Experiments 2 and 3. Individuals also spontaneously form expectations in a 10-person game context. Social value orientation and situational features jointly influenced expectations. In the morality and might priming conditions, expectations assimilated to the primes. Expectations-behavior correlations generated strong positive correlations except for high consistent pro-selfs in the morality priming condition where a negative correlation was found.

### General Discussion

#### On the role of expectations about the partner

Previous research has found that both social value orientation and situation-specific features impact on people's cooperative behavior. More recently it was suggested that social interactions in mixed-motive settings reflect a disposition  $\times$  situation interaction (Van Lange, 2000; Van Lange et al., 1997a), with dispositional influences playing a larger role in ambiguous than in unambiguous situations. Building on the work by Hertel & Fiedler (1998), we predicted that the later interaction would be more pronounced among low than high consistent individuals. Although we did not obtain the predicted statistical interaction between social value orientations and primes on cooperative behavior among the low consistent individuals, the results showed that both low consistent pro-self and low consistent pro-social individuals assimilated their behavior towards the primes, and that differences between these groups were obtained in the neutral priming condition only. We basically obtained the same pattern of data

among the high consistent individuals, with the notable exception that high consistent pro-selfs contrasted their behavior away from the morality primes.

We suggested an interpretation of the later intriguing contrastive finding in terms of an expectation formation process. We reasoned that the priming of morality concepts may have led high consistent pro-selfs to expect more cooperation from their partners, and to exploit them as a result of this impression. Results of Experiments 2, 3, and 4 confirmed our reasoning. Expectations about the partner's cooperation were significantly influenced both by participants' social value orientation and the nature of the supraliminal (Study 2 and 4) or subliminal (Study 3) primes. However, while correlations between the expectation and cooperation measures were significantly positive in all conditions, they came out significantly negative for high consistent pro-selfs primed with morality related words. This is an important finding as it shows that high consistent pro-selfs became less cooperative as they expected more cooperation from their partner. It is noteworthy that the formation of expectations occurred in a very spontaneous manner in the present research. This can be illustrated by the fact that, although expectations were measured in Experiment 2 but not in Experiment 1, we obtained the same pattern of data in both Experiments. Moreover, expectations were elicited in very unobtrusive ways in the present studies (see for instance Exp. 3, which used a subliminal priming technique).

As a whole, the present findings suggest that dispositional and situational influences may not directly impact on people's cooperative behavior in mixed-motive interdependence situations. Rather, these factors may guide people's impressions about their partner, and these impressions may in turn determine people's behavioral options. This suggestion is perfectly in line with previous empirical and theoretical work (e.g., Kelley & Stahelski, 1970; Kelley & Thibaut, 1978; Kuhlman & Wimberley, 1975; Van Lange & Kuhlman, 1994), suggesting that expectations about the partner's cooperation is a crucial antecedent of decision-making in mixed-motive situations.

#### Consistency of social value orientations

Consistency of social value orientations has rarely been investigated in the literature (see also Hertel & Fiedler, 1998). Our studies show that this factor may be an important moderator for future research on social value orientations. As we saw, high consistent pro-selfs behaved in a different manner than low consistent pro-selfs in the morality priming condition. Previous studies suggest that pro-selfs generally behave in an individualistic manner. However, it has been proposed that pro-selfs start

cooperating when they believe that the partner is a cooperative person and that his or her cooperativeness is due to moral, honest intentions (Van Lange & Kuhlman, 1994; Van Lange & Semin-Goossens, 1998). Our findings suggest that the later effect may be true for low consistent pro-selfs only. A study conducted by Smeesters, Van Avermaet, & Warlop (2001) actually tested this reasoning in a sequential dilemma game by giving participants information about personality characteristics and cooperative intentions regarding their partner. Results showed that low consistent pro-selfs but not high consistent pro-selfs reciprocated the cooperative behavior of a moral person. Hence, pro-self individuals should not be expected to all behave in the same way: the consistency of one's social orientation does make a difference.

If one focuses on the groups where behavioral assimilation was obtained (that is, the low-consistent pro-selfs, and the low and high consistent pro-social individuals), only slight differences emerged. The pro-social individuals always acted in the same manner and low consistent pro-selfs differed from the pro-socials in the neutral priming condition only. It was expected that pro-socials behaved more cooperatively than pro-self individuals in the neutral priming conditions. The interesting result is that behavioral differences vanished when the priming of morality or might concepts disambiguated the situation (more specifically, disambiguated participants' expectations about the partner). Does this mean that in unambiguous situations, pro-socials and low consistent pro-selfs should be expected to always behave in the same manner? Not necessarily. It is clear that all these individuals will generally tend to behave less cooperatively when expecting a lack of cooperation from their partner, and more cooperatively when expecting cooperation from a moral partner (Van Lange & Kuhlman, 1994; Van Lange & Semin-Goossens, 1998). Future research may however benefit from examining situations in which differences emerge among these individuals. For instance, Smeesters et al. (2001) recently found that high consistent pro-socials behave cooperatively in more types of unambiguous situations than low consistent individuals and that these individuals behave cooperatively in more types of unambiguous situations than high consistent pro-selfs.

### Biased Perception

To the best of our knowledge, the present research is the first that evidenced behavioral contrasts following the subliminal priming of concepts. Our results may thus have important implications for research on automaticity. In that literature, there is strong support to the view that subtle situational influences may have a direct impact on

social behavior (e.g., Bargh et al., 1996; Carver, Ganellen, Froming, & Chambers, 1983; Dijksterhuis & Corneille, 2001; Dijksterhuis & Van Knippenberg, 1998; for reviews see Bargh & Ferguson, 2000; Dijksterhuis & Bargh, 2001). Direct influences are assumed to operate via the activation of mentally represented traits, stereotypes, or goals (Bargh, 1997). Recently, some authors argued that some findings obtained under the automatic behavior framework may actually be explained by a biased perception principle (see Wheeler & Petty, 2001; see also Herr, 1986; Neuberg, 1988). This principle refers to a process whereby the primes would influence individuals' behavior not in an automatic fashion, but via the influence they would have on the appraisal of the situation.

Our research (together with Herr, 1986; Neuberg, 1988) suggests that biased perception processes may indeed sometimes account for what would otherwise appear as automatic behavior processes. That the subliminal priming of morality concepts elicited more cooperative behavior among some participants but less cooperative behavior among others provides a strong support for this view. The contrastive influence of the primes obtained for high consistent pro-selfs could not be accounted for by correction-based process. This correction process is likely to emerge when an individual recognizes the potential of primes to bias behavioral responses (Strack, Schwarz, Bless, Kübler, & Wänke, 1993). Specifically, individuals who enjoy sufficient attentional resources sometimes overcorrect for the mental contamination of the primes in restoring the authenticity of their responses (e.g., Corneille, Vescio, & Judd, 2000; Martin, Seta, & Crelia, 1990; Moskowitz & Skurnik, 1999).

In the present research, one may however wonder how participants could have noticed the contaminating influence of the primes. If contrastive effects have been occasionally reported in studies that relied on the classic scrambled sentences task (Corneille et al., 2000; Moskowitz & Skurnik, 1999), they have not been reported in a study that relied on a subliminal priming task. In addition, one may also wonder why correction process would have emerged only under the priming of morality concepts and only among high consistent pro-self individuals (and only at the behavioral level). One possibility is that our morality traits appeared to be more extreme to high consistent pro-selfs than to the others individuals (as it has been established that extreme primes may sometimes lead to contrastive judgments). However, the recent modelization of priming effects proposed by Moskowitz & Skurnik (1999) made it clear that only extreme exemplars (and not extreme traits) should result in contrastive effects. And, in the present study only traits were activated. For all these reasons, we strongly doubt that a contrast emerged in the present studies because of a correction for mental

contamination. Rather, there is good reasons to think that the high consistent pro-selfs primed with the morality concepts took advantage of a partner's who was appraised as particularly cooperative because of the influence of the prime.

Finally, we do certainly not mean to argue here that social behavior is alien to automatic influences. Rather, the present research suggests that in some situations biased perception may be the best explanation for behavioral effects that would otherwise appear automatic. Recently, Wheeler & Petty (2001) also argued that biased perception processes might offer a plausible explanation for some automatic behavior effects and that this explanation should be thus be considered and assessed as a plausible alternative. Future research we think should pay close attention to this possibility and design experiments to determine conditions in which primes influence behavioral choices throughout automatic or mediated processes.

### Conclusion

The present research demonstrated that transformation processes and cooperative behavior in part emerge from people's expectations about the partner. These beliefs are influenced by dispositional and situational influences, depending on the ambiguity of the situation. Furthermore, our results indicated that all individuals are to some extent sensitive to these partner-based beliefs. Expectations of partner' cooperation determine own cooperative behavior in an assimilative or contrast manner, depending on the nature and consistency of one's social value orientation. A remarkable finding in our studies is that high consistent pro-selfs were as sensitive as the other individuals to their environment and that their expectations regarding the partner's cooperation strongly influenced their decision process. They however decided to exploit their partner rather than subscribing to a norm of reciprocity that the other participants appeared to share (as indicated by the pattern of correlations between expectation and cooperation measures reported in Exp. 2, 3, and 4).

Our results only hold to first-trial social interactions. Often social interactions comprise more than one confrontation. In that case, individuals are often provided with feedback about their partner's cooperation. This feedback information may then distort the initial beliefs about partner's cooperation and people might use this information to determine their own cooperative behavior. For instance, individuals might use specific norms or strategies (e.g., Tit-for-Tat) to deal with partner's cooperation in sequential games. Future research of course should investigate how long initial beliefs, influenced by social value orientations and situation-specific features, will last.

### References:

- Allison, S.T., & Messick, D.M. (1990). Social decision heuristics in the use of shared resources. Journal of Behavioral Decision Making, 3, 195-204.
- Bargh, J.A. (1997). The automaticity of everyday live. In R.S. Wyer & T.K. Srull (Eds.), Advances in social cognition (Vol. 10, pp. 1-61). Hillsdale, NJ: Erlbaum.
- Bargh, J.A., & Chartrand, T.L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. Reis & C. Judd (Eds.), Handbook of research methods in social psychology (pp. 253-285). New York: Cambridge University Press.
- Bargh, J.A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype action on construct accessibility. Journal of Personality and Social Psychology, 50, 869-878.
- Bargh, J.A., & Ferguson, M.J. (2000). Beyond behaviorism: On the automaticity of higher mental processes. Psychological Bulletin, 126, 925-945.
- Carver, C.S., Ganellen, R.J., Froming, W.J., & Chambers, W. (1983). Modeling: An analysis in terms of category accessibility. Journal of Experimental Social Psychology, 19, 403-421.
- Corneille O., Vescio, T., & Judd, C. M. (2000). Incidentally Activated Knowledge and Stereotype Based Judgments: A Consideration of Primed Construct - Target Attribute Match. Social Cognition, 18, 377-399.
- Dawes, R.M. (1980). Social dilemmas. Annual Review of Psychology, 31, 169-193.
- De Bruin, E.N.M., & Van Lange, P.A.M. (1999). Impression formation and cooperative behavior. European Journal of Social Psychology, 29, 305-328.
- De Dreu, C.K.W., & Van Lange, P.A.M. (1995). The impact of social value orientation on negotiator cognition and behavior. Personality and Social Psychology Bulletin, 21, 1178-1188.
- Deutsch, M. (1982). Interdependence and psychological orientation. In J. Derlaga & J. Grzelak (Eds.), Cooperation and helping behavior (pp. 15-42). San Diego: Academic Press.
- Dijksterhuis, A., & Bargh, J.A. (2001). The perception-behavior expressway: Automatic effects of social perception on social behavior. In M. Zanna (Ed.), Advances in Experimental Social Psychology (Vol. 33, pp. 1-40). Hillsdale, NJ: Lawrence Erlbaum Associates.

- Dijksterhuis, A., & Corneille, C. (2001). On the relation between stereotype activation and intellectual performance. Unpublished manuscript, University of Nijmegen.
- Dijksterhuis, A., & Van Knippenberg, A. (1998). The relation between perception and behavior or how to win a game of Trivial Pursuit. Journal of Personality and Social Psychology, *74*, 865-877.
- Griesinger, D.W., & Livingston, J.W. (1973). Toward a model of interpersonal orientation in experimental games. Behavioral Science, *18*, 173-188.
- Herr, P.M. (1986). Consequences of priming: Judgment and behavior. Journal of Personality and Social Psychology, *51*, 1106-1115.
- 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*, 49-70.
- Hertel, G., & Kerr, N. (2001). Priming ingroup favoritism: The impact of normative scripts in the minimal group paradigm. Journal of Experimental Social Psychology, *37*, 316-324.
- Kelley, H.H., & Stahelski, A.J. (1970). Social interaction basis of cooperators' and competitors' beliefs about others. Journal of Personality and Social Psychology, *16*, 66-91.
- Kelley, H.H., & Thibaut, J. (1978). Interpersonal relations. New York: Wiley.
- 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*, 101-117.
- Kuhlman, D.M., & Marshello, A. (1975). Individual differences in game motivation as moderators of preprogrammed strategic effects in prisoner's dilemma. Journal of Personality and Social Psychology, *32*, 922-931.
- Kuhlman, D.M., & Wimberley, D.C. (1976). Expectation of choice behavior held by cooperators, competitors, and individualists across four classes of experimental games. Journal of Personality and Social Psychology, *34*, 69-81.
- Liebrand, W.B.G. (1984). The effect of social motives, communication and group size on behavior in an N-person multi-stage, mixed-motive game. European Journal of Social Psychology, *14*, 239-246.
- 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, 217-230.
- Liebrand, W.B.G., Jansen, R.W.T.L., Rijken, V.M., & Suhre C.J.M. (1986). Might over morality: The interaction between social values and the interpretation of decision-making in experimental games. Journal of Experimental Social Psychology, 22, 203-215.
- Liebrand, W.B.G., & Van Run, G.J. (1985). The effects of social motives on behavior in social dilemmas in 2 cultures. Journal of Experimental Social Psychology, 21, 86-102.
- Martin, L. L., Seta, J. J., & Crelia, R. A. (1990). Assimilation and contrast as a function of people's willingness and ability to expend effort in forming an impression. Journal of Personality and Social Psychology, 59, 27-37.
- MacCrimmon, K.R., & Messick, D.M. (1976). Framework for social motives. Behavioral Science, 21, 86-100.
- McClintock, C.G. (1972). Social motivation - A set of propositions. Behavioral Science, 17, 438-454.
- McClintock, C.G., & Allison, S.T. (1989). Social value orientation and helping behavior. Journal of Applied Social Psychology, 19, 353-362.
- McClintock, C.G., Kramer, R.M., & Keil, L.J. (1984). Equity and social exchange in human relationships. In L. Berkowitz (Ed.), Advances in Experimental Social Psychology (Vol. 17, pp. 183-228). New York: Academic Press.
- McClintock, C.G., & Liebrand, W.B.G. (1988). Role of interdependence structure, individual value orientation and another's strategy in social decision making: A transformational analysis. Journal of Personality and Social Psychology, 55, 396-409.
- Messick, D.M., & Cook, K.S. (1983). Equity theory: Psychological and sociological perspectives. New York: Praeger.
- Messick, D.M., & McClintock, C.G. (1968). Motivational bases of choice in experimental games. Journal of Experimental Social Psychology, 4, 1-25.
- Moskowitz, G.B., & Skurnik, I.W. (1999). Contrast effects as determined by the type of prime: Trait versus exemplar primes initiate processing strategies that differ in how accessible construct are used. Journal of Personality and Social Psychology, 76, 911-927.

- Neuberg, S.L. (1988). Behavioral implications of information presented outside of conscious awareness: The effect of subliminal presentation of trait information on behavior in the prisoner's dilemma game. Social Cognition, *6*, 207-230.
- Rusbult, C.E., & Van Lange, P.A.M. (1996). Interdependence processes. In E.T. Higgins & A.W. Kruglanski (Eds.), Social psychology: Handbook of basic principles (pp. 564-596). New York: Guilford.
- Rusbult, C.E., Verette, J., Whitney, G.A., Slovik, L.F., & Lipkus, I. (1991). Accommodation processes in close relationships: Theory and preliminary empirical evidence. Journal of Personality and Social Psychology, *60*, 53-78.
- Sattler, D.N., & Kerr, N.L. (1991). Might versus morality explored: Motivational and cognitive bases for social motives. Journal of Personality and Social Psychology, *60*, 756-765.
- Smeesters, D., Van Avermaet, E., & Warlop, L. (2001). Reciprocity and forgiveness in sequential give-some games. Unpublished Manuscript, Catholic University of Leuven.
- Strull, T.K., & Wyer, R.S., Jr. (1979). The role of category accessibility in the interpretation of information about others: Some determinants and implications. Journal of Personality and Social Psychology, *37*, 1660-1672.
- Strack, R., Schwarz, N., Bless, H., Kübler, A., & Wänke, M. (1993). Awareness of the influence as a determinant of assimilation versus contrast. Journal of Experimental Social Psychology, *23*, 53-62.
- 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*, 337-349.
- Van Lange, P.A.M. (2000). Beyond self-interest: A set of propositions relevant to interpersonal orientations. In W. Stroebe & M. Hewstone (Eds.), European Review of Social Psychology (Vol. 11, pp. 297-331). New York: Wiley.
- 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*, 1330-1344.
- Van Lange, P.A.M., & Kuhlman, D.M. (1994). Social value orientations and impressions of a partner's honesty and intelligence: A test of the might versus morality effect. Journal of Personality and Social Psychology, *67*, 126-141.

- 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*, 209-225.
- Van Lange, P.A.M., & Liebrand, W.B.G. (1991a). Social value orientation and intelligence: A test of the goal-prescribes-rationality principle. European Journal of Social Psychology, *21*, 273-292.
- Van Lange, P.A.M., & Liebrand, W.B.G. (1991b). The influence of other's morality and own social value orientation on cooperation in the Netherlands and the U.S.A. International Journal of Psychology, *26*, 429-449.
- Van Lange, P.A.M., Otten, W., De Bruin, E.N.M., & Joireman, J.A. (1997b). Development of pro-social, individualistic, and competitive orientations: Theory and preliminary evidence. Journal of Personality and Social Psychology, *73*, 733-746.
- Van Lange, P.A.M., Rusbult, C.E., Drigotas, S.M., Arriaga, X.B., Witcher, B.S., & Cox, C.L. (1997c). Willingness to sacrifice in close relationships. Journal of Personality and Social Psychology, *72*, 1373-1395.
- Van Lange, P.A.M., & Semin-Goossens, A. (1998). The boundaries of reciprocal cooperation. European Journal of Social Psychology, *28*, 847-854.
- 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*, 258-278.
- Wheeler, S.C., & Petty, R.E. (2001). The effects of stereotype activation on behavior: A review of possible mechanisms. Psychological Bulletin, *127*, 797-826.
- Wieselquist, J., Rusbult, C.E., Foster, C.A., & Agnew, C.R. (1999). Commitment, pro-relationship behavior, and trust in close relationships. Journal of Personality and Social Psychology, *77*, 942-966.

### Footnotes

---

<sup>1</sup> An individualistic transformation reflects no real outcome transformation because outcome preference is consistent with the outcomes displayed in the given matrix.

<sup>2</sup> Decomposed game techniques have been developed to measure disposition-based differences (the Triple-Dominance Technique of Social Values, e.g., Kuhlman & Marshello, 1975; Van Lange, Otten, De Bruin, & Joireman, 1997b; or the Ring Measure of Social Values, e.g., Liebrand, 1984; Liebrand & McClintock, 1988). In both techniques, participants have to make choices among various combinations of outcomes for the self versus outcomes for an imaginary other person. These techniques can indicate whether participants have a pro-social or pro-self social value orientation.

<sup>3</sup> One could argue that high consistent pro-socials might be somewhat susceptible to morality primes and high consistent pro-selfs might be somewhat susceptible to might primes (according to the might-vs.-morality phenomenon, see Liebrand et al., 1986). However, because Hertel & Fiedler (1998) did not report any findings on an interaction between social value orientation and primes, we just follow their basic finding, which suggested that high consistent individuals are not susceptible at all to primes.

<sup>4</sup> In fact, a median split matched the same distribution of participants across high and low consistency categories (for all four experiments). Moreover, different analyses using median split and a priori criteria revealed the same pattern of results.

<sup>5</sup> For all four experiments, individualists and competitors were equally distributed across low and high consistent pro-selfs.

<sup>6</sup> We never used the words cooperation, non-cooperation, pro-social behavior or pro-self behavior in the instructions.

<sup>7</sup> We found no effects of different expectation-choice orders in Experiment 2, 3 and 4. Therefore, we will not report anymore on this factor.

<sup>8</sup> Correlations were calculated with the assumption that expectations of partner's cooperation influenced own cooperative behavior. Behavior may in part influence expectations but two arguments are against this. First, we counterbalanced the order of assessing expectations and behavior. There was no order effect. Thus, making a choice did not influence the formation of expectations. Second, and more importantly, high consistent pro-selfs in the morality priming conditions showed a high degree of expected cooperation while they acted in a non-cooperative manner. If one assumes

---

that individuals used their own behavior as a basis for forming expectations, then one should expect that high consistent pro-selfs used their own non-cooperative behavior in the morality priming condition to form non-cooperative expectations of their partner. Instead, these individuals had strong cooperative expectations of their partner's cooperation. Therefore, we assume that, because all individuals' expectations assimilate to the primes, expectations of partner's cooperation have a much stronger impact on own cooperative behavior than vice versa.

**Table 1**

**Correlations Between Expectations of Partner's Cooperation and Own  
Cooperative Behavior as a Function of Social Value Orientation, Consistency and  
Primes  
Experiment 2**

Social Value Orientation	Consistency	Primes		
		Morality	Neutral	Might
Pro-social	High	.65**	.92***	.79***
Pro-self	High	-.81***	-.16	.93***
Pro-social	Low	.70**	.78***	.58*
Pro-self	Low	.72**	.63*	.80***

Note: \*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

**Table 2**

**Correlations Between Expectations of Partner's Cooperation and Own  
Cooperative Behavior as a Function of Social Value Orientation, Consistency and**

**Primes**

**Experiment 3**

Social Value Orientation	Consistency	Primes	
		Morality	Might
Pro-social	High	.89***	.80***
Pro-self	High	-.74**	.86***
Pro-social	Low	.66*	.79***
Pro-self	Low	.80***	.79***

Note: \*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

**Table 3**

**Correlations Between Expectations of Partners' Cooperation and Own  
Cooperative Behavior as a Function of Social Value Orientation, Consistency and  
Primes  
Experiment 4**

Social Value Orientation	Consistency	Primes		
		Morality	Neutral	Might
Pro-social	High	.66**	.78***	.60*
Pro-self	High	-.72**	.73**	.69*
Pro-social	Low	.72**	.84***	.59*
Pro-self	Low	.70*	.69*	.85***

Note: \*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

**Figure 1**

**Mean Cooperative Behavior as a Function of Social Value Orientation, Consistency  
and Primes**

**Experiment 1**

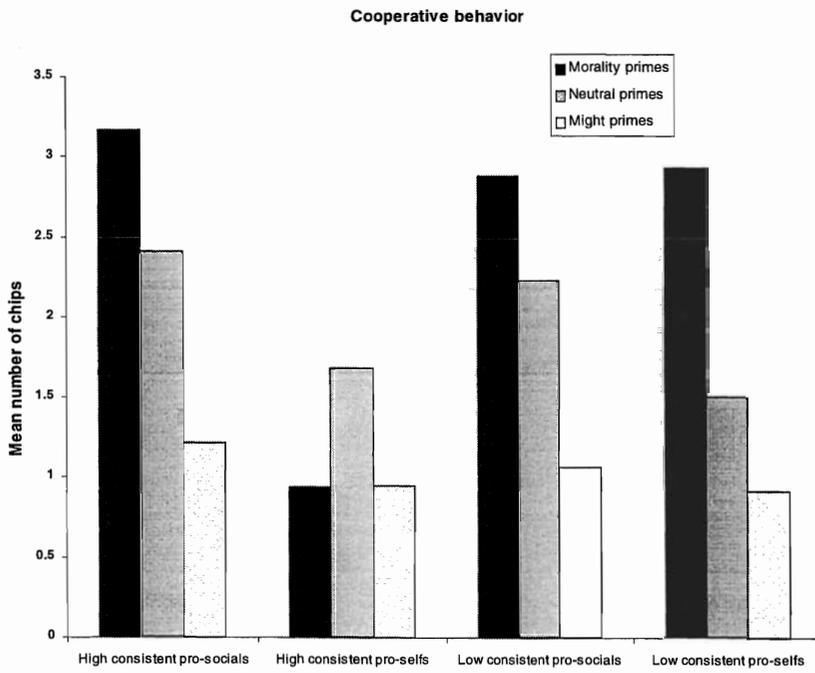
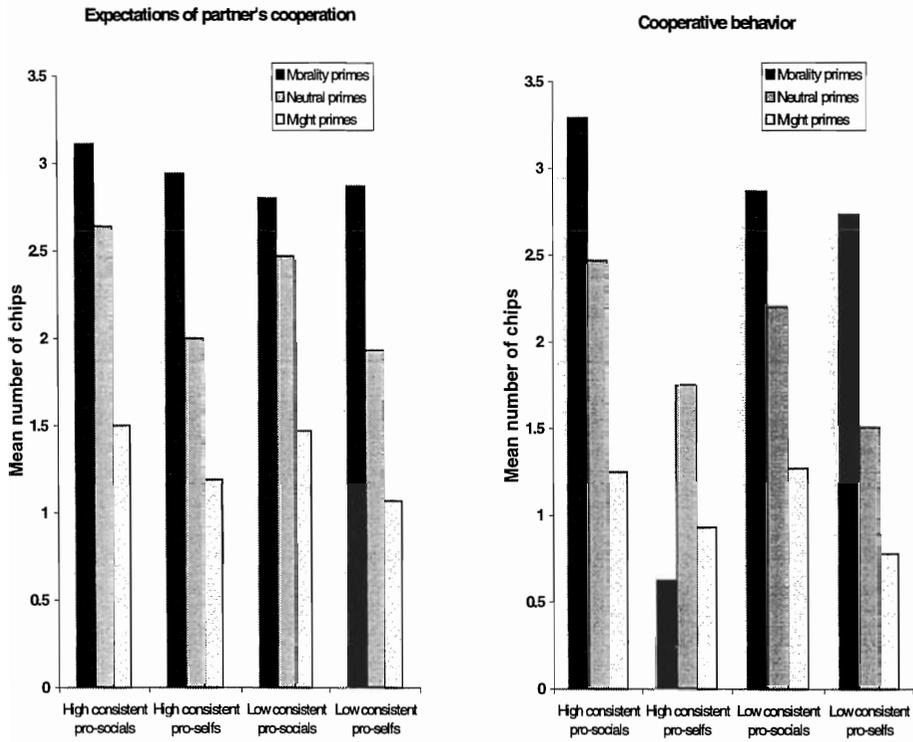


Figure 2

Mean Expectations of Partner's Cooperation and Mean Cooperative Behavior as a Function of Social Value Orientation, Consistency and Primes

Experiment 2



**Figure 3**

**Mean Expectations of Partner's Cooperation and Mean Cooperative Behavior as a Function of Social Value Orientation, Consistency and Primes**

**Experiment 3**

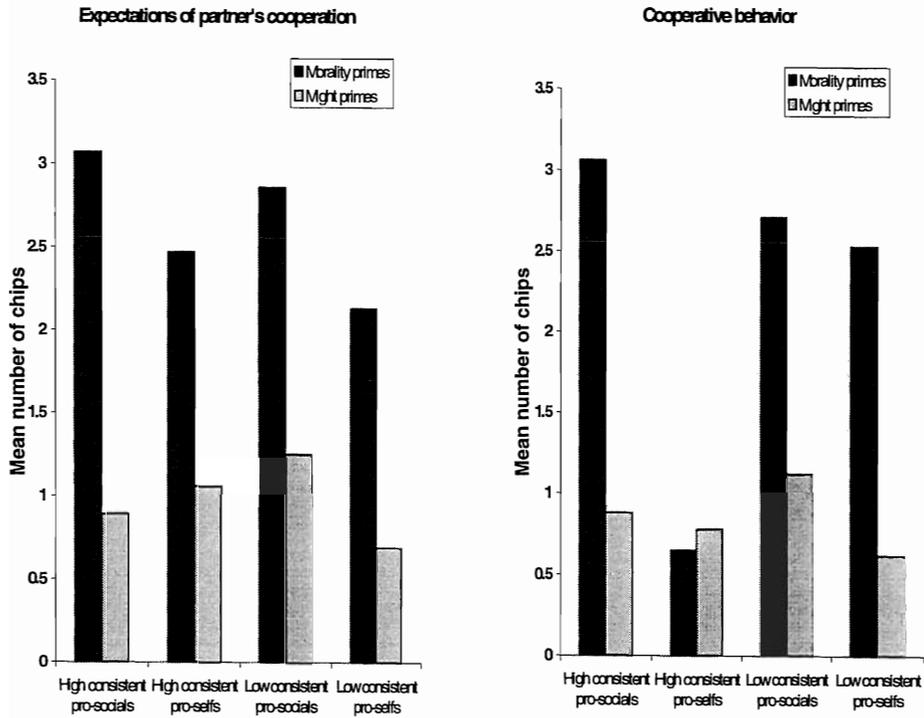


Figure 4

Mean Expectations of Partners' Cooperation and Mean Cooperative Behavior as a Function of Social Value Orientation, Consistency and Primes

Experiment 4

