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Social Value Orientations and Impressions of Partner's Honesty and Intelligence: A Test of the Might Versus Morality Effect

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This research evaluates the might vs. morality effect (Liebrand, Jansen, Rijken, & Suhre, 1986) by examining whether the manipulation of the perception of partner's honesty and intelligence interacts with the observer's own social value orientation to influence the latter's expectations regarding partner cooperation and own cooperation in a social dilemma. Results reveal that greater cooperation was expected from an honest partner than from a dishonest partner and that this effect was stronger for prosocial Ss than for individualists and competitors. Conversely, individualists and competitors expected greater cooperation from an unintelligent partner than from an intelligent partner, whereas prosocial Ss did not expect differences between these partners. Similar findings were obtained for own cooperation, although social value orientations did not interact with partner intelligence.

Considerable research has been focused on how individuals form, maintain, and organize personality impressions, revealing that people readily form impressions of others, that such impressions are fairly stable, and that such impressions frequently are organized along dimensions of social meaning, such as honesty and intelligence (e.g., for theoretical analyses, see Reeder & Brewer, 1979; Rosenberg & Sedlak, 1972; Skowronski & Carlston, 1989). However, little prior research has been concerned with the interpersonal consequences of personality impressions, even though in real-life situations, individuals frequently may use global impressions of others (e.g., new colleagues and acquaintances) in forming expectations of other's probable behavior as well as in deciding how to approach such others. Impressions may be particularly valuable in situations in which one's outcomes, at least in part, are affected by the actions of others; such beliefs may help the individual to form expectations regarding the other's probable behavior and to anticipate the ways in which own outcomes will be affected by the other (e.g., will the other come well-prepared for this meeting?). These expectations, in turn, can serve the important function of guiding the person's own behavior (e.g., how much time shall I invest in preparing for this meeting?). Accordingly, we assume that in the context of interdependent situations, individuals will value information regarding another person's personality characteristics because such information may help them to predict other's behavior and to effectively respond to the social environment (cf. Fiske, 1993; Kelley, 1972).

The current research is focused on impressions regarding the honesty and intelligence of a partner, examining how these influence the person's expectations of the partner's cooperative behavior as well as the person's own cooperative behavior. In addition, we provide a framework in which to understand how the influences of partner impressions may differ as a function of the person's social value orientation (i.e., preferences for certain patterns of self-other outcome distributions; Messick & McClintock, 1968). Accordingly, we test a series of hypotheses regarding the ways in which impressions of a partner's honesty and intelligence interact with the individual's social value orientation to determine both expectations regarding another's cooperative behavior and one's own cooperative behavior in a social dilemma task.

Interpretations of a Social Dilemma and the Role of Social Value Orientations

Cooperation between individuals frequently is examined in *social dilemmas*—interdependent situations characterized by a conflict between individual and collective interests. Such dilemmas can be construed in at least two distinct ways. First, the dilemma itself may be construed as arising from two conflicting forms of rationality (Messick & Brewer, 1983; Yamagishi, 1986). From an individual perspective, it is rational to approach others noncooperatively because a noncooperative choice always yields greater outcomes for oneself (individual rationality). Conversely, from a collective perspective, it is rational to approach others cooperatively because universal noncooperation provides poorer outcomes for everyone than universal cooperation (collective rationality). Thus, from this *rational perspective*, cooperative and noncooperative decisions are simultaneously rational and irrational, or intelligent and unintelligent, depending on the perspective one takes to rationality.

From a second perspective, social dilemmas require a deci-

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sion to either help or harm other persons, whereby helping involves some personal costs and harming involves some personal gain. Theorizing by social and behavioral scientists indeed indicates that social dilemmas involve a "conflict of human values" (Edney, 1980), norms as to how one should or ought to behave (Deutsch, 1982), and questions of morality (Van Lange & Liebrand, 1991b). Morality questions typically include a sense of obligation toward one's conspecifics and the relative absence of harming others; accordingly, a *moral perspective* fairly unambiguously indicates the goodness of cooperation and the badness of noncooperation (cf. Van Lange, Liebrand, Messick, & Wilke, 1992).

The fundamental assumption underlying the current research is that people differ in their predispositions to approach social dilemmas cooperatively or noncooperatively. As originally demonstrated by Messick and McClintock (1968), individuals systematically differ in how they evaluate outcomes for self and others. Although a variety of social value orientations can be identified (e.g., Knight, Dubro, & Chao, 1985; MacCrimmon & Messick, 1976), in the current research we focus on an empirically established three-category typology that Deutsch (1960) referred to as *cooperation*, *individualism*, and *competition*. Cooperators (also referred to as *prosocial subjects*) are concerned primarily with maximization of joint outcomes, individualists are concerned primarily with maximization of own outcomes with no regard for others' outcomes, and competitors are concerned primarily with their relative advantage over others' outcomes (e.g., Bem & Lord, 1979; Kuhlman & Wimberley, 1976; Lindskold, Walters, & Koutsourais, 1983; McClintock & Liebrand, 1988). Following Kelley and Thibaut (1978), one may assume that individuals holding different social value orientations engage in outcome transformations, reconceptualizing the "objective" or given interdependent situations according to their predominant motivation. The underlying argument is that prosocial subjects primarily attach significance to the cooperative properties of an interdependent situation and define the situation in terms of the availability of a solution that is best for all. Individualists and competitors, however, primarily attend to the egocentric or competitive properties of an identical situation and define the situation in terms of the availability of a solution that is best for themselves, either in absolute terms (i.e., doing well, irrespective of others' outcomes—individualists) or in relation to other persons (i.e., doing better than others irrespective of own outcomes—competitors).

Empirical research has indeed supported the construct validity of these differences in social value orientation by demonstrating both motivational and perceptual differences among prosocials, individualists, and competitors (e.g., Kuhlman, Brown, & Teta, 1992; Liebrand, Jansen, et al., 1986; McClintock & Liebrand, 1988; Sattler & Kerr, 1991). These experiments have used so-called *iterated game situations*, in which a subject is interdependent with another person over a series of trials, and have examined the moderating influence of social value orientations on own choice behavior and judgments of (preprogrammed) partners pursuing cooperative, noncooperative, or tit-for-tat strategies (i.e., a strategy of beginning with a cooperative choice and subsequently imitating the previous choice made by the partner; cf. Axelrod, 1984). These studies have provided support for motivational differences underlying social value orientations in that (a) prosocial subjects are very willing to cooperate, so long as it is reciprocated by the partner, (b) individualists are not willing to cooperate, tend to take advantage of cooperative partners, but do cooperate if there are obvious selfish reasons for doing so (e.g., if the partner follows a tit-for-tat strategy), and (c) competitors are not willing to cooperate regardless of the partner's strategy.

The aforementioned studies have also revealed that social value orientations reflect perceptual differences by demonstrating that individuals with differing social value orientations make substantially different inferences regarding partners who behave cooperatively or noncooperatively in iterated social dilemmas or related game situations (e.g., Kuhlman et al., 1992; Liebrand, Jansen, et al., 1986; McClintock & Liebrand, 1988; Sattler & Kerr, 1991). Specifically, relative to individualists and competitors, prosocial subjects perceive others primarily in terms of morality (e.g., good vs. bad or honest vs. dishonest), viewing a cooperative partner as more moral than a noncooperative partner. Conversely, relative to prosocial subjects, individualists and competitors perceive cooperative and noncooperative partners more in terms of "might" (e.g., intelligent vs. unintelligent or strong vs. weak), viewing a cooperative partner as less intelligent and less powerful than a noncooperative partner. These perceptual differences have been referred to as the *might versus morality effect* (Liebrand, Jansen, et al., 1986), consistent with the assumption that social value orientations affect interpretations of situations of social interdependence. Whereas prosocials define the social dilemma primarily as a situation in which good or bad, or moral or immoral, choices can be made, individualists and competitors are more likely to define it as a situation in which intelligent or unintelligent and strong or weak choices can be made.

Extensions of Prior Research

Generally, the current research extends work in social dilemmas by linking the person perception dimensions of honesty and intelligence to the cognitive (i.e., expectations of partner cooperation) and behavioral (i.e., cooperative choice) processes that are the central focus in this domain. Moreover, it extends research on person perception by directly assessing the expectational and behavioral consequences of these personality impressions (i.e., this literature has been focused on the formation of impressions; cf. Skowronski & Carlston, 1989). More specific extensions are relevant to social value orientations—the might versus morality effect, in particular—which we describe in the following paragraphs.

First, previous research has been focused on the perceptual differences associated with social value orientation by examining its moderating role on impression formation of partners who behave cooperatively or noncooperatively. Whereas this prior work was focused on the antecedents of might versus morality impressions (i.e., the partner's cooperative vs. noncooperative behavior), the current study examines this process in reverse. How does social value orientation moderate the expectational consequences of personality impressions? Moreover, in prior research, subjects formed impressions on the basis of one

piece of information (e.g., partner's cooperative or noncooperative behavior), whereas in the current research, subjects are provided simultaneously with information about the honesty and intelligence of the partner so as to examine the relative weight or importance subjects assign to each type of information.

Second, virtually all previous research on the might versus morality effect has used iterated social dilemmas in which subjects are allowed to respond to each other's prior choices. In these situations, cooperative and noncooperative choices may be made for a variety of reasons, including not only motives that parallel social value orientations, but also tactics or strategic considerations (e.g., making a noncooperative choice to signal to a noncooperative partner one's reluctance to be exploited). The current research is focused on the motivational underpinnings of cooperative and noncooperative behavior, controlling for tactics and strategic considerations by examining a single-trial social dilemma in which two subjects simultaneously make only one choice.

Third, several findings obtained in prior research using iterated social dilemmas may be explained by the partner's strategy as well as by the presumed origins of these strategies (e.g., might vs. morality). For example, the well-documented tendency of individualists and competitors to exploit cooperative partners (i.e., partners programmed to be unconditionally cooperative) may be explained by partner's exploitability (i.e., unconditional cooperation) as well as by the attributed causes of that fact (i.e., partner's lack of intelligence). These findings raise an interesting question as to whether individualists and competitors exhibit the same noncooperative tendencies when they believe that cooperative intentions should be explained in more desirable terms, for example as an expression of partner's honesty. Because the current research manipulates impressions of partner's honesty and intelligence independently of the partner's actual behavior, a person's cooperative behavior could only be influenced by the impressions of the partner or the expectations based on these impressions. This allows us to more directly examine how the behavior of prosocials, individualists, and competitors is influenced by these impressions.

Effects of Perceived Honesty and Intelligence of a Partner on Expectations

The first purpose of the present research is to examine the moderating influence of social value orientations on the relationship between perceptions of a partner's honesty and intelligence and expectations of the partner's cooperation. On the basis of the might versus morality effect, we propose that there are important individual differences in the relative importance—or relative weights—that individuals assign to morality and intelligence information. If prosocials tend to interpret the social dilemma as a situation in which moral or immoral decisions can be made, then information indicative of a partner's morality should be more meaningful and relevant to prosocials than to individualists and competitors. Prosocials are therefore hypothesized to assign more weight than individualists and competitors to information about a partner's honesty. Hence, relative to the expectations of individualists and competitors, prosocials' expectations of a partner's cooperation are predicted to be more strongly influenced by varying levels of a partner's honesty (Hypothesis 1).

Conversely, if individualists and competitors interpret the social dilemma more strongly as a situation in which intelligent or unintelligent, strong or weak decisions can be made, then information indicative of a partner's might should be more meaningful and relevant to individualists and competitors than to prosocials. Individualists and competitors are therefore hypothesized to assign more weight than prosocials to information about a partner's intelligence. Hence, relative to prosocials' expectations, individualists' and competitors' expectations about a partner's cooperation are predicted to be more strongly influenced by varying levels of a partner's intelligence (Hypothesis 2).

In addition to weighting, we propose that social value orientations may affect interpretations of personality information in the context of social dilemmas; that is, the direction in which information affects expectations of a partner's behavior. Because intelligence information carries a relative, or ambiguous, meaning in social dilemmas, we propose that interpretations of intelligence information will differ depending on individuals' social value orientations. Specifically, intelligence reflects an aspect of the might dimension that is directly related to the conflict between individual and collective rationality. Following the goal-prescribes-rationality principle, we assumed that prosocial subjects perceive rational behavior primarily from the collective perspective, whereas individualists and competitors perceive rational behavior primarily from the individual perspective. Prosocial subjects should stress collective rationality more than individual rationality, so they should perceive a positive relationship between cooperation and intelligence. Conversely, individualists and competitors should stress individual rationality more than collective rationality and should therefore perceive a negative relationship between cooperation and intelligence. According to this principle, prosocial subjects should expect greater cooperation from a high-intelligence partner than from a low-intelligence partner, whereas individualists and competitors should expect greater cooperation from a low-intelligence partner than from a high-intelligence partner (Hypothesis 3).

Effects of Perceived Honesty and Intelligence of a Partner on Own Cooperation

The second purpose of the present study is to examine the influence of expectations regarding a partner's choice behavior on the subject's own choice behavior. Previous research has demonstrated that expectations of a partner's cooperation is strongly related to a subject's own choice behavior and that the causal nature of this relationship is likely to be bidirectional. Whereas choice may cause expectations because of post hoc self-justification or because of assumed similarity (Messé & Sivacek, 1979), there is also strong evidence that expectations determine choice (cf. Kelley & Stahelski, 1970; Pruitt & Kimmel, 1977). For example, subjects are more willing to cooperate when they are led to believe that their partners will cooperate than when they are led to believe that their partners will behave noncooperatively (e.g., Liebrand, Wilke, Vogel, & Wolters,

1986; Schroeder, Jensen, Reed, Sullivan, & Schwab, 1983). Therefore, it seems reasonable to assume that, at least in part, choice is influenced by differences in expectations regarding a partner's behavior.

However, the extent to which expectations influence choice may depend on individuals' social value orientations. As described earlier, previous research has indicated that prosocial subjects are primarily concerned with outcomes associated with mutual cooperation but will react to exploitation by choosing noncooperatively (cf. behavioral assimilation, Kelley & Stahelski, 1970). The expectation of cooperative behavior by a partner should therefore be an important ingredient in their decisions. Individualists and competitors, on the other hand, are most interested in the maximization of own or relative outcomes, which in social dilemmas can be obtained by choosing noncooperatively regardless of how a partner is likely to behave. Therefore, expectations of a partner's cooperation should not be an important ingredient in the decisions of individualists and competitors. Hence, relative to individualists and competitors, prosocials should exhibit a greater tendency to match their choices with their expectations; individualists and competitors should be more tempted to choose noncooperatively, regardless of expectations regarding a partner's probable behavior.

In addition to the influence of expectations, we propose that cooperative choice behavior may also be affected by the desirability of a partner's characteristics. Previous research has demonstrated that people are more cooperative and helpful toward others characterized by desirable attributes than toward those who possess undesirable attributes (e.g., Chiu, 1989; Eisenberg & Miller, 1987). One explanation for this effect is that individuals perceive themselves as more similar to others described in positive terms than to others described in negative terms (cf. Wood, 1989) and that these perceived differences in similarity influence prosocial behavior (cf. Kaufman, 1967; Pruitt & Kimmel, 1977). Because such effects have been observed in studies in which others are unilaterally dependent (as opposed to interdependent), we assume that, at least to some degree, the influence of the desirability of a partner's personality characteristics is independent of the role of expectations regarding a partner's behavior. Therefore, we propose that individuals should be more willing to cooperate with a partner characterized by desirable attributes (whom they are likely to see as more similar to themselves, i.e., having high honesty and high intelligence) than with a partner characterized by undesirable attributes (whom they are likely to see as more dissimilar to themselves, i.e., having low honesty and low intelligence). This phenomenon is termed the *similarity effect*.

On the basis of the above reasoning, two hypotheses predicting interactions of social value orientations are advanced. First, prosocials, as well as individualists and competitors, should exhibit greater cooperation toward high-honesty partners than toward low-honesty partners because we predicted that all groups of social value orientations expect relatively more cooperation from high-honesty partners and because perceived honesty provides a desirable attribute underlying partner cooperation (similarity effect). However, the effect of perceived partner honesty is expected to be stronger for prosocials than for individualists and competitors (Hypothesis 4). This hypothesis is based on the greater variability in prosocials' expectations as a function of a partner's honesty (as predicted by Hypothesis 1), coupled with the greater assumed tendency among prosocial subjects to match their choices with their expectations. Second, we predict an interaction between partner's intelligence and social value orientations. Prosocial subjects should cooperate more with a high-intelligence partner than with a low-intelligence partner, because they are predicted to expect greater cooperation from a high-intelligence than from a low-intelligence partner (according to Hypothesis 3) and because of the similarity effect. Individualists and competitors are predicted to expect greater cooperation from a low-intelligence partner than from a high-intelligence partner, according to Hypothesis 3. However, they should not be strongly inclined to match their choices with these expectations because of their general tendency to choose noncooperatively and because lack of intelligence provides a rather undesirable attribute underlying partner cooperation. Thus, prosocial subjects were predicted to cooperate more with a high-intelligence partner than with a low-intelligence partner, whereas the effect of a partner's intelligence on individualists' and competitors' choice behavior should be weaker (Hypothesis 5).

Comparisons of Game Format and Culture

The third purpose of the present study is to examine the generality of our hypotheses across give-some and take-some dilemmas in which cooperation corresponds with "giving" or "refraining from taking," respectively (Hamburger, 1974). This complements prior research on the might versus morality effect because frequently, findings are based on dilemmas that are not specified as give-some or take-some (except the study of Sattler & Kerr [1991], which used a take-some dilemma). Moreover, we were interested in exploring the role of give-some versus take-some dilemmas because this variation may further affect perceptual and motivational processes in social dilemmas, even though these dilemmas are structurally equivalent. First, according to Pruitt (1967), give-some formats may evoke greater feelings of trust and norms of helping than do take-some formats; therefore, give-some dilemmas should elicit greater cooperation than take-some dilemmas (for empirical evidence, see Komorita, 1987; Komorita & Carnevale, 1992, Experiments 1 and 3; Pruitt, 1970). A second psychological difference involves decision framing in that cooperation in give-some versus take-some formats is experienced as "incurring personal costs" versus "refraining from personal gains" (Brewer & Kramer, 1986). Because losses typically loom larger than gains (Kahneman & Tversky, 1979), levels of cooperation should be greater in take-some than in give-some dilemmas (for empirical evidence, see Brewer & Kramer, 1986; Komorita & Carnevale, 1992, Experiment 2). Thus, although these findings do not reveal a convergent pattern, they do indicate that different formats may enhance different motivations or different decision frames. However, the vast majority of these studies have used iterated social dilemmas, and to our knowledge, only two studies have used single-trial social dilemmas, neither of which revealed significant differences (Rutte, Wilke, & Messick, 1987; Schwartz-Shea & Simmons, 1986). Also, none of the above research has in-

cluded social value orientations as a possible moderating variable. However, social value orientations may be important in this regard because feelings of trust may be more important to prosocials than to individualists and competitors and because compared with individualists and competitors, framing among prosocials should not be based on own (or relative) costs or gains, but on the joint costs and gains. Thus, in an exploratory vein, the current research attempts to contribute to these lines of reasoning by examining format effects in single-trial social dilemmas and by considering the possible moderating role of social value orientations.

Finally, we explored the generality of our hypotheses across American and Dutch samples, allowing us also to examine whether the distribution of social value orientation, as well as the effects of impressions of partner's honesty and intelligence would differ as a function of culture. This complements prior research suggesting that the development of social value orientations may be related to some cultural differences (e.g., Toda, Shinotsuka, McClintock, & Stech, 1978; Liebrand & Van Run, 1985) and that moral considerations may be less important and intelligence considerations more important in the United States than in some European countries (Kelley et al., 1970).

Method

Subjects and Experimental Design

One hundred seventy-three men and 176 women participated in the experiment, which was conducted simultaneously at the University of Delaware (United States) and the University of Groningen (The Netherlands). At the Delaware site, 169 students participated in partial fulfillment of an introductory psychology course requirement. At Groningen, 180 subjects (almost all of whom were students) were recruited by means of an advertisement in the university paper; each Dutch subject was paid 10 Dutch guilders (f10, approximately $4.75). The experimental design included three between-subjects factors and two within-subject factors. The between-subjects factors were social value orientation (prosocials vs. individualists vs. competitors), culture (United States vs. The Netherlands), and game format (give some vs. take some); the two within-subject factors were partner's honesty (high vs. low) and partner's intelligence (high vs. low). Two dependent measures were assessed: the level of cooperation subjects expected from a partner and the subject's actual choice behavior.

Procedure

Subjects participated in the experiment in groups of 20 to 25 persons. After they were welcomed and seated, the experimenter made introductory comments, including a request not to talk during the experiment. The experiment consisted of two tasks: (a) a series of decomposed games to assess subjects' social value orientations and (b) the social dilemma task to measure expectations of a partner's cooperation, as well as own choice behavior.

Decomposed games. Each subject's social value orientation was determined by his or her responses to a series of nine decomposed games (Messick & McClintock, 1968). Decomposed games involve making choices between specific combinations of outcomes for oneself and for a hypothetical other. Outcomes were presented in terms of points, and subjects were asked to imagine that the points had value to themselves as well as to the other person. The decomposed game measurement technique has been shown to have good internal consistency (e.g., Liebrand & Van Run, 1985) and test–retest reliability over a period of 4–6 weeks (e.g., Eisenberger, Kuhlman, & Cotterell, 1992; Kuhlman, Camac, & Cunha, 1986). Also, the measurement of social value orientations does not tend to be correlated with measures of social desirability (Platow, 1992), and there is evidence in support of the ecological validity of the three orientations measured by the decomposed game technique (e.g., Bem & Lord, 1979; McClintock & Allison, 1989).

In the current study, we administered decomposed games in which subjects were given a choice among three alternatives, each corresponding to one of the three social value orientations under study. An example is the choice among A (480 points for self and 80 points for other), B (540 points for self and 280 points for other), and C (480 points for self and 480 points for other). In this example, Choice A represents the competitive option, because it provides a larger difference between one's own and the other's outcomes (480 − 80 = 400) than either Choice B (540 − 280 = 260) or Choice C (480 − 480 = 0). Choice B represents the individualistic option because one's own outcomes are larger (540) than are those in Choice A (480) or Choice C (480). Finally, Choice C represents the prosocial option because it provides a larger joint outcome (480 + 480 = 960) than does either Choice A (480 + 80 = 560) or Choice B (540 + 280 = 820). As in previous research (e.g., McClintock & Allison, 1989; Platow, McClintock, & Liebrand, 1990), subjects were classified if they made at least six of the nine choices consistent with one of the three social value orientations (15 subjects made fewer than six consistent choices). Accordingly, 203 subjects were classified as prosocial, 91 were classified as individualistic, and 40 were classified as competitive. The distribution of the three social value orientations (98 vs. 105 prosocials, 47 vs. 44 individualists, and 19 vs. 21 competitors in the United States and The Netherlands, respectively) was found to be very similar in the two countries, $\chi^2(2, N = 334) = .33$, *ns*.

Social dilemma task. The social dilemma task we used was adopted from previous research (Van Lange & Liebrand, 1991a, 1991b). It offered the subject a choice among five options, varying systematically from most to least cooperative. For about half of the subjects, the dilemma was presented as a situation in which cooperation involved giving to the partner (give-some dilemma); for the other half, cooperation involved refraining from taking from the partner (take-some dilemma). In the give-some dilemma, each subject was asked to imagine that she or he had been given four yellow (or blue) chips and that the partner had been given four blue (or yellow) chips (the combination of colors was randomly determined). Each own chip had a value of 25¢ (or 50 Dutch cents) to the person himself or herself and a value of 50 cents (or f1) to the partner. Similarly, each chip held by the partner had a value of 25¢ to the partner and a value of 50¢ to the subject himself or herself. The subject's task was to decide how many of his or her four chips to give to the partner. Maximal cooperation is to give four chips, and maximal noncooperation is to give zero chips. In the take-some dilemma, each subject was asked to imagine that she or he had been given four yellow (or blue) chips and that the partner had been given four blue (or yellow) chips (again the color was random). Each own chip had a value of 50¢ (or f1) to the person himself or herself and a value of 25¢ (or 50 Dutch cents) to the partner. Similarly, each of the partner's chips had a value of 50¢ to the partner and a value of 25¢ to the subject himself or herself. The subject's task was to decide how many chips to take from the partner. Maximal cooperation is to take zero chips, and maximal noncooperation is to take four chips.

Thus, each form of the dilemma provides the subject with five choices, and each person's outcome is determined by the combined choices of both players. The total set of (25) payoffs to each person was presented to the subject in the form of a 5 × 5 payoff matrix, and for each form of the game, the cells of the matrix contained identical values, which are shown in Table 2. Thus, the only difference between give-some and take-some dilemmas was the nature of the cooperative act in

Table 1
Outcomes (in U.S. Dollars) for Self and Other as a Function of Own Cooperative Behavior and Other's Cooperative Behavior in the Give-Some and Take-Some Dilemmas

Row player (give/take)	Column player (give/take)				
	4/0	3/1	2/2	1/3	0/4
4/0					
R	2.00	1.50	1.00	0.50	0.00
C	2.00	2.25	2.50	2.75	3.00
3/1					
R	2.25	1.75	1.25	0.75	0.25
C	1.50	1.75	2.00	2.25	2.50
2/2					
R	2.50	2.00	1.50	1.00	0.50
C	1.00	1.25	1.50	1.75	2.00
1/3					
R	2.75	2.25	1.75	1.25	0.75
C	0.50	0.75	1.00	1.25	1.50
0/4					
R	3.00	2.50	2.00	1.50	1.00
C	0.00	0.25	0.50	0.75	1.00

Note. The column labeled *give* indicates the number of chips one subject could give to the other, and the column labeled *take* indicates the number of chips one subject could take from the other, in the give-some and take-some versions of the game, respectively. The outcome next to R is the amount the row player ends up with for a particular combination of choices; the outcome next to C is the amount the column player ends up with.

each game (giving vs. not taking). As can be seen in Table 1, the subject obtains higher outcomes to the extent that he or she gives fewer chips away (give-some dilemma) or takes more chips from the other (take-some dilemma): This defines individual rationality. Also, both individuals end up with higher outcomes to the extent that they simultaneously give more chips to each other or take fewer chips from each other (collective rationality).

After we explained the social dilemma to the subjects, we administered a 10-item questionnaire to check subjects' comprehension of the task. Three subjects failed to answer at least seven questions correctly, and therefore their data were discarded. Subjects were then told that they would make one decision along with another person whom they would never meet and with whom they would never communicate; throughout the instructions this person was referred to as *the other.* Subjects were further told that the other person was not present in the laboratory and that the subject would never know for certain the choice of the partner.

Finally, they were told that they would be making choices with a series of other persons and that each of those persons had completed a highly reliable and valid personality questionnaire, the so-called Personality Characteristics Questionnaire (PCQ), which provides measures of a number of personality characteristics, including honesty and intelligence. Subjects were told that before each decision task, they would be shown the partner's standing on each of these two dimensions.

Manipulation of perceptions of partner's honesty and intelligence. Before each social dilemma, the subject was given two PCQ scores, one corresponding to the partner's morality (honest vs. not honest) and the other corresponding to the partner's intelligence (smart vs. not smart). A low-morality (or low-intelligence) partner was presented by having a score in the lower 20% on honesty (or smartness). A high-morality (or high-intelligence) partner was presented by having a score in the upper 20% on honesty (or smartness). We used the adjectives *honesty* and *smartness* for several reasons. First, these descriptions parallel the adjectives used in prior might versus morality research (e.g., Liebrand, Jansen, et al., 1986) and reflect the dimensions of social and intellectual desirability that people tend to use to organize their personality impressions (cf. Rosenberg & Sedlak, 1972). Second, they are identical to one of two adjectives used in prior research (Van Lange & Liebrand, 1991a, 1991b) in which the effects of morality information only and intelligence information only were examined. Third, we assumed that *honesty* has a strong moral connotation, yet is sufficiently different from other morality-related adjectives such as *generosity* or *helpfulness*, which would be very closely related to the act of cooperation. Finally, we used *smartness* rather than *intelligence* because we assumed that *smartness* has a broader connotation, including both cognitive, task-related performance and social, or interpersonal wisdom.

Without indicating the number of other persons with whom they would be paired, each subject was paired with four partners (high vs. low honesty and high vs. low intelligence). The order of the four partners was randomly determined for each subject. After presenting the PCQ scores for a given person, we asked subjects to make two responses: (a) to state expectations concerning the partner's choice behavior (i.e., "How many chips do you think the other will give to [take from] you?") and (b) to indicate what choice they wished to make (i.e., "How many chips do you wish to give to [take from] the other?"). Subjects always stated their expectations before their choice because previous research on the influence of honesty information has shown virtually identical results across different expectation–choice orders (e.g., Van Lange & Liebrand, 1991b) and because expectations of a partner's cooperation were of primary interest in testing hypotheses regarding the might versus morality effect. Of the 334 classified subjects, 3 were deleted because they did not pass the social dilemma comprehension questionnaire, and 17 were deleted for failing to provide all responses. This left a total of 314 classified subjects: 189 prosocial subjects, 89 individualists, and 36 competitors.

Postexperimental questionnaire. The experiment conducted in The Netherlands included a postexperimental questionnaire, consisting of two tasks (this was deleted from the Delaware experiment because of time constraints). In the first task, subjects rated the similarity between themselves and each of four partners who varied in terms of honesty and intelligence. Ratings were made using a 100-point scale, ranging from 0 (*not at all similar*) to 100 (*completely similar*). In the second task, subjects were asked to make causal attributions regarding a cooperative target, a moderately cooperative target, and a noncooperative target. In the give-some (and take-some) dilemmas, the cooperative target was described as someone who gave four chips to the other (or took zero chips from the other), the moderately cooperative target was one who gave two chips to the other (or took two chips from the other), and a noncooperative target was one who gave zero chips to the other (or took four chips from the other). To examine the validity of the goal-prescribes-rationality principle, we measured attributions to the target's ignorance, using items similar to those in the Van Lange, Liebrand, and Kuhlman (1990) study (we also measured attributions to target's concern for others, fear, and greed).

Results

Expectations of Partner's Cooperation

For each subject, we calculated the monetary value of the chips they expected the partner to give away (give-some dilemma) or to refrain from taking (take-some dilemma). That is, the number of chips they expected the partner to give (give-some) or not to take (take-some) was multiplied by the value of each chip (25¢). By these computations, expectations of part-

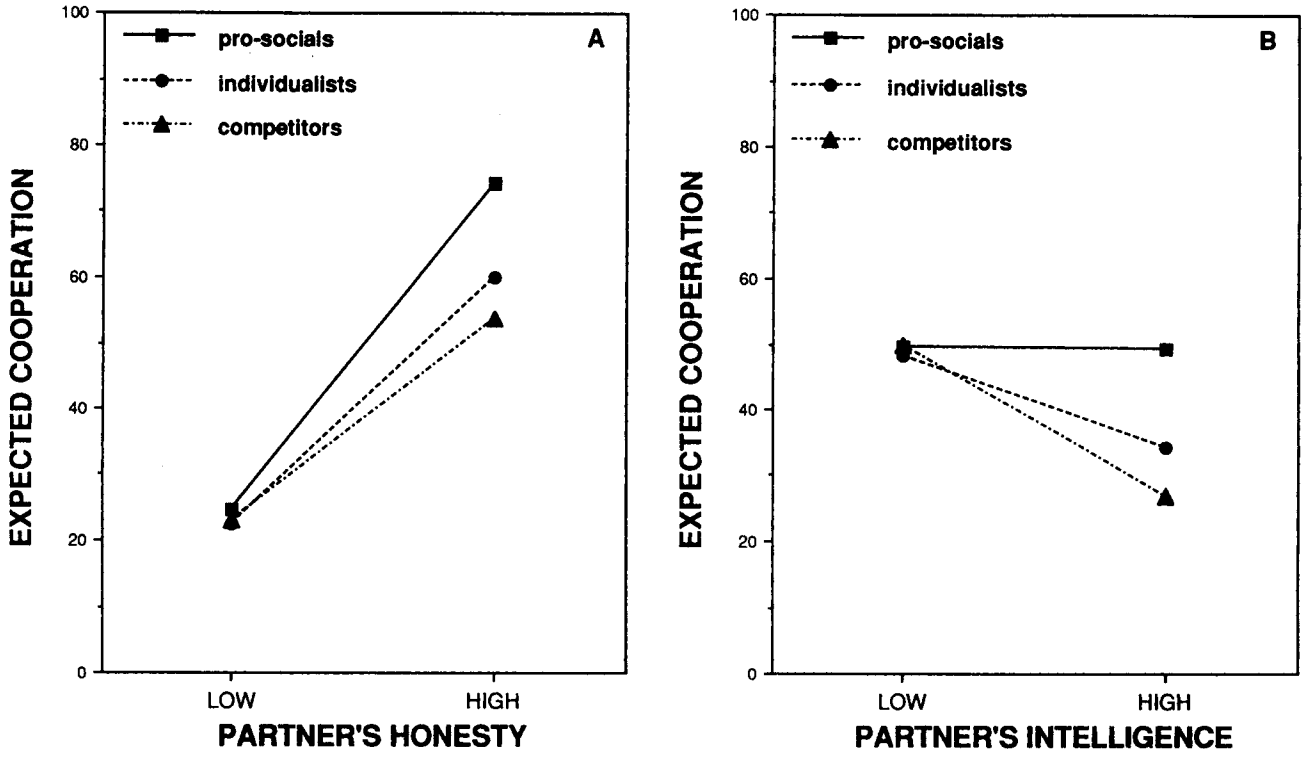

Figure 1. Expectations of partner's cooperative behavior as a function of social value orientation and partner's honesty (Panel A) and as a function of social value orientation and partner's intelligence (Panel B).

ner's cooperation can vary from 0 (0 chips given away or 4 chips taken away) to 100 (4 chips given away or 0 chips taken away). Expectations of partner cooperation were analyzed in a 3 (social value orientation: prosocials vs. individualists vs. competitors) × 2 (country: United States vs. Netherlands) × 2 (format: give-some vs. take-some) × 2 (honesty: high vs. low) × 2 (intelligence: high vs. low) analysis of variance (ANOVA), the latter two variables being within-subject factors. This analysis revealed three significant main effects: for social value orientation, $F(2, 302) = 9.36$, $p < .001$; for partner honesty, $F(1, 302) = 210.95$, $p < .001$; and for partner intelligence, $F(1, 302) = 26.34$, $p < .001$. These effects indicated that, overall, (a) more cooperation was expected by prosocial subjects ($M = 49.34$) than by individualists ($M = 41.22$) and competitors ($M = 38.37$), (b) more cooperation was expected from a high-honesty partner ($M = 67.80$) than from a low-honesty partner ($M = 23.77$), and (c) more cooperation was expected from a low-intelligence partner ($M = 49.16$) than from a high-intelligence partner ($M = 42.40$). Of primary interest, however, were the predicted interactions involving social value orientation that tested Hypotheses 1, 2, and 3.

Tests of Hypotheses 1, 2, and 3. Consistent with Hypothesis 1, the effect of partner honesty was found to be greater for prosocial subjects' expectations than for individualists' and competitors' expectations (see Figure 1A). An interaction between honesty and social value orientation, $F(2, 302) = 7.03$, $p < .001$, revealed that the expectations of prosocials ($Ms = 74.14$ and 24.54, a difference of $M = 49.60$) were influenced more by honesty than were those of individualists ($Ms = 59.97$ and 22.47, a difference of $M = 37.50$) and competitors ($Ms = 53.82$ and 22.92, a difference of $M = 30.90$). A series of pairwise comparisons confirmed that the differences due to honesty were significantly greater for prosocial subjects than for either individualists, $t(276) = 2.60$, $p < .01$, or competitors, $t(223) = 3.06$, $p < .005$. Individualists were not found to be significantly more influenced by honesty than competitors, $t(123) = .90$, *ns*. The initial ANOVA revealed no further effects associated with honesty, supporting the robustness of Hypothesis 1 across country and format.

According to Hypotheses 2 and 3, an interaction between intelligence and social value orientation was anticipated. The effect for intelligence indeed was qualified by an interaction between intelligence and social value orientation, $F(2, 302) = 9.47$, $p < .001$, in a manner consistent with Hypothesis 2. As can be seen in Figure 1B, the influence of intelligence was found to be greatest for competitors ($Ms = 50.00$ and 26.74, a difference of $M = 23.26$), followed by individualists ($Ms = 48.17$ and 34.27, a difference of $M = 13.90$), and nearly absent for prosocial subjects ($Ms = 49.47$ and 49.21, a difference of $M = 0.26$). A series of pairwise comparisons confirmed that differences due to intelligence were significantly smaller for prosocial subjects than for either individualists, $t(276) = 3.00$, $p < .001$, or competitors, $t(223) = 3.57$, $p < .001$. Competitors were not significantly more influenced by intelligence than were individualists,

$t(123) = 1.29$, *ns*. Whereas these findings are consistent with Hypothesis 2, they provide partial support for the prediction based on the goal-prescribes-rationality principle (Hypothesis 3). Although individualists and competitors expected less cooperation from a high-intelligence partner than from a low-intelligence partner, we found no support for the prediction that prosocial subjects would expect greater cooperation from a high-intelligence partner than from a low-intelligence partner. Instead, prosocial subjects do not seem to use intelligence information at all (see Figure 1B).[1]

Two additional effects associated with intelligence were significant. First, the interaction between country and intelligence was significant, $F(1, 302) = 4.32$, $p < .05$, suggesting that, overall, the expectations of American subjects (*M*s = 44.23 and 50.09, a difference of $M = 5.86$) were somewhat less strongly influenced by intelligence than were those of Dutch subjects (*M*s = 40.79 and 48.35, a difference of $M = 7.56$). This finding is at odds with the results of Kelley et al. (1970), which suggest that negotiation situations are more strongly interpreted in terms of might by American subjects than by European subjects. Second, a four-way interaction involving social value orientation, country, format, and intelligence was significant, $F(2, 302) = 4.83$, $p < .01$.[2] Finally, it should be mentioned that, overall, there was no Honesty × Intelligence interaction, nor were any of the higher order interactions associated with Honesty × Intelligence significant.

Own Cooperative Behavior

As for expectations, we calculated the monetary value (varying from 0 to 100) of the chips they wished to give away (give-some dilemma) or to refrain from taking (take-some dilemma). Own cooperation was analyzed in a 3 (social value orientation: prosocials vs. individualists vs. competitors) × 2 (country: United States vs. Netherlands) × 2 (format: give-some vs. take-some) × 2 (honesty: high vs. low) × 2 (intelligence: high vs. low) ANOVA, the latter two factors being within-subject factors. This analysis revealed three main effects—for social value orientation, $F(2, 302) = 27.73$, $p < .001$; for partner honesty, $F(1, 302) = 156.66$, $p < .001$; and for partner intelligence, $F(1, 302) = 11.46$, $p < .001$. Overall, (a) prosocials chose more cooperatively ($M = 45.87$) than individualists ($M = 27.46$) or competitors ($M = 19.79$), (b) a high-honesty partner ($M = 55.10$) elicited much more cooperation than a low-honesty partner ($M = 20.22$), and (c) a high-intelligence partner ($M = 41.96$) elicited more cooperation than a low-intelligence partner ($M = 33.36$).

Tests of Hypotheses 4 and 5. Consistent with Hypothesis 4, we found a significant interaction between social value orientation and honesty, $F(1, 302) = 5.10$, $p < .001$. As can be seen in Figure 2A, the effect of honesty was stronger for prosocial subjects (*M*s = 65.54 and 26.19, a difference of $M = 39.35$) than for individualists (*M*s = 42.70 and 12.22, a difference of $M = 30.48$) or competitors (*M*s = 30.90 vs. 8.68, a difference of $M = 22.22$). Pairwise comparisons confirmed that the differences in own cooperation due to honesty were significantly greater for prosocial subjects than for either individualists, $t(276) = 2.06$, $p < .05$, or competitors, $t(223) = 2.82$, $p < .005$. Individualists were not found to be significantly more influenced by honesty than were competitors, $t(123) = 1.43$, *ns*.

No support was obtained for Hypothesis 5. The effect of intelligence did not interact with social value orientation, $F(2, 302) = 1.18$, *ns*. As can be seen in Figure 2B, the effect of intelligence on cooperative behavior was not greater for prosocials than for individualists or competitors.[3] However, there were two effects involving intelligence. First, we found a significant interaction between honesty and intelligence, $F(1, 302) = 4.84$, $p < .05$. The associated means indicate that within the high-

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[1] To provide additional tests for Hypotheses 1 and 2, we performed analyses in which for each subject we computed the absolute difference in expectations as a function of different levels (high vs. low) of honesty and the absolute difference in expectations as a function of different levels of the other within-subject factor, intelligence. These difference scores, "sensitivity to honesty" and "sensitivity to intelligence," were analyzed in an ANOVA with social value orientation, country, and format as between-subjects factors. For sensitivity to honesty, this analysis revealed only one effect, namely, a significant main effect for social value orientation, $F(2, 302) = 6.52$, $p < .005$. Consistent with Hypothesis 1, prosocial subjects ($M = 51.06$) were most sensitive to honesty information, followed by individualists ($M = 44.24$), with competitors being least sensitive ($M = 33.68$). Sensitivity to intelligence was analyzed in a parallel ANOVA, which also revealed a main effect for social value orientation, $F(2, 302) = 3.78$, $p < .05$. Consistent with Hypothesis 2, competitors ($M = 33.68$) were most sensitive to intelligence information, followed by individualists ($M = 28.23$), with prosocials being least sensitive ($M = 24.60$) to intelligence information.

[2] This 2-degrees-of-freedom interaction was decomposed into single degree-of-freedom components, based on the pairwise comparisons of prosocials versus individualists and competitors and between individualists and competitors. The four-way interaction based on the prosocials versus individualists and competitors was not significant, $F(1, 306) < 1$, *ns*, indicating that the two-way interaction between social value orientation and intelligence supporting Hypothesis 2 is robust across country and format. However, the four-way interaction with the individualists versus competitors contrast was significant, $F(1, 117) = 9.06$, $p < .005$. Examination of the means associated with this comparison showed that (a) in all cases, greater cooperation was expected from a low-intelligence partner than from a high-intelligence partner, (b) among American individualists, the effect for intelligence was more pronounced in the give-some dilemma, whereas among Dutch individualists it was most pronounced in the take-some dilemma, and (c) among American competitors, the effect for intelligence was most pronounced in the take-some format, whereas among Dutch competitors it was most pronounced in the give-some format.

[3] As for expectations, for each subject we computed the absolute difference in own cooperation as a function of different levels (high vs. low) of honesty, and the absolute difference in own cooperation as a function of different levels of intelligence. These difference scores, "responsiveness to honesty" and "responsiveness to intelligence," respectively, served as dependent measures in an ANOVA with social value orientation, country, and format as between-subjects factors. For responsiveness to honesty, this analysis revealed only one significant effect: a main effect of social value orientation, $F(2, 302) = 6.18$, $p < .005$. Consistent with Hypothesis 4, prosocial subjects ($M = 40.81$) were most responsive to morality information, followed by individualists ($M = 30.76$), with competitors being least responsive ($M = 23.61$). An identical ANOVA testing the effects on responsiveness to intelligence revealed no significant effects. The absence of an effect for social value orientation is inconsistent with Hypothesis 5.

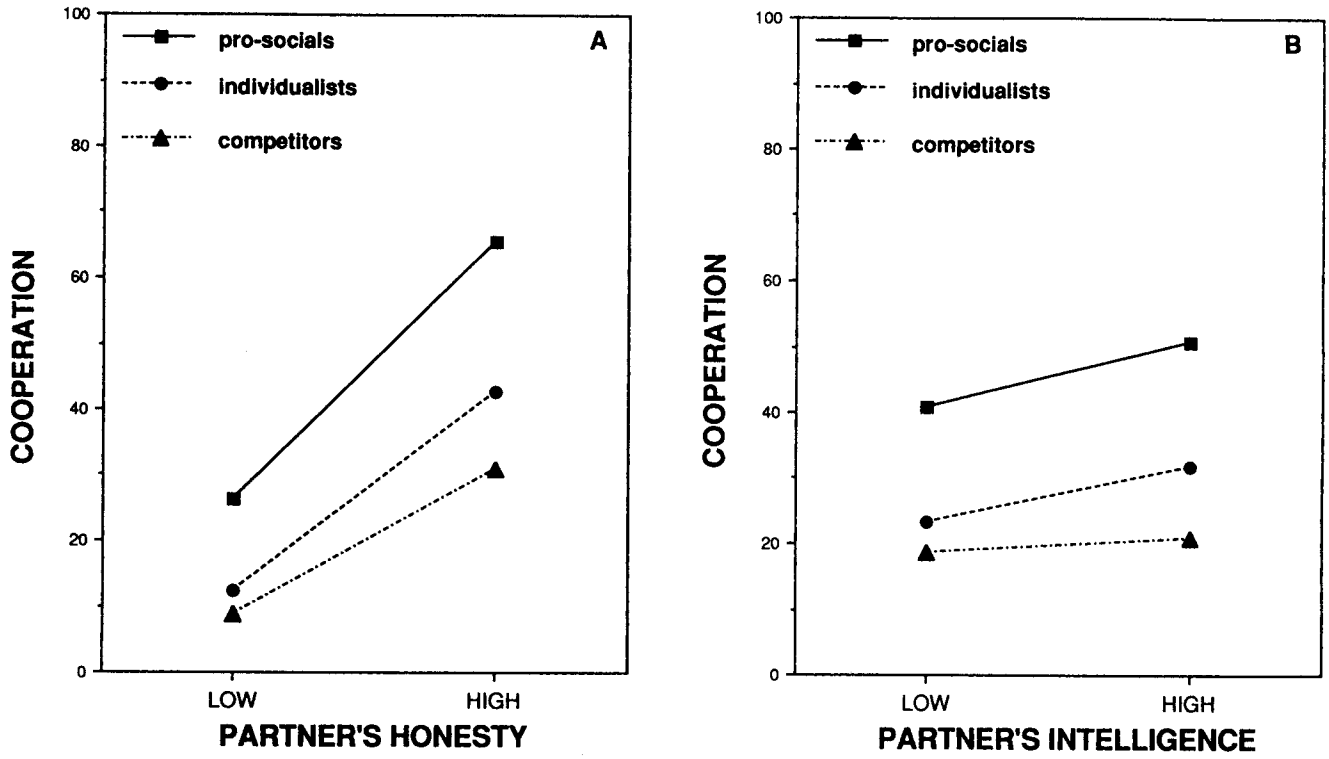

Figure 2. Own cooperative choice behavior as a function of social value orientation and partner's honesty (Panel A) and as a function of social value orientation and partner's intelligence (Panel B).

honesty condition, intelligence influenced cooperation (*M*s = 61.15 and 49.05, a difference of $M = 12.10$) more than it did within the low-honesty condition (*M*s = 22.77 and 17.68, a difference of $M = 5.09$). These means also suggest that cooperation declines more strongly by the presence versus absence of one undesirable characteristic than by the presence of one versus two undesirable characteristics. Second, as for expectations, we found an interaction among social value orientation, country, format, and intelligence, $F(2, 302) = 3.61$, $p < .05$.[4]

The Relationship Between Expectations of Partner Cooperation and Own Cooperation

It was assumed that the influence of expectations on own cooperative choice behavior would depend on social value orientations, such that prosocials would have a stronger tendency than individualists and competitors to match their choices with their expectations. In this section, we focus on the expectation–choice relationship to provide insight into the extent to which expectations influence own choice[5] and how this relationship may depend on social value orientations and the personality descriptions of the partner. The expectation–choice relationship was investigated by examining (a) correlations to explore the extent to which expectations are predictive of choice behavior and (b) the discrepancy between one's expectations of the partner's cooperation and one's own level of cooperation.

First, we examined within-cell correlations between expectations and choice. As can be seen in Table 2, the size of the resulting correlations varied dramatically (the range was .93–.13). Furthermore, within each social value orientation group, the correlations appear to vary similarly and systematically as a function of the partner's characteristics. Following a test described by Cohen and Cohen (1983), we compared the strength of the correlations for the three social value orientation groups within each of the four partner conditions. Specifically, for each partner, three comparisons were calculated: (a) prosocials versus individualists, (b) prosocials versus competitors, and (c) individualists versus competitors. Of the 12 resulting *z* scores, only one exceeded the .05 critical value: for the high-honesty, low-intelligence partner, the correlation for prosocials was greater than that for individualists. Thus, correlations of choice with expectation appear to wax and wane for prosocials, individualists, and competitors in more or less the same manner.

In addition, we examined the influence of the personality de-

[4] Examination of the means associated with this interaction revealed the same pattern as for expectations (see Footnote 2).

[5] This analysis is based on the assumption that, at least in part, choice is influenced by expectations. However, the present study does not allow us to provide greater insight into the relative importance of the causal roles of expectations and choice. Accordingly, this analysis does not exclude the possibility that expectations are substantially influenced by choice—a relationship that we assume is not moderated by social value orientations.

Table 2
Correlations Between Choice and Expectation for Each Partner and for Each Group of Social Value Orientation

Social value orientation	Honesty and intelligence of partner			
	High, high	High, low	Low, high	Low, low
Prosocial	.85	.42	.73	.48
	.85	.42	.73	.47
Individualist	.90	.13	.70	.34
	.90	.13	.69	.36
Competitor	.93	.50	.86	.38
	.92	.52	.85	.44

Note. The first row of correlations within each group of social value orientation is not corrected for any mean differences due to country or to the format of the social dilemma task. The second row is corrected for these two possible effects.

scriptions of the partner, following a procedure proposed by Steiger (1980). For four different partners, six paired comparisons can be made for each social value orientation group. The results were identical for each social value orientation group: Five of six comparisons were statistically significant (per comparison, $p < .05$). For each social value orientation group, the only comparison that was not significant was the contrast of the two low-intelligence partners. The above analyses thus suggest that the size of the correlations is most strongly influenced by descriptions of a partner's intelligence, with substantially lower correlations for low-intelligence partners than for high-intelligence partners.

A second way to examine the expectation–choice relationship is by focusing on the algebraic difference between the subject's expectation of partner cooperation and the subject's own choice. Because previous research has shown repeatedly that subjects tend to cooperate less than they expect the partner to cooperate, this difference is referred to as *relative benefit*. Using relative benefit as the dependent measure, an ANOVA was carried out with social value orientation, culture, and format as between-subjects factors and honesty and intelligence as within-subject factors.

This analysis revealed a number of significant effects. First, the constant effect was significant, $F(1, 302) = 67.78$, $p < .001$, indicating that, overall, subjects extended less cooperation than they expected to receive ($M = 12.26$). As one would predict, a significant main effect for social value orientation was observed, $F(2, 302) = 13.53$, $p < .001$. Greatest relative benefit was observed for competitors ($M = 19.18$), followed by individualists ($M = 13.89$), with the least relative benefit observed for prosocials ($M = 3.71$). Overall, greater relative benefit was observed for a low-intelligence partner ($M = 17.37$) than for a high-intelligence partner ($M = 1.92$), $F(2, 302) = 100.37$, $p < .001$. More important, this effect of intelligence was strongly moderated by social value orientation, $F(2, 302) = 9.82$, $p < .001$. For a high-intelligence partner, relative benefit was not influenced by social value orientation for prosocials ($M = -1.36$), individualists ($M = 2.73$), and competitors ($M = 4.41$). However, for a low-intelligence partner, relative benefit was strongly influenced by social value orientation. Relative benefit was largest for competitors ($M = 33.85$), followed by individualists ($M = 25.05$), and was smallest for prosocials ($M = 8.79$). A three-way interaction among social value orientation, game format, and intelligence, $F(2, 302) = 3.41$, $p < .05$, indicated that the differences for social value orientation were more pronounced in the give-some dilemma than in the take-some dilemma. Finally, a main effect for honesty emerged, with greater relative benefit observed for a high-honesty partner ($M = 16.11$) than for a low-honesty partner ($M = 8.42$), $F(2, 302) = 15.40$, $p < .001$. This effect was not moderated by social value orientation.

Although relative benefit was quite considerable among individualists and competitors, a comparison of the findings for expectations and own cooperation suggests that such tendencies may be stronger toward a low-intelligence partner than toward a high-honesty partner. Although partner honesty had a similar effect on their expectations and choice behavior (i.e., relative to low-honesty partners, high-honesty partners elicited greater levels of both expected cooperation and own cooperation), partner intelligence had a converse effect on these variables (i.e., they expected more cooperation from low-intelligence partners, but exhibited greater cooperation toward high-intelligence partners). In the next analyses, we focus on simple effects so as to test whether individualists' and competitors' responses would depend on high-honesty versus low-intelligence partners. Individualists and competitors expected relatively high levels of cooperation from these partners (for high-honesty partners, Ms = 59.97 and 53.82; for low-intelligence partners, Ms = 48.17 and 50.00). Whereas individualists expected greater cooperation from high-honesty partners than from low-intelligence partners, indicated by a mean difference of $M = 11.80$, $F(1, 88) = 13.77$, $p < .001$, there was no significant difference for competitors ($M = 3.82$), $F(1, 35) < 1$. However, both individualists (Ms = 42.70 vs. 23.17, a mean difference of 19.53), $F(1, 88) = 75.84$, $p < .001$, and competitors (Ms = 30.90 vs. 18.75, a mean difference of 12.15), $F(1, 35) = 12.03$, $p < .001$, exhibited greater cooperation toward high-honesty partners than toward low-intelligence partners.

To more directly control for differences in the expected level of partner's cooperation, we performed the following two analyses. First, within each subject, we computed a contrast comparing high-honesty partners (averaged across levels of intelligence) with low-intelligence partners (averaged across levels of honesty). This contrast was significant for individualists, $F(1, 88) = 16.52$, $p < .001$, and competitors, $F(1, 35) = 5.28$, $p < .03$, suggesting that they are tempted to pursue relative benefit to a greater extent when the partner is unintelligent rather than honest.[6] However, because this first contrast is functionally a comparison of the high-honesty, high-intelligence partner with the low-honesty, low-intelligence partner (because high-honesty, low-intelligence is included in each component of the contrast),

[6] A 3 (social value orientation) × 2 (type of partner: high honesty vs. low intelligence) analysis for relative benefit revealed a significant interaction of social value orientation and type of partner, $F(2, 311) = 6.82$, $p < .001$. The means associated with this interaction indicated that, unlike individualists and competitors, relative benefit for prosocials did not depend on high honesty vs. low intelligence partners (Ms = 4.30 vs. 4.27).

this result could also mean that pursuit of relative benefit is greatest when the partner is dishonest. Accordingly, we computed a second contrast comparing the high-honesty, low-intelligence partner with the low-honesty, high-intelligence partner. This contrast was significant for individualists, $F(1, 88) = 43.07$, $p < .001$, and competitors, $F(1, 35) = 36.30$, $p < .001$, indicating that pursuit of relative benefit was greatest when the partner was low on intelligence (Ms = 32.58 and 38.89, respectively) rather than low on honesty (Ms = 3.09 and 4.86, respectively). The results of these contrast analyses are consistent with the notion that competitors and individualists are more likely to exploit others whom they perceive to be unintelligent, rather than honest. However, we should note explicitly that both of the above contrast analyses are far from ideal, partly because this experiment was not specifically designed to test this notion (i.e., high-honesty and low-intelligence information was always provided in addition to intelligence information or honesty information, respectively). Currently, we are exploring this notion by examining whether individualists and competitors are more likely to reciprocate high levels of cooperation exhibited by these two types of partners in a prior trial (Van Lange, 1993).

Perceived Self–Other Similarity

In the first postdilemma task, the Dutch subjects were asked to rate the similarity between themselves and each of four partners. For exploratory purposes, we were interested in examining (a) possible differences among prosocials, individualists, and competitors in perceived similarity as a function of the partner's honesty and intelligence and (b) whether perceived similarity, in part, may account for the results obtained for expectations of partner cooperation and for own-choice behavior. First, similarity ratings were analyzed in a 3 (social value orientation: prosocials vs. individualists vs. competitors) × 2 (format: give-some vs. take-some) × 2 (honesty: high vs. low) × 2 (intelligence: high vs. low) ANOVA, the latter two variables being within-subjects.[7] This analysis revealed a main effect for both honesty, $F(1, 162) = 178.76$, $p < .001$, and intelligence, $F(1, 162) = 226.90$, $p < .001$. As expected on the basis of the similarity effect, subjects rated themselves as being more similar to high-honesty partners than to low-honesty partners ($M = 60.06$ vs. 25.71), as well as being more similar to high-intelligence partners than to low-intelligence partners ($M = 59.55$ vs. 26.23). More interestingly, we observed an interaction between social value orientation and honesty, $F(2, 162) = 4.33$, $p < .02$. Differences in similarity ratings between high-honesty and low-honesty partners appeared to be greater for prosocials ($M = 61.91$ vs. 23.71, a difference of $M = 38.20$) than for individualists ($M = 57.16$ vs. 27.27, a difference of $M = 29.89$) or competitors ($M = 57.02$ vs. 32.29, a difference of $M = 24.74$). A series of pairwise comparisons confirmed that differences due to honesty were significantly greater for prosocials than for either individualists, $t(145) = 2.13$, $p < .04$, or competitors, $t(122) = 2.69$, $p < .01$; differences between individualists and competitors were not significant, $t(63) = .72$, *ns*. There was no interaction between social value orientation and intelligence, $F(2, 162) = .80$, *ns*.[8]

Second, we analyzed expectations of partner cooperation in a 3 (social value orientation: prosocials vs. individualists vs. competitors) × 2 (format: give-some vs. take-some) × 2 (honesty: high vs. low) × 2 (intelligence: high vs. low) ANOVA—the latter two variables being within-subjects factors—and included similarity judgments for each of the four partners as a covariate. As was the case in the analysis described earlier, this analysis revealed that all effects remained significant. A parallel ANOVA focusing on own cooperative choice behavior revealed that all effects remained significant, except for the main effect for intelligence, which did not remain significant, $F(1, 161) = .22$, *ns*. This effect of intelligence (i.e., high-intelligence partners elicited more cooperation than partners having low intelligence) was significant not only in the analyses described earlier—without the covariate and for the American and the Dutch subjects combined—but also in an analysis without the covariate, for Dutch subjects only: main effect intelligence, $F(1, 162) = 4.35$, $p < .04$. Finally, we analyzed relative benefit—the difference between the subject's expectation of partner cooperation and the subject's own choice—in an ANOVA with similarity judgments included as a covariate. This analysis revealed that all the effects that were found to be significant in the prior analysis without the covariate remained significant.

Thus, the greater perceived similarity with high-intelligence partners, at least in part, accounts for the finding that high-intelligence partners elicit greater cooperation than low-intelligence partners. The other effects appear to be robust (i.e., the main and interaction effects observed for social value orientation), even when they are controlled for perceived self–other similarity.

Causal Attribution of Choices to Ignorance

In a second postdilemma task, the Dutch subjects were asked to make causal attributions regarding a cooperative choice, a moderately cooperative choice, and a noncooperative choice. Each subject rated (on a 5-point scale) the appropriateness of each of five explanatory phrases in accounting for the three choices. To examine the implications of the goal-prescribes-rationality principle, each of these items was adapted from Van Lange et al. (1990) and concerned the lack of rationality or intelligence of the decision maker (e.g., "The actor is irrational" and "The actor did not think about what he/she was doing"). As in Van Lange et al. (1990), the five phrases showed fairly good internal consistency: Cronbach's alphas were .85, .73, and .81, for a cooperative, moderately cooperative, and noncooperative target, respectively.

Using the average of these five ratings as the dependent variable, a 3 (social value orientation) × 2 (game format) × 3

[7] One subject was excluded because of missing values.

[8] The analysis also revealed an interaction between honesty and intelligence, $F(1, 62) = 8.80$, $p < .005$, indicating that perceived similarity was more strongly influenced by the absence versus presence of undesirable attributes of the target than by the absence versus presence of desirable attributes. A main effect for format, $F(1, 162) = 5.83$, $p < .02$, revealed that similarity ratings were somewhat higher when paired with partners in the take-some dilemma ($M = 43.84$) than when paired with partners in the give-some dilemma ($M = 41.84$).

(choice of target) ANOVA was performed, with repeated measures for the last factor. The only significant effect was the interaction of social value orientation and choice of target, $F(2, 162) = 8.31$, $p < .001$. A series of pairwise comparisons indicated that prosocial subjects attributed a noncooperative choice to ignorance ($M = 2.85$) more than it did a moderately cooperative choice ($M = 2.46$) or a cooperative choice ($M = 2.41$), respective $ts(102) = 2.83$ and 3.42, $ps < .01$. Conversely, individualists and competitors tended to attribute a cooperative choice to ignorance ($Ms = 2.82$ and 3.06) more than they did a moderately cooperative choice ($Ms = 2.36$ and 2.60) or a noncooperative choice ($Ms = 2.38$ and 2.37): for individualists, respective $ts(44) = 2.63$ and 1.98, $ps < .05$; for competitors, $ts(21) = 2.00$ and 2.00, $ps < .06$. Thus, in support of the goal-prescribes-rationality principle, prosocials associated cooperation with higher levels of intelligence (or lower levels of ignorance) than noncooperation, whereas individualists and competitors did the opposite.

Discussion

The present study provides strong evidence in support of the claim that social value orientations reflect individual differences in the way personality information about interdependent others is weighted and interpreted. Such perceptual differences seem to have implications for how individuals tend to approach interdependent others in social dilemmas and therefore are important for our understanding of cooperative choice behavior in situations of social interdependence. In coming paragraphs, we briefly consider the specific purposes and findings of the present study and their implications.

The first purpose of the present research was to examine the moderating influence of social value orientations on the expected level of cooperation from partners perceived in terms of honesty and intelligence. As predicted by the might versus morality effect (Liebrand, Jansen, et al., 1986), prosocial subjects assigned greater weight to honesty information than did individualists and competitors, whereas individualists and competitors assigned greater weight to intelligence information than did prosocial subjects. The underlying argument is that people with different social value orientations make substantially different interpretations of the same social dilemma, with prosocials emphasizing moral implications by considering the consequences of own actions for others and individualists and competitors emphasizing rationality and intelligence by considering the consequences for their own welfare (either in more absolute terms or relative to the other).

Although the might versus morality effect generally was supported, the prediction based on the goal-prescribes-rationality principle (Van Lange et al., 1990) received only partial support. Whereas individualists and competitors indeed expected more cooperation from a low-intelligence partner than from a high-intelligence partner, prosocial subjects expected the same amount of cooperation from low- and high-intelligence partners. There are at least two possible interpretations of this apparent lack of responsiveness. First, it may be that prosocial subjects simply do not respond to intelligence information because they do not find this type of information useful or relevant in the context of social dilemmas. However, such a conclusion would be at odds not only with the results of previous research (Van Lange et al., 1990; Van Lange & Liebrand, 1991a) but also with the attribution findings obtained in the present study: Prosocials attributed a noncooperative choice more to ignorance than they did a cooperative choice (whereas individualists and competitors did exactly the opposite). Thus, in this postdilemma task, individualists, competitors, and prosocials formed interpretations in terms of intelligence. A second and more plausible interpretation of the absence of an intelligence effect on the expectations of prosocial subjects is based on the fact that in the dilemma task, subjects responded to honesty and intelligence information simultaneously. According to this reasoning, prosocial subjects do not necessarily find intelligence information irrelevant, but will not use it if they are simultaneously provided with information that is directly indicative of a partner's morality—information that they find much more diagnostic for the other's intentions.

In this regard, it may well be that prosocial subjects differ from individualists and competitors in their implicit personality theories (Rosenberg & Sedlak, 1972; Schneider, 1973) concerning the assumed covariation of intelligence and honesty. If prosocials see intelligence and honesty as strongly co-occurring, then it is likely that they focus on only one type of information. Inconsistencies such as an honest but unintelligent or a dishonest but intelligent partner may be resolved by prosocials simply by focusing on honesty. Furthermore, if individualists and competitors see intelligence and honesty as relatively independent characteristics, then it is perfectly logical for them to make use of both types of information. Thus, differences in preexisting implicit personality theories may have influenced the extent to which subjects assigned weights to both types of information about a partner, rather than primarily focusing on one type of information.

A second purpose of the present study was to examine the influence of expectations regarding another's choice behavior on own cooperative choice behavior. One major finding was that prosocials' choice behaviors were more strongly influenced by information about a partner's honesty than were those of individualists and competitors. This finding is consistent with Hypothesis 4, which was based on (a) the presumed influence of predicted differences in expectations of a partner's cooperation and (b) the assumed greater tendency among prosocials to match their choices with their expectations of a partner's cooperative behavior.

Which of these two influences was most important? We believe that expectation differences are primarily responsible for this effect, because (a) for expectations, the predicted moderation of social value orientation on the effects of a partner's honesty indeed was observed; (b) although individualists and competitors were generally more inclined than prosocials to cooperate less than they expected the partner to cooperate, such differences did not interact with the perceived honesty of the partner; and (c) the magnitudes of the correlations between expectations and choice did not differ across the three social value orientations. The latter two findings indicate that expectations influence choice behavior similarly for the three social value orientations, and therefore the interaction between social value

orientation and partner's honesty for own choice behavior is more likely due to differences in honesty-based expectations than to differences in responsiveness to such expectations. These findings complement prior research on impression formation (e.g., Rosenberg & Sedlak, 1972; Skowronski & Carlston, 1989) by providing evidence in support of the claim that differences in the way individuals weight and process information affects specific expectations, which in turn, may influence interpersonal behavior.

The current research also revealed that a high-intelligence partner elicited greater cooperation than did a low-intelligence partner and that social value orientation did not moderate this effect, which is inconsistent with Hypothesis 5 (predicting that the effect of a partner's intelligence would be stronger for prosocials than for individualists and competitors). An explanation of these findings may be gleaned from the observation that expectations based on low intelligence did not correlate very strongly with the choice behavior of prosocials, individualists, or competitors. This may have occurred for a variety of reasons. First, as the self–other similarity ratings indicated, one mediating factor may be perceived similarity, that is, the tendency to cooperate more with others who possess a desirable attribute (high intelligence) than with others characterized by an undesirable attribute (low intelligence) because the former group is seen as more similar to self. Second, relative to high-intelligence partners, low-intelligence partners elicit similar (prosocials) or greater (individualists and competitors) levels of expected cooperation, but these expectations may be held with different levels of confidence. Whereas one can count on what an intelligent other is going to do, it is more difficult to predict what an unintelligent other would do in a social dilemma. Perhaps the perceived risk of being exploited by a low-intelligence partner prevented subjects from making more cooperative choices. Finally, individualists and competitors exhibited strong tendencies to cooperate less than they expected a low-intelligence partner to cooperate, which suggests that they may be inclined to derogate unintelligent others and to blame them for irrational behavior, which in turn, is likely to inhibit cooperative behavior (cf. Van Lange & Liebrand, 1991a).

Interestingly, we found some preliminary evidence in support of the notion that cooperative behavior expected on the basis of perceived honesty was more likely to elicit cooperation among individualists and competitors than was cooperative behavior expected on the basis of a perceived lack of intelligence. Although future research is needed to further examine the validity of this notion, this evidence contributes to explaining the well-established finding that individualists and competitors do not cooperate when they are paired with an unknown partner who chooses to act cooperatively at each trial in an iterated social dilemma (e.g., Kelley & Stahelski, 1970; Kuhlman & Marshello, 1975; Sattler & Kerr, 1991). If individualists and competitors tend to be quite confident that others generally are selfish (Kelley & Stahelski, 1970; Van Lange, 1992), then it is easy to imagine that someone who forgoes "the" rational choice is seen not only as rather uncommon and dissimilar to self, but also as quite unintelligent, or at least as someone who did not engage in sufficient thought before acting, as our present attribution findings suggest. Such attributions may serve to rationalize individualists' and competitors' previous noncooperative choices, as well as their noncooperative intentions for the next series of trials. The hypothesis that follows from the present research is that if individualists and competitors believe that the other's cooperation is due to morality, then they should be more likely to respond cooperatively than if they believe that the other's cooperation is primarily due to a lack of intelligence.

It was somewhat surprising to find that the correlation between expectations and choice was substantially lower for all three social value orientation groups when a partner was described as low in intelligence. How do we account for this finding and why did this not occur when the partner was described as possessing another undesirable attribute, that is, when the partner was described as having low honesty? Relative to dishonest partners, it may be that it is more difficult to assess whether unintelligent partners have cooperative or noncooperative intentions, that unintelligent partners are held less responsible for their actions, and, finally, that expectations of the behavior of an unintelligent partner are held with lower levels of confidence. Thus, subjects may feel uncertain as to their expectations and their perceptions of the underlying intentions of unintelligent partners and may choose noncooperatively so as to minimize any risk of being exploited by such partners.

We should note, however, that the above lines of reasoning are based on the assumption that expectations affect own cooperation. Although this assumption is reasonable in light of prior research, the current research left the issue of causal direction unexamined. Accordingly, some of the current findings may also be explained from the perspective that expectations, at least in part, are influenced by own behavior. Also, it is not yet clear what precise mechanisms lead an individual to cooperate considerably less than they expect a partner to cooperate. That is, we have provided evidence that such inclinations are stronger for individualists and competitors than for prosocials—particularly when paired with an unintelligent partner—and that differences in perceived self–other similarity may play a role in this regard, but other possible mechanisms (e.g., lack of confidence in one's cooperative expectations and derogating unintelligent others) underlying such tendencies toward relative benefit remain to be examined.

The third purpose of the current research was to examine the generality of our hypotheses. The current work revealed that the effects supporting our hypotheses were not further moderated by game format or culture. These findings further underline the importance and generality of perceptual differences underlying social value orientations. It is also important to note that the distributions of social value orientations were very similar in the United States and The Netherlands, despite the fact that our experiments differed in recruitment procedures and language, and despite incidental differences between Newark and Groningen (e.g., population density). These findings, in combination with the relative absence of further effects for nation, suggest that the two countries may be very similar on dimensions related to cooperation versus noncooperation (e.g., collectivism vs. individualism; Kagiticibasi & Berry, 1990).

In light of prior findings of game format (e.g., Brewer & Kramer, 1986; Komorita & Carnevale, 1992; Pruitt, 1970), it was remarkable that the current study did not reveal any strik-

ing differences between give-some and take-some dilemmas, either as main effects or in interaction with social value orientation. As described earlier, most of the format effects have been demonstrated in iterated social dilemmas or in interactive situations in which individual losses (give-some) and gains (take-some) are immediate, whereas the collective consequences are experienced in the long run. The current findings, in combination with prior research revealing no game format differences in single-trial social dilemmas (Rutte et al., 1987; Schwartz-Shea & Simmons, 1986), suggest that the different motivations or states—such as trust and helping—may actually emerge during the interaction process. This argument is also supported by Pruitt's (1967) findings, which revealed that format differences did not occur on the first trial but emerged on subsequent blocks of trials. Similarly, the role of framing (e.g., Brewer & Kramer, 1986) may play a different role in iterated social dilemmas in which individuals can compare and evaluate short-term versus long-term gains and losses; that is, unlike single-trial social dilemmas, framing may be based on the longer decision perspective (cf. Rutte et al., 1987). Finally, it may be that in the current study the manipulations of perceived honesty and intelligence were so strong and salient that these effects overshadowed the more subtle differences in format. Clearly, future research is needed to clarify the influence of format, the direction of the effect, as well as the moderating role of other variables.

Before concluding, we should note some of the strengths and limitations of the present work. One potential limitation concerns the hypothetical nature of the experiment. For example, subjects were confronted with a social dilemma in which choices were made for imaginary amounts of money, and subjects received personality information about others whom they would never meet and who were not present in the laboratory. Although the overall level of cooperative behavior—or the overall expectation of another's cooperation—might have been influenced by the hypothetical nature of the social dilemma task, the more critical issue is whether the influence of morality and intelligence information would be different if the social dilemma task were less hypothetical. Previous research using a similar paradigm suggests that the influences of hypothetical versus more involving social dilemmas are likely to be weak (e.g., Van Lange & Liebrand, 1991a, 1991b), suggesting that the present findings may be robust across both hypothetical and more involving social dilemmas. A related limitation concerns the fact that the measurement of social value orientations took place just before the social dilemma task. It is possible that the contiguity of these measures could have sensitized subjects to respond consistently on the two tasks. Although quite possible, previous research suggests that even when a social value orientation measure and behavior in a social dilemma or related task are separated by 4–6 weeks, social value orientations still appeared to affect the following: (a) cooperative or helping behavior (e.g., Eisenberger et al., 1992; McClintock & Allison, 1989), (b) expectations of another's cooperation (Kuhlman et al., 1986), and (c) might and morality judgments regarding partners who behave cooperatively or noncooperatively in iterated social dilemmas (Kuhlman et al., 1992). Nevertheless, it would be fruitful to replicate the present work by using a more involving social dilemma task or by measuring social value orientations a substantial period of time before the social dilemma task.

We believe that the present work has several general strengths beyond the specific contributions discussed earlier. To begin with, the present findings indicate the usefulness of an integrative approach to cooperation—a theoretical and experimental approach in which person variables, situation variables, as well as their interactions are considered (e.g., Endler & Magnusson, 1976; Kenrick & Funder, 1988; Mischel, 1984). One advantage of this approach is that it allows us to better specify the conditions under which individuals with different social value orientations do and do not perform behavior that is consistent with their general values. Indeed, the present research reveals that prosocials do not always choose cooperatively (i.e, when the partner is perceived as dishonest) and that individualists and competitors do not always choose noncooperatively (e.g., when the partner is perceived as honest).

Finally, to our knowledge, this is the first research that examines and supports the construct validity of social value orientations by demonstrating that personality information is weighted and interpreted differently by individuals holding different social value orientations. Another novel finding is that differences in perceived self–other similarity as a function of others' honesty were greater for prosocials than for either individualists or competitors. This suggests that, relative to individualists and competitors, prosocials may be more "schematic" for honesty and dishonesty and possibly for other morality-related concepts, that is, their generalized understandings of the self may be more strongly related to morality information (cf. Markus, 1977). Moreover, there is evidence that differences in the impact of a partner's honesty on expectations of partner cooperation do—whereas differences in self–other similarity do not—affect prosocials', individualists', and competitors' choice behavior. More generally, we believe that social dilemma and related game situations provide a useful paradigm in which to examine the behavioral and interpersonal implications of the ways in which people process social information.

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