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The Pursuit of Joint Outcomes and Equality in Outcomes: An Integrative Model of Social Value Orientation

Paul A. M. Van Lange
Free University, Amsterdam

The author provides a conceptual framework for understanding differences among prosocial, individualistic, and competitive orientations. Whereas traditional models conceptualize prosocial orientation in terms of enhancing joint outcomes, the author proposes an integrative model of social value orientation in which prosocial orientation is understood in terms of enhancing both joint outcomes and equality in outcomes. Consistent with this integrative model, prosocial orientation (vs. individualistic and competitive orientations) was associated with greater tendencies to enhance both joint outcomes and equality in outcomes; in addition, both goals were positively associated (Study 1). Consistent with interaction-relevant implications of this model, prosocial orientation was strongly related to reciprocity. Relative to individualists and competitors, prosocials were more likely to engage in the same level of cooperation as the interdependent other did (Study 2) and the same level of cooperation as they anticipated from the interdependent other (Study 3).

Presumably, patterns of social interaction could be relatively easily understood if individuals tended to act in accordance with "rational self-interest." However, the motivations that individuals bring to bear on social interactions seem to be broader and more multifaceted than the simple pursuit of personal outcomes. One pervasive broader motivation derives from tendencies to enhance the outcomes of a dyad, group, or collective, even when such actions are quite costly to the self (e.g., donations to public goods, acts of self-sacrifice in relationships). The pursuit of joint outcomes has received a fair amount of attention in the literature on experimental games, cooperation, and competition (e.g., Kelley & Stahelski, 1970; McClintock & Liebrand, 1988). Another pervasive broader motivation derives from tendencies to enhance equality in outcomes, even when such actions are quite costly to the self (e.g., distributing resources in a fair manner, compromising and sharing in relationships). The pursuit of equality in outcomes has received a fair amount of attention in the literature on justice, fairness, and equity (e.g., Deutsch, 1975; Lind & Tyler, 1988). How are the broader motivations of enhancing joint outcomes and enhancing equality in outcomes to be understood? Does each of these motivations operate in isolation or in concert? Might it be that many people tend to pursue both joint outcomes and equality in outcomes, or do these motivations exclude each other?

This research addresses social value orientation, a concept that theoretically extends the rational self-interest postulate by assuming that individuals tend to pursue broader goals than self-interest. The concept refers to preferences for particular patterns of outcomes for the self and others and focuses on a three-category typology of (a) cooperation (i.e., maximizing outcomes for the self and others), (b) individualism (i.e., maximizing outcomes for the self with little or no regard for others' outcomes), and (c) competition (i.e., maximizing relative advantage over others' outcomes; Messick & McClintock, 1968). This typology and the three definitions of cooperative, individualistic, and competitive orientations have formed the theoretical basis for numerous studies designed to illuminate the understanding of the ways that individuals differ in their approaches, judgments, and responses regarding others with whom they are interdependent (e.g., Kelley & Stahelski, 1970; Kuhlman & Marshello, 1975; Liebrand, Jansen, Rijken, & Suhre, 1986; McClintock & Liebrand, 1988; Sattler & Kerr, 1991; Van Lange & Kuhlman, 1994).

The major purpose of this research is to demonstrate that traditional conceptualizations of social value orientation are too limited to fully comprehend the primary interaction goals of individuals with different orientations. Using concepts derived from interdependence theory (Kelley & Thibaut, 1978) and a reevaluation of past research regarding cooperation and competition, I discuss three models of social value orientation. I advance an integrative model of social value orientation, proposing that differences among prosocial orientation (which includes cooperative orientation), individualistic orientation, and competitive orientation need to be understood in terms of differences in concern with others' outcomes and concern with equality in outcomes.

Social Value Orientation: An Overview

By extending classic formulations of rational self-interest, several theories have advanced models that suggest that individuals value not only their own outcomes but also the outcomes of others, or the manner in which their own outcomes relate to others' outcomes. Such broader preferences are explicitly addressed in

interdependence theory (Kelley & Thibaut, 1978; for a review, see Rusbult & Van Lange, 1996), which describes such preferences as "outcome transformations." Although theoretically one could identify numerous outcome transformations (e.g., Lurie, 1987; MacCrimmon & Messick, 1976), a relatively parsimonious framework based on the extant empirical literature suggests the importance of two prosocial orientations, including cooperation (i.e., maximization of own and others' outcomes; MaxJoint) and equality (i.e., minimization of absolute differences between own and others' outcomes; MinDiff), and two proself orientations, including individualism (i.e., maximization of own outcomes with little or no regard for others' outcomes; MaxOwn) and competition (i.e., maximization of own outcomes relative to others' outcomes; MaxRel).

One widely used technique for measuring outcome transformations (or social value orientations) derives from the decomposed game approach, in which participants make decisions among various combinations of outcomes for the self and another person. Although several decomposed game measures have been used in prior research, the most commonly used technique is the Triple-Dominance Measure of Social Values, in which prosocial, individualistic, and competitive preferences are pitted against each other (e.g., Kuhlman & Marshello, 1975; Sattler & Kerr, 1991; for details regarding this measure, see Van Lange, Otten, De Bruin, & Joireman, 1997). That is, one option represents greatest joint outcomes and smallest differences in outcomes for the self and others (i.e., cooperation and equality). A second option represents greatest outcomes for the self (i.e., individualism), and a third option represents greatest relative advantage over others' outcomes (i.e., competition). Thus, in this frequently used measure of social value orientation, prosocial orientation may be guided by cooperation (MaxJoint), equality (MinDiff), or both.

Social value orientation, as measured with the Triple-Dominance Measure of Social Values or related instruments, has received considerable attention in the context of iterated game situations, situations in which individuals are interdependent over a series of choices. This research has demonstrated that prosocials approach interdependent others in a prosocial manner and continue to do so until the interdependent others fail to exhibit prosocial behavior (e.g., Kuhlman & Marshello, 1975; McClintock & Liebrand, 1988; Sattler & Kerr, 1991). That is, prosocials turn to noncooperation when other individuals fail to cooperate, a pattern referred to as *behavioral assimilation* (Kelley & Stahelski, 1970). In contrast, individualists engage in prosocial behavior only if there are long-term self-oriented reasons for doing so (e.g., if others follow a tit-for-tat strategy that "rewards" prosocial or cooperative behavior and "punishes" selfish or noncooperative behavior by imitating the previous choice made by the interaction partners). Finally, competitors are not willing to engage in prosocial behavior, even if their interaction partners consistently exhibit prosocial behavior, and even if they themselves could benefit in the long run by doing so (e.g., in response to a tit-for-tat strategy). The responses by individualists and competitors can be parsimoniously understood in terms of considerations of long-term self-interest (individualists) and the pursuit of relative advantage over others (competitors).

But how can researchers understand prosocials' tendencies toward behavioral assimilation, coming to behave noncooperatively toward others who adopt noncooperative strategies? Iterated game situations permit several specific motivations, following from others' past behaviors in combination with beliefs regarding the outcomes that can be attained in future interaction situations. Next, I evaluate this pattern of behavioral assimilation by using three models of outcome transformations.

Three Models of Social Value Orientation

I advance and compare three specific models of outcome transformation, discussing the validity of each model in accounting for behavioral assimilation among prosocial individuals as well as the interaction patterns of individualists and competitors. Each model is based on the premise that all or most individuals assign positive weight to outcomes for the self but that individuals differ in the manner in which they evaluate others' outcomes, the manner in which their own outcomes relate to others' outcomes, or both.[1]

In this analysis, it is important to carefully describe an example of the given matrix (i.e., nontransformed matrix) of a prisoner's dilemma in which behavioral assimilation has been observed. Figure 1 shows that outcomes for the self are greatest when an individual unilaterally defects (outcome = 4), followed by mutual cooperation (outcome = 3) and mutual defection (outcome = 2), and outcomes for the self are smallest when an individual unilaterally cooperates (outcome = 1). What outcome transformations might underlie prosocial orientation?

Model 1: Prosocial Orientation = Cooperation

In Model 1, prosocial orientation is conceptualized in terms of cooperation or MaxJoint:

$$OT = W_1 \text{ (Outcomes for the Self)}$$

$$+ W_2 \text{ (Outcomes for Others).} \quad (1.1)$$

This model defines prosocial outcome transformations (OT) in terms of the weights assigned to outcomes for the self and outcomes for others (MaxOwn + MaxOther, or MaxJoint; i.e., $W_1 = +1$, $W_2 = +1$). This model, in which the weight assigned to equality is not included, has received considerable attention and has been used most frequently as a framework for social value orientation, whereby individuals adopting a prosocial orientation are referred to as "cooperators" (e.g., Griesinger & Livingston, 1973; McClintock & Liebrand, 1988). As can be seen in Figure 1, a MaxJoint transformation (i.e., adding outcomes for the self and for others) yields an effective matrix in which mutual cooperation should be most preferred (utility = 6), unilateral forms of cooperation either by the self or by others should be second most preferred (utility = 5), and mutual defection should be least preferred (utility = 4; see row labeled *Model 1* in Figure 1). This model can only partially account for patterns of behavioral assimilation. It can account for the finding that prosocials exhibit cooperation with cooperative others (i.e., mutual cooperation is more

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[1] This premise implies that I assumed that specific orientations, such as altruism, aggression, and equality, often complement the preference for enhancing outcomes for the self (i.e., these orientations serve as additional considerations) and provide the basis for understanding differences in the specific interaction goals that individuals pursue in situations of interdependence.
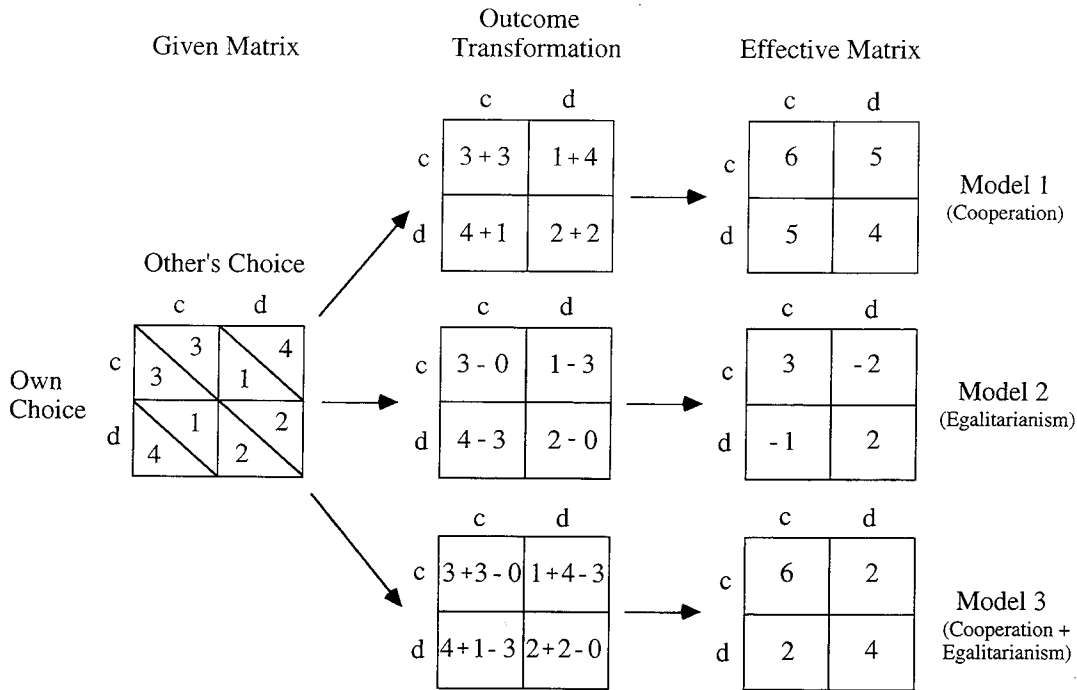
Figure 1. Three models of outcome transformation underlying prosocial orientation.

strongly preferred than unilateral cooperation by others), but it cannot account for the finding that prosocials exhibit noncooperation with noncooperative others (i.e., mutual defection is preferred less strongly than unilateral cooperation by the self).

Model 2: Prosocial Orientation = Egalitarianism

In Model 2, prosocial orientation is conceptualized in terms of egalitarianism or MinDiff:

OT = W_1 (Outcomes for the Self)

$$+ W_2 \text{ (Equality in Outcomes).} \quad (1.2)$$

This model defines prosocial orientation in terms of weights assigned to outcomes for the self and equality in outcomes (MaxOwn + MinDiff; i.e., $W_1 = +1$, $W_2 = +1$). This model, in which the weight assigned to others' outcomes is not included, has received relatively little attention in the literature on social value orientation (but see Schulz & May, 1989), even though equality has been proposed and has been found to be a powerful orientation in various contexts (e.g., Allison, McQueen, & Schaerfl, 1992; Wilke, 1991). It is interesting that, unlike Model 1, Model 2 can actually account for behavioral assimilation among prosocials. As can be seen in Figure 1, a MaxOwn plus MinDiff transformation yields an effective matrix in which mutual cooperation should be most preferred (utility = 3), mutual defection should be second most preferred (utility = 2), unilateral cooperation by others should be third most preferred (utility = 1), and unilateral cooperation by the self should be least preferred (utility = −2; see row labeled *Model 2* in Figure 1). Thus, unlike Model 1, Model 2 is able to account for both (a) the finding that prosocials exhibit cooperation with cooperative others (i.e., mutual cooperation is

preferred over unilateral cooperation by others) and (b) the finding that prosocials defect when others fail to cooperate (i.e., mutual defection is preferred over unilateral cooperation by the self).

Model 3: Prosocial Orientation = Cooperation and Egalitarianism

In Model 3, prosocial orientation is conceptualized in terms of both cooperation and egalitarianism:

OT = W_1 (Outcomes for the Self)

$$+ W_2 \text{ (Outcomes for Others)} + W_3 \text{ (Equality in Outcomes).}$$

$$(1.3)$$

In this integrative model of social value orientation, prosocial outcome transformations are defined in terms of the weights assigned to outcomes for the self, outcomes for others, and equality in outcomes (i.e., $W_1 = +1$, $W_2 = +1$, $W_3 = +1$).[2] A prosocial transformation (i.e., MaxOwn + MaxOther + MinDiff) yields an effective matrix in which mutual cooperation should be most preferred (utility = 6), mutual defection should be second most preferred (utility = 4), and unilateral cooperation by either the self or others should be least preferred (utility = 2; see row labeled *Model 3* in Figure 1). Like Model 2, Model 3 is able to account for behavioral assimilation in that it accounts for both (a) the finding

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[2] Models 1, 2, and 3 focus primarily on conceptualizations of prosocial orientation, rather than individualistic and competitive orientations. Nevertheless, Model 3 is referred to as the integrative model of social value orientation (rather than the integrative model of prosocial orientation)

that prosocials exhibit cooperation with cooperative others (i.e., mutual cooperation is preferred over unilateral cooperation by others) and (b) the finding that prosocials defect when others fail to cooperate (i.e., mutual defection is preferred over unilateral cooperation by the self).

Thus, the most frequently used model of social value orientation, which conceptualizes prosocial orientation in terms of cooperation (i.e., maximize joint), cannot fully account for patterns of behavioral assimilation among prosocials. In contrast, Models 2 and 3, which have received little theoretical attention as models of social value orientation, can actually account for behavioral assimilation. On the basis of other evidence, I suggest that the integrative model (i.e., Model 3), rather than Model 2, is the more accurate model. First, a qualitative study by McClintock and McNeel (1966) revealed that getting as many points as possible for the both of us, which resembles MaxJoint, is an important consideration. Second, an attribution study by Van Lange, Liebrand, and Kuhlman (1990) revealed that individuals who exhibit cooperation are more likely to view cooperative and noncooperative behavior in terms of the degree to which an individual is concerned not only with his or her own well-being but also with the well-being of others. Third, a recent study by De Dreu and McCusker (1997) compared prosocials' behavior with the behavior of individuals instructed to maximize joint outcomes or to maximize their own outcomes, revealing that the MaxJoint instructions yielded patterns of behavior that were similar to those of individuals with prosocial orientations. The aforementioned evidence adds credence to the claim that prosocials cooperate not only because they are merely concerned with enhancing equality but also because they are concerned with enhancing joint outcomes.

Study 1

The central purpose of Study 1 was to provide direct evidence relevant to the integrative model of social value orientation by examining the association of social value orientation and the weights assigned to outcomes for the self, outcomes for others, and equality in outcomes. I assessed these weights by using a version of the Ring Measure of Social Values (Liebrand et al., 1986), in which participants distribute hypothetical amounts of money between themselves and another person (see the *Method* section). Two additional features of Study 1 deserve brief attention. First, Study 1 examined a large sample that presumably is representative of the Dutch adult population, thus providing a basis for testing the

generality of the integrative model of social value orientation among multiple populations. Second, Study 1 included two measurement sessions separated by 19 months. Time 1 and Time 2 included the nine-item Triple-Dominance Measure of Social Values, and Time 2 included the Ring Measure of Social Values. Thus, Study 1 provides some insight into the concurrent and lagged associations of social value orientation and the weights assigned to outcomes for the self, outcomes for others, and equality in outcomes. On the basis of the integrative model of social value orientation, I predicted that (a) prosocial individuals would assign a greater (positive) weight to outcomes for others than would individualists and competitors (the latter group should assign a negative weight to outcomes for others) and (b) prosocial individuals would assign a greater weight to equality in outcomes than would individualists and competitors.

Method

Participants. A total of 1,728 individuals participated at Time 1 (May 1994), and a total of 2,360 individuals participated at Time 2 (December 1995). Thus, Time 1 and Time 2 were separated by 19 months. The samples consisted of individuals who agreed to participate once every week in surveys and research conducted by Telepanel, an organization linked to the University of Amsterdam.[3] In exchange, each participant received a personal computer that also was used for surveys and research. This personal computer was connected to the main computer at Telepanel, where the data were stored automatically. The Telepanel organization made every possible attempt to recruit a sample of participants who were representative of the Dutch adult population. In total, there were 805 individuals who participated at both Time 1 and Time 2 (i.e., 923 individuals from the Time 1 sample did not participate at Time 2, and 1,555 individuals who participated at Time 2 did not participate at Time 1). In this sample, there were somewhat more men than women (54% vs. 46%, respectively, at Time 1; 56% vs. 44%, respectively, at Time 2); mean age was 46 years (age ranged from 15 years to 89 years across the Time 1 and Time 2 samples).

Triple-Dominance Measure of Social Values. At Time 1 and Time 2, differences in social value orientation were assessed using the Triple-Dominance Measure of Social Values. In this study, I administered six decomposed games (for details, see Van Lange et al., 1997). An example is the choice among three options—Option A: 480 points for the self and 80 points for others, Option B: 540 points for the self and 280 points for others, and Option C: 480 points for the self and 480 points for others. In this example, Option A represents the competitive choice because it provides a larger difference between one's own and others' outcomes than either Option B or Option C. Option B represents the individualistic choice because one's own outcomes are larger than those in Option A or Option C. Finally, Option C represents the prosocial choice because it provides a larger joint outcome than does either Option A or Option B and a smaller

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because this model (as well as Models 1 and 2) represents a conceptualization of prosocial orientation that is especially meaningful in comparison with individualistic and competitive orientations. Also, for reasons of conceptual clarity and parsimony, the three models are analyzed by the weights -1, 0, and 1. Of course, one could develop more precise models using weights of intermediate value—for example, a model of prosocial orientation in which the weight assigned to outcomes for the self is twice as high as the weights assigned to outcomes for others and equality in outcomes (e.g., $W_1 = .60$, $W_2 = .30$, and $W_3 = .30$). However, I believe that such precision is premature in light of the preliminary nature of extant research regarding models underlying social value orientation, even though it is plausible that, for example, prosocials actually assign a somewhat greater weight to outcomes for the self than to outcomes for others or equality in outcomes.

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[3] In the period from 1992 to 1996, there were about 2,000 households (5,000 individuals), on average, that served as participants for Telepanel. These participants were selected after contacting them by phone (by randomly selecting phone numbers) and interviewing them face-to-face. They tended to serve the organization for an extended period of time, often for longer than 2 or 3 years (in the present sample, 805 of 1,728 Time 1 individuals (47%) participated at Time 2, which occurred 19 months later). The computerized questionnaire sessions were completed on a weekly basis, and each session tended to include multiple surveys and generally took no longer than 30 min. This sample contained only individuals who were from different households.

discrepancy between one's own and others' outcomes than does either Option A or Option B.

The instructions for these decomposed games were similar at Time 1 and Time 2. However, there was one difference between the Time 1 and Time 2 instructions. At Time 2, each decomposed game presented on the screen was accompanied by the statement "recall that the other is an unknown other." The reason was that, unlike at Time 1, the decomposed games at Time 2 were preceded by questionnaires included by other researchers; that is, at Time 2, I wanted to avoid carryover effects from preceding questionnaires (e.g., it is possible that individuals bring to mind particular others on the basis of previous questionnaires that, among other issues, focused on social comparison activities with close and nonclose others). As in prior research (e.g., Van Lange et al., 1997), participants were classified if they made at least five of six choices that were consistent with one of the three social value orientations. At Time 1, 1,134 participants were classified as prosocial, 340 were classified as individualistic, and 119 were classified as competitive. One hundred thirty-five participants made fewer than five consistent choices and thus were not classified. At Time 2, 1,057 participants were classified as prosocial, 583 were classified as individualistic, and 211 were classified as competitive. Five hundred nine participants (22%) made fewer than five consistent choices and thus were not classified.[4]

Ring Measure of Social Values. This instrument consists of 24 decomposed games and involves choices between two alternatives that represent differing combinations of outcomes for the self and another person. These outcomes are defined in terms of imaginary amounts of money (i.e., Dutch guilders) and involve positive outcomes (i.e., gains) as well as negative outcomes (i.e., losses). However, for two reasons, the present version of the Ring Measure of Social Values included only positive outcomes. First, and most important, the outcomes for the self and the other should be either both positive or both negative to provide a fair test of the weight assigned to equality in outcomes. That is, equality in outcomes becomes virtually irrelevant when outcomes for the self are positive and outcomes for the other are negative (or vice versa), because such a mixture of positive and negative outcomes represents large discrepancies between outcomes for the self and outcomes for the other in both options. Thus, I wanted to avoid a mixture of positive and negative outcomes. Second, I examined only positive outcomes (rather than only negative outcomes) because I administered this measure to a rather unusual sample, which included individuals with relatively little educational training. I assumed that making comparisons among negative outcomes—especially in numerical form—is somewhat more complex.

The 24 pairs of self–other outcome combinations were sampled from a circle in the own–other outcome plane, defined by two orthogonal dimensions representing outcomes for the self (which varied from Dfl. 5.00 to Dfl. 35.00, or from approximately U.S. $2.75 to U.S. $19.25) and outcomes for the other (which also varied from Dfl. 5.00 to Dfl. 35.00). The radius of the circle was Dfl. 15.00, and the center of the circle coincided with the origin of the own–other outcome plane (i.e., the point representing Dfl. 20.00 for the self and Dfl. 20.00 for the other). Each decomposed game involved a choice between two equidistant own–other outcome distributions that were located next to each other on the circle. An example is the choice between Alternative A: Dfl. 34.50 for the self and Dfl. 23.90 for the other and Alternative B: Dfl. 35.00 for the self and Dfl. 20.00 for the other. The Ring Measure of Social Values is discussed in more detail by Liebrand et al. (1986).

On the basis of these 24 choices, I calculated the total amount of money allocated to the self and the total amount of money allocated to the other. For both the self and the other, the sum of monetary outcomes across the 24 choices could vary from Dfl. 450.00 to Dfl. 510.00 (from approximately U.S. $248 to U.S. $280). For example, if one's choices consistently minimized outcomes for the other, the other's outcomes would be Dfl. 450.00; conversely, if one's choices consistently maximized outcomes for the other, the other's outcomes would be Dfl. 510.00. On the basis of these

amounts of money allocated to the self and the other, one can calculate (a) the weight assigned to outcomes for the self and (b) the weight assigned to outcomes for the other. That is, the total outcomes allocated to the self and the other (from Dfl. 450.00 to Dfl. 510.00) were translated into weights varying from -1.00 to 1.00. For example, if one allocated Dfl. 510.00 to the other, then the weight assigned to outcomes for the other would be 1.00; if one allocated Dfl. 450.00 to the other, then the weight assigned to outcomes for the other would be -1.00; and if one allocated Dfl. 480.00 to the other (i.e., the average of Dfl. 450.00 and Dfl. 510.00), then the weight assigned to outcomes for the other would be 0.00. The weights assigned to outcomes for the self were calculated in precisely the same way.

I calculated the weights assigned to equality in outcomes in a similar manner. Across the 24 choices, the sum of absolute differences between one's own and the other's outcomes could vary from Dfl. 280.00 to Dfl. 364.80 (from approximately U.S. $154 to U.S. $200). These absolute differences were translated into weights varying from -1.00 to 1.00. For example, if the absolute difference between one's own and the other's outcomes was Dfl. 280.00, then the weight assigned to equality in outcomes would be 1.00 (i.e., one seeks to minimize differences between one's own and the other's outcomes, irrespective of relative advantage for the self or the other). If the absolute difference was Dfl. 364.80, then the weight assigned to equality in outcomes would be -1.00 (i.e., one seeks to maximize differences between one's own and the other's outcomes, irrespective of relative advantage for the self or the other). If the absolute difference was Dfl. 322.40 (i.e., the average of these extreme values), then the weight assigned to equality in outcomes would be 0.00 (i.e., one is indifferent to differences between one's own and the other's outcomes, irrespective of relative advantage for the self or the other).

It is useful to illustrate these specific orientations in a more concrete manner by linking them to the integrative model of social value orientation, which defines outcome transformations in terms of the weights assigned to outcomes for the self (W_1), outcomes for the other (W_2), and equality in outcomes (W_3). A perfectly cooperative orientation (i.e., MaxJoint) results in the following weights: $W_1 = .707$, $W_2 = .707$, and $W_3 = 0.00$. A perfectly individualistic orientation (i.e., MaxOwn) results in the following weights: $W_1 = 1.00$, $W_2 = 0.00$, and $W_3 = 0.00$. A perfectly competitive orientation (i.e., MaxOwn and MinOther) results in the following weights: $W_1 = .707$, $W_2 = -.707$, and $W_3 = 0.00$. An orientation that is guided exclusively by equality in outcomes (i.e., MinDiff) yields the following weights: $W_1 = 0.00$, $W_2 = 0.00$, and $W_3 = 1.00$. Thus, the three orientations are measured in an orthogonal manner. However, because the sum of the squared weights cannot exceed 1.00, this measurement examines "distributions" of weights. For example, it is likely that, relative to individualists, prosocials assign less weight to outcomes for the self because prosocials are expected to assign more weight to outcomes for the other and equality in outcomes.

Results and Discussion

To test the integrative model, I examined differences among prosocials, individualists, and competitors in the weights they assigned to outcomes for the self, outcomes for others, and equality in outcomes. First, I examined the concurrent link between Time 2 social value orientation and Time 2 weights assigned to

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[4] I also examined the number of unclassifiable participants when the criterion for classification involved making at least four (rather than five) consistent choices. This less conservative criterion yielded 251 participants (11%) who could not be classified. In the *Results* section, I discuss the results on the basis of the conservative criterion for classification; however, the results were virtually identical (i.e., all significant effects remained significant, and there were no new significant effects) when the less conservative criterion for classification was used.

Table 1

Mean Weights Assigned to Outcomes for Self, Outcomes for Others, and Equality in Outcomes by Prosocials, Individualists, and Competitors

Weight assigned to	Prosocials	Individualists	Competitors	M
Time 2 social value orientation				
Outcomes for self	.59	.84	.67	.68
	(.31)	(.24)	(.29)	(.31)
Outcomes for others	.30	.02	−.34	.14
	(.31)	(.27)	(.33)	(.36)
Equality in outcomes	.32	.05	.02	.20
	(.29)	(.17)	(.19)	(.28)
Time 1 social value orientation				
Outcomes for self	.66	.78	.80	.70
	(.29)	(.25)	(.23)	(.29)
Outcomes for others	.13	.09	−.09	.11
	(.35)	(.32)	(.37)	(.35)
Equality in outcomes	.19	.11	.04	.16
	(.28)	(.22)	(.15)	(.26)

Note. Standard deviations are in parentheses.

outcomes for the self, outcomes for others, and equality in outcomes. As can be seen in Table 1, relative to individualists and competitors, prosocials assigned (a) greater positive weight to others' outcomes and (b) greater weight to equality in outcomes. All statistics relevant to these findings were significant. That is, one-way analyses of variance (ANOVAs) revealed a significant effect of Time 2 social value orientation for (a) the weight assigned to outcomes for the self, $F(2, 1848) = 147.20, p < .001$; (b) the weight assigned to outcomes for others, $F(2, 1848) = 477.94, p < .001$; and (c) the weight assigned to equality in outcomes, $F(2, 1848) = 275.46, p < .001$. Planned comparisons revealed a prosocials versus individualists and competitors contrast for the weights assigned to outcomes for the self, outcomes for others, and equality in outcomes, $Fs(1, 1848) = 239.68, 722.28,$ and 547.93, respectively, $ps < .001$. The contrast of individualists versus competitors was significant for the weights assigned to outcomes for the self, $F(1, 1848) = 54.71, p < .001$, and outcomes for others, $F(1, 1848) = 233.60, p < .001$, and marginal for equality in outcomes, $F(1, 1848) = 2.99, p < .10$. Finally, the weight assigned to outcomes for others by competitors was significantly different from zero, $F(1, 209) = 387.91, p < .001$ (i.e., it was significantly negative). Thus, these findings provide good support for the integrative model of social value orientation.

Second, I examined the lagged link between Time 1 social value orientation and Time 2 weights assigned to outcomes for the self, outcomes for others, and equality in outcomes. As can be seen in Table 1, prosocials assigned (a) greater positive weight to others' outcomes and (b) greater weight to equality in outcomes than did individualists and competitors. One-way ANOVAs revealed a significant effect of Time 1 social value orientation for (a) the weight assigned to outcomes for the self, $F(2, 701) = 13.16, p < .001$; (b) the weight assigned to outcomes for others, $F(2, 701) = 9.09, p < .001$; and (c) the weight assigned to equality in outcomes, $F(2, 701) = 10.47, p < .001$. Planned comparisons revealed a prosocials versus individualists and competitors contrast for the weights assigned to outcomes for the self, outcomes for others, and equality in outcomes, $Fs(1, 701) = 26.19, 8.34,$

and 18.80, respectively, $ps < .005$. The contrast of individualists versus competitors was significant only for outcomes for others, $F(1, 701) = 9.84, p < .005$. Finally, the weight assigned to outcomes for others by competitors was significantly different from zero, $F(1, 46) = 28.17, p < .001$ (i.e., it was significantly negative). These findings provide additional support for the integrative model, that is, evidence in support of the lagged link between social value orientation and the weights assigned to outcomes for others and equality in outcomes.[5]

Next, I examined the links among the three weights. These analyses revealed a negative association between the weights assigned to outcomes for the self and equality in outcomes, $r(1851) = −.59, p < .001$, and no association between the weights assigned to outcomes for the self and outcomes for others, $r(1851) = .03, ns$. More important, the weight assigned to others' outcomes was positively correlated with the weight assigned to equality in outcomes, $r(1851) = .31, p < .001$. This correlation was somewhat higher when both variables were corrected for the weight assigned to outcomes for the self, partial $r(1851) = .36, p < .001$. At the same time, the correlations were somewhat modest in magnitude, suggesting that there might be a fair amount of people who tend to pursue either good outcomes for others or equality in outcomes. However, this appeared to be the case for only a small minority of people. Analyses based on median splits revealed that 73% exhibited above median scores (high–high) or below median scores (low–low) on both weights and 27% exhibited above median scores on one weight and below median scores on the other weight (high–low or low–high). Thus, tendencies toward enhancing outcomes for others and equality in outcomes

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[5] I also explored the role of gender. I observed an association between social value orientation and gender, such that women were relatively more prevalent among prosocials and less prevalent among individualists and competitors. However, ANOVAs on the three weights revealed no effects for gender, neither in one-variable analyses nor in two-variable analyses (i.e., including gender and social value orientation).

were correlated and tended to go hand-in-hand for most participants.[6]

Study 2

Study 1 provided good evidence in support of the integrative model of social value orientations. Relative to individualists and competitors, prosocials assigned greater weight to outcomes for others as well as equality in outcomes. Study 2 was designed to test an interaction-relevant implication of the integrative model of social value orientation, examining whether prosocials would be more strongly inclined than individualists and competitors to reciprocate a previous choice made by an interdependent partner.

As noted earlier, most prior studies examined behavioral assimilation (or reciprocity) in the context of iterated prisoner's dilemmas (most notably, Kelley & Stahelski, 1970). However, in iterated prisoner's dilemmas, reciprocity could be guided by a multitude of specific considerations, following from the interplay of others' past choices (or past interactions) and individuals' long-term interaction goals (e.g., the perceived feasibility of attaining particular interaction goals). For example, a partner's past actions may influence, to some degree, considerations relevant to long-term interaction goals, because the partner's past actions (e.g., noncooperative choices) might bring about beliefs regarding the feasibility of attaining particular long-term interaction goals (e.g., diminished confidence in the feasibility of establishing patterns of mutual cooperation). Thus, because considerations regarding the past, present, and future are inextricably linked to patterns of choice in iterated prisoner's dilemmas, it is difficult to understand the specific considerations and motivations that underlie patterns of reciprocity. As such, the explanation of prosocials' reciprocity in terms of their tendencies to enhance joint outcomes and equality in outcomes is in fact one of several plausible accounts.

In Study 2, I used a prisoner's dilemma task in which an individual's choice could be influenced merely by a single previous choice of the partner and not by any considerations relevant to future interactions. Specifically, in this prisoner's dilemma, the partner first made a choice, and the participant then made a choice in full awareness of the previous choice by the partner and knowing that there would be no further choices to be made by the partner or the participant himself or herself. Thus, in this task, choice can be understood only in terms of a single previous choice by the interaction partner in combination with the broader interaction goals (i.e., social value orientations) that individuals bring to bear on this situation.

A second, though perhaps less important, limitation is that most prior research on iterated prisoner's dilemma compared cooperative, noncooperative, and tit-for-tat strategies (Kuhlman & Marshello, 1975; McClintock & Liebrand, 1988; Sattler & Kerr, 1991), thus providing little insight into the degree to which prosocials exhibit reciprocity with others who vary in the degree of cooperative behavior. In this research, I used a give-some dilemma in which individuals could decide to give away a number of chips (varying from zero to four) that were worth twice as much to the other person as they were to the participants. I systematically manipulated the degree of cooperation exhibited by the other. That is, some others gave away one chip (low cooperation), some others

gave away two chips (average cooperation), and some others gave away three chips (high cooperation).

As noted earlier, the construct of social value orientation has been conceptualized primarily in terms of differences in the weight assigned to a partner's outcomes, as explicated in Model 1. Model 2 and the integrative model extend this model by assuming that prosocials wish to enhance equality in outcomes, either as a single broader motivation (Model 2) or as an additional broader motivation (the integrative model). The interaction-relevant implication of these latter models is that prosocials should be more strongly inclined than individualists and competitors to make the same choice as did the partner. Thus, I predicted that prosocials would exhibit stronger levels of reciprocity than individualists and competitors. I refer to this prediction as the "value-reciprocity hypothesis."

Method

Participants and experimental design. One hundred thirty-five students (90 women, 45 men) participated in this study. They were recruited by means of an advertisement in the university newspaper inviting individuals to participate in an experiment on decision making; each participant was paid 20 Dutch guilders (Dfl. 20.00 equal approximately $11 in American currency).

The experimental design was a 3 (social value orientation: prosocials vs. individualists vs. competitors) × 3 (partner's cooperation: low vs. average vs. high) × 2 (impression of partner: desirable vs. undesirable), with the latter two variables being within-participant variables. I have not yet discussed the latter variable (i.e., impression of partner) because this variable was not relevant to the primary goals or hypotheses of this study. As I describe in the Procedure section, I provided participants with information about a partner's personality characteristics in addition to information about a partner's choice. The reason was to provide participants with an additional source of information that they could use to make their decisions, thereby decreasing, to some degree, the salience of the partner's choice as the sole basis for one's choice and minimizing the possible role of demand characteristics.

Procedure. Experimental sessions were scheduled in groups of 8 to 14 participants. After the participants were welcomed and escorted to individual cubicles, I administered three tasks to them using noncomputerized (i.e., paper-and-pencil) and self-paced procedures: (a) a series of nine decomposed games; (b) a sequential, single-trial prisoner's dilemma task; and (c) a set of 20 game situations, followed by ratings of the participants'

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[6] The design of this study also allowed me to provide some insight (albeit indirect) into the stability of social value orientation. This evidence is indirect because the Time 1 and Time 2 measurements were somewhat different (see the *Method* section). Despite these differences, there was a significant relationship between Time 1 and Time 2 social value orientation, $\chi^2(4, N = 581) = 43.20, p < .001$, revealing that 342 of 581 participants (59%) expressed the same social value orientation at Time 1 and Time 2 ($\kappa = .19, p < .001$). Clearly, the stability of social value orientation is somewhat lower than one would expect from a "stable dispositional" point of view, but it is comparable to that found for other individual-differences variables that are similarly unevenly distributed (e.g., adult attachment styles, with a 50%–60% base rate of secure attachment; Shaver & Brennan, 1992), which are argued to be relatively stable. Along with recent research indicating a 75% stability in social value orientation over a period of 6 months (Van Lange & Semin-Goossens, 1998), I suggest that social value orientation reflects dispositions that are at least somewhat stable yet open to modification, particularly over a relatively longer period of time.

own choices in these game situations (the results of this latter task are not reported here). After completing these three tasks, the participants were debriefed, thanked, and paid 20 Dutch guilders.

Measuring social value orientation. I began the experiment by assessing participants' social value orientations by using the Triple-Dominance Measure of Social Values (see Study 1). Unlike Study 1, in Study 2 I administered nine decomposed games, as in most previous research (see Van Lange et al., 1997). Participants were classified if they made at least six of nine choices that were consistent with one of the three social value orientations. Using these criteria, I identified 49 prosocial individuals, 38 individualists, and 31 competitors. Seventeen participants could not be classified because they made fewer than six consistent choices.

Measuring reciprocity in a sequential, single-trial prisoner's dilemma. Participants were engaged in a prisoner's dilemma, which used a give-some dilemma that was adopted from previous research (e.g., Van Lange & Kuhlman, 1994). Each participant was asked to imagine that he or she had been given four yellow (blue) chips and that the other had been given four blue (yellow) chips. Each own chip had a value of 50 Dutch cents (or approximately U.S. $.28) to the person himself or herself and a value of 100 Dutch cents to the other. Similarly, each chip held by the other had a value of 50 cents to the other and a value of 100 cents to the participant himself or herself. The participant's task was to decide how many of his or her four chips to give to the other. Maximal cooperation was to give four chips (i.e., joint well-being was better served by exchanging more chips), and maximal noncooperation was to give zero chips (i.e., personal well-being was better served by giving fewer chips to the other). This task was well understood (i.e., 133 of 135 participants correctly answered at least 9 of 10 comprehension questions, and no participant correctly answered fewer than 6 questions). Therefore, no data were excluded in the analyses.

I explained to the participants that each of them would be paired with several others and that all of these others sufficiently understood the decision task and had made choices regarding the number of chips they gave away. Also, participants were led to believe that all of these other individuals had completed the so-called Personality Characteristics Questionnaire—a highly reliable and valid personality questionnaire that provides measures of a number of personality characteristics. They were paired with 12 others who had decided to give away one chip, two chips, or three chips and who were described in terms of their standing on the dimensions of artistic interest and athletic ability. Regarding both dimensions, the others were described as having scores either in the upper 20% (i.e., high artistic ability or high athletic ability) or in the lower 20% (i.e., low artistic ability or low athletic ability). Four others scoring high or low on these two dimensions gave away one chip, 4 others scoring high or low on these two dimensions gave away two chips, and 4 others scoring high or low on these two dimensions gave away three chips. I used the dimensions of artistic ability and athletic ability because they are not directly linked to morality or social competence (which may influence patterns of reciprocity; Van Lange & Kuhlman, 1994) but they do carry an evaluative meaning. Yet the fact that I used both the positive and negative poles of both of these dimensions provided participants with a basis for choice. I used two dimensions so that the choices did not depend on a single specific adjective. The 12 others were given a random position in a total "list" of 15 others so as to minimize the possibility of reactivity (i.e., 2 others were described in terms of physical fitness and 1 other in terms of adventurousness) and make them believe that individuals could make choices other than giving away one, two, or three chips (i.e., 1 other gave away four chips, and 1 other gave away zero chips).

Results and Discussion

I conducted a 3 (social value orientation: prosocials vs. individualists vs. competitors) × 3 (partners' cooperation: low vs. average vs. high) × 2 (impression of partners: desirable vs. undesirable) ANOVA, with the latter two variables being within-

participant variables. This analysis revealed three significant effects. First, a main effect of social value orientation, $F(2, 115) = 16.80$, $p < .001$, revealed that prosocials ($M = 1.58$, $SD = 0.76$) exhibited greater cooperation than did individualists ($M = 0.93$, $SD = 0.86$), who in turn exhibited greater cooperation than did competitors ($M = 0.62$, $SD = 0.62$). Indeed, planned comparisons revealed a significant contrast of prosocials versus individualists and competitors, $F(1, 115) = 30.78$, $p < .001$, and a marginal contrast of individualists versus competitors, $F(1, 115) = 2.81$, $p < .10$. Second, a main effect of partners' cooperation, $F(2, 114) = 155.43$, $p < .001$, revealed that high-cooperative partners ($M = 1.68$, $SD = 1.25$) elicited greater cooperation than did low-cooperative partners ($M = 0.55$, $SD = 0.59$), and average-cooperative partners elicited intermediate levels of cooperation ($M = 1.13$, $SD = 0.89$).

Third, the analysis revealed an interaction between social value orientation and partners' cooperation, $F(4, 226) = 6.37$, $p < .001$. Prosocials' level of cooperation varied strongly as a function of partners' cooperation (for low-, average-, and high-cooperative partners, $Ms = 0.80$, 1.58, and 2.37, respectively, $SDs = 0.65$, 0.79, and 1.05, respectively), and prosocials tended to exhibit levels of cooperation that were fairly similar although slightly lower than the levels of cooperation exhibited by the partners. Levels of cooperation by individualists (for low-, average-, and high-cooperative partners, $Ms = 0.43$, 0.97, and 1.40; $SDs = 0.51$, 0.90, and 1.26) and competitors (for low-, average-, and high-cooperative partners, $Ms = 0.30$, 0.62, and 0.95; $SDs = 0.41$, 0.67, and 0.95) varied less strongly as a function of partners' cooperation and were substantially lower than the levels of cooperation exhibited by the three partners. Indeed, subsequent planned comparisons revealed an interaction between partners' cooperation and the contrast of prosocials versus individualists and competitors, $F(1, 115) = 22.52$, $p < .001$. The contrast of individualists versus competitors did not interact with partners' cooperation, $F(1, 115) = 0.43$, *ns*. No other effects in the original three-variable ANOVA were significant, including all possible effects of impression of partner.

To provide a more direct test of the value-reciprocity hypothesis, I performed additional analyses in which I computed for each partner the proportion of self-benefit choices (i.e., contributing fewer chips than the partner did), reciprocity choices (i.e., contributing precisely the same number of chips as the partner did), and partner-benefit choices (i.e., contributing more chips than the partner did). Before these analyses, these proportions were subjected to arcsine transformations to correct for the dependence among the three variables. Although the analyses are based on the transformed proportions, I report the nontransformed proportions because these are readily interpretable.

First, a 3 (social value orientation) × 3 (partners' cooperation) ANOVA on the (arcsine-transformed) proportion of reciprocity choices revealed a main effect of social value orientation, $F(2, 115) = 17.10$, $p < .001$. Subsequent planned comparisons revealed a greater proportion of reciprocity choices for prosocials than for individualists and competitors, $F(1, 115) = 31.62$, $p < .001$, and no significant contrast between individualists and competitors, $F(1, 115) = 2.59$, *ns* (for means, see Table 2). Second, the analysis revealed a main effect for partners' cooperation, $F(2, 114) = 4.38$, $p < .05$, indicating a greater proportion of reciprocity choices for low-cooperative partners than for high-cooperative

Table 2

Proportions of Reciprocity, Self-Benefit, and Partner-Benefit Choices for Prosocials, Individualists, and Competitors

	Partners' cooperation			
Choice	Low	Average	High	M
Reciprocal				
Prosocials	.66	.65	.60	.64
Individualists	.33	.34	.33	.33
Competitors	.27	.15	.09	.17
M	.45	.42	.38	.42
Self-benefit				
Prosocials	.29	.31	.33	.31
Individualists	.62	.63	.66	.64
Competitors	.72	.84	.90	.82
M	.51	.55	.59	.55
Partner-benefit				
Prosocials	.05	.04	.07	.05
Individualists	.05	.03	.01	.03
Competitors	.01	.01	.01	.01
M	.04	.03	.03	.03

partners, with an intermediate proportion of reciprocal choices for average-cooperative partners. Third, the interaction between social value orientation and partners' cooperation was not significant, $F(4, 226) = 1.23$, *ns*, indicating that the effect of prosocials versus individualists and competitors on the proportion of reciprocity choices was not further influenced by low-, average-, and high-cooperative partners.[7]

Next, I analyzed the (arcsine-transformed) proportion of self-benefit choices, contributing fewer chips than the partners did. This analysis yielded a main effect for social value orientation, $F(2, 115) = 19.42$, $p < .001$. Subsequent planned comparisons revealed a greater proportion of self-benefit choices for individualists and competitors than for prosocials, $F(1, 115) = 35.43$, $p < .001$, and a greater proportion of self-benefit choices for competitors than for individualists, $F(1, 115) = 4.55$, $p < .05$ (for means, see Table 2). The analysis also yielded a main effect for partners' cooperation, $F(2, 114) = 5.33$, $p < .01$, revealing that self-benefit was greater for high-cooperative partners than for low-cooperative partners, with intermediate values of self-benefit for average-cooperative partners.

Finally, I analyzed the (arcsine-transformed) proportion of partner-benefit choices, contributing more chips than the partners did. This analysis yielded no main effects, neither for social value orientation, $F(2, 115) = 0.35$, *ns*, nor for partners' cooperation, $F(2, 114) = 0.29$, *ns*. However, the interaction between these variables was significant, $F(4, 226) = 2.50$, $p < .05$, indicating that, relative to individualists, prosocials tended to make more partner-benefit choices with high-cooperative partners but not with low-cooperative or average-cooperative partners. Competitors did not tend to make partner-benefit choices at all, irrespective of the degree of cooperation exhibited by the partners.[8,9]

Study 3

Study 2 provided good support for the value-reciprocity hypothesis. Relative to individualists and competitors, prosocials exhibited greater tendencies toward reciprocity. In contrast, individual-

ists and competitors were more strongly inclined to make self-benefit choices. These findings were observed in a sequential, single-trial social dilemma, in which participants were provided with information about the others' levels of cooperation just before participants made their own choice. A potential limitation of this paradigm is that information on the others' levels of cooperation, given by the experimenter, may have enhanced the salience of the others' choices as a basis for making their own choice (even though I wanted to diminish the salience by also giving them irrelevant personality information about the others). Thus, it remained to be determined whether evidence for the value-reciprocity hypothesis would generalize to situations in which the others' choices were not directly made salient.

Study 3 extended Study 2 by examining a simultaneous, single-trial prisoner's dilemma, in which choices by the self and the other were made simultaneously. Rather than examining actual reciprocity, Study 3 examined implicit reciprocity (or expected reciprocity) by examining the frequency with which participants exhibited the same level of cooperation as they expected from the other in the social dilemma task. Expected reciprocity was compared with (a) the frequency with which participants exhibited less cooperation than they expected from the other (expected self-benefit) and (b) the frequency with which participants exhibited greater cooperation than they expected from the other (expected partner benefit).

By virtue of its correlational design, Study 3 provides a relatively conservative test of the value-reciprocity hypothesis because there are at least two additional mechanisms that could contribute to expected reciprocity. These mechanisms include (a) assumed similarity, or a tendency to project one's own motivations and behaviors onto the other (e.g., Dawes, McTavish, & Shaklee, 1977), and (b) post hoc justification, or rationalizing one's own (intended) levels of cooperation by coloring judgments regarding the other's level of cooperation (e.g., Messé & Sivacek, 1979). However, there were no a priori reasons to believe that these mechanisms would be stronger for prosocials than for individualists and competitors. (In fact, it is plausible that tendencies toward justification should be stronger among individualists and competitors, assuming that one is more strongly motivated to justify one's

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[7] Before Study 2, I conducted a small study involving 20 prosocials and 11 individualists and competitors. Using the same paradigm, I examined the number of reciprocity choices with 4 others who gave away two chips. Consistent with the value-reciprocity hypothesis, prosocials made a greater number of reciprocity choices ($M = 3.30$, $SD = 1.34$) than did individualists and competitors ($M = 1.45$, $SD = 1.51$), $F(1, 19) = 8.73$, $p < .01$. In other words, the proportion of reciprocity choices was .82 for prosocials and .36 for individualists and competitors.

[8] I also examined possible gender effects but found no main or interaction effects involving gender.

[9] After a set of 20 game situations, I examined participants' self-reports of cooperation (MaxJoint), equality (MinDiff), altruism (MaxOther), individualism (MaxOwn), and competition (MaxRel) as considerations for their choices in the game situations. Analyses revealed that, relative to individualists and competitors, prosocials exhibited higher levels of self-reported cooperation, equality, and altruism and lower levels of individualism and competition. These findings, too, are consistent with the integrative model of social value orientation in that prosocials differed from individualists and competitors in their tendencies to enhance joint outcomes and equality in outcomes.

own tendencies toward exploitation than to justify one's willingness to be exploited.) Thus, the focus on expected reciprocity in a simultaneous, single-trial social dilemma should make the other's choice somewhat less salient as a basis for one's own choice and provides a relatively conservative test of the value-reciprocity hypothesis.

Study 3 extended Study 2 in two additional respects. First, Study 2 used a social dilemma in which the outcomes were imaginary. To use outcomes that were likely to be more meaningful and involving, in Study 3 I used a social dilemma in which the outcomes represented actual money. Second, Study 2 used the Triple-Dominance Measure of Social Values, which examines decisions among a prosocial option, an individualistic option, and a competitive option. An alternative measure that has often been used to classify individuals in terms of their social value orientation is the Ring Measure of Social Values (Liebrand et al., 1986), which does not "force" individuals to choose among three orientations. Thus, Study 3 examined whether a classification based on the Ring Measure of Social Values would also yield support for the value-reciprocity hypothesis.

Method

Participants and design. One hundred ninety-six students (98 women, 98 men) participated in this study. They were recruited by means of an advertisement in the university newspaper inviting individuals to participate in an experiment on decision making. The design was a simple one-variable design, examining the link between social value orientation (prosocial, individualist, or competitive) and the tendency to make exactly the same choice as that expected from the other (i.e., expected reciprocity). The entire experiment was computerized.

Measuring social value orientation. I began the experiment by assessing participants' social value orientations, using the Ring Measure of Social Values, measured precisely the same way as in previous research (e.g., Liebrand et al., 1986; McClintock & Liebrand, 1988). This task consists of choices between 24 pairs of self–other outcome combinations. Outcomes were defined in terms of imaginary amounts of money and, unlike Study 1, involved combinations of positive outcomes and negative outcomes for the self and the other. Hence, I did not use the Ring Measure of Social Values as an instrument to assess three weights, as I did in Study 1, because the combinations of positive and negative outcomes for the self and the other made it difficult to compare these options in terms of equality in outcomes (i.e., participants would have to have engaged in laborious calculations to assess which option best served equality in outcomes). Thus, the Ring Measure of Social Values was used as an alternative instrument for assessing participants' social value orientations.

Consistent with previous research (e.g., McClintock & Liebrand, 1988), participants with social value vectors between 22.5° and 112.5° were classified as "prosocial," participants with social value vectors between 337.5° (or −22.5°) and 22.5° were classified as "individualistic," and participants with social value vectors between 292.5° (or −67.5°) and 337.5° (or −22.5°) were classified as "competitive." Participants were classified only if at least 50% of their choices were consistent with a particular social value orientation. Of the 196 participants, I identified 93 as prosocial, 60 as individualistic, and 11 as competitive. Twenty-six participants were not classified because they exhibited a consistency that was less than 50%, and 6 participants were not classified because they revealed a social value vector of exactly 22.5°.

Measuring expected reciprocity in a simultaneous, single-trial prisoner's dilemma. The prisoner's dilemma was similar to the give-some dilemma used in Study 2. The participant's task was to decide how many of his or her four chips to give to the other, whereby maximal cooperation was to give four chips, and maximal noncooperation was to give zero

chips. There were two substantial differences between the prisoner's dilemma tasks used in Studies 2 and 3. First, because Study 3 used a simultaneous, single-trial social dilemma, the participant made a choice in the absence of any information relevant to the other's choice. Second, unlike Study 2, the choices involved actual money. Specifically, each own chip had a value of 25 cents to the participant himself or herself and a value of 50 cents to the other. Thus, each 25 cents given away yielded a 25-cent loss to the self and a 50-cent gain to the other. When both persons exhibited maximal cooperation, they would each gain 1 guilder; when one exhibited maximal cooperation and the other exhibited maximal noncooperation, the former would lose 1 guilder, whereas the latter would gain 2 guilders. Although it is intuitively compelling to increase the stakes by involving large amounts of money (or large monetary incentives), the stakes (maximal loss was 1 guilder, and maximal gain was 2 guilders) were not very high in this study. Extant research has revealed that the magnitude of monetary incentives (i.e., playing for pennies vs. large amounts of money) does not systematically affect cooperation; indeed, as outlined by Komorita and Parks (1995), the majority of studies report no significant differences. And from a practical point of view, I expected that when I set the minimal amount of payment at a reasonable level, individuals would be more likely to participate, and selection effects (e.g., recruitment of "sensation seekers") would be less likely to occur.

I should note that, throughout the explanations of the prisoner's dilemma, no advice was given as to how much participants should give away (e.g., I did not use concepts like "cooperation" and "competition"). To check the participants' comprehension, I asked them a series of five questions with seven alternatives. It appeared that only 2 participants required additional explanation to correctly answer at least four questions; hence, the analysis included the data of all participants. After the comprehension check, I asked the participants to indicate how many cents they expected the other to give away (measuring expectations regarding the other's cooperation) and how many cents they decided to give away themselves (measuring actual cooperation).

Results and Discussion

I tested the value-reciprocity hypothesis by examining the percentages of prosocials, individualists, and competitors who expected the other to give (a) a greater number of chips than they gave themselves (i.e., expected self-benefit), (b) an equal number of chips as they gave themselves (i.e., expected reciprocity), and (c) a smaller number of chips than they gave themselves (i.e., expected partner benefit). As can be seen in Table 3, the percentage of expected reciprocity was higher for prosocials than for individualists and competitors, and the percentage of expected self-benefit was lower for prosocials. Indeed, there was a significant association between the three social value orientations and the three types of choice, $\chi^2(4, N = 164) = 11.09, p < .05$. Next, I conducted two analyses in which small groups were excluded. First, an analysis in which the group of individuals expecting partner benefit ($n = 17$) was excluded revealed a significant association, $\chi^2(2, N = 147) = 9.20, p < .01$. Second, an analysis in which competitors ($n = 11$) were excluded also revealed a significant association, $\chi^2(2, N = 153) = 8.14, p < .05$. Finally, I compared prosocials with individualists in their frequencies regarding reciprocity and self-benefit choices, thereby excluding both (a) individuals expecting partner benefit and (b) the group of competitors. This analysis also yielded a significant association, $\chi^2(1, N = $

Table 3

Percentages of Prosocials, Individualists, and Competitors Whose Own Level of Cooperation Was Equal to (Reciprocity), Lower Than (Self-Benefit), or Higher Than (Partner Benefit) the Level of Cooperation Expected From Others

	Social value orientation			
Expected outcome	Prosocials ($n = 93$)	Individualists ($n = 60$)	Competitors ($n = 11$)	Total ($N = 164$)
Reciprocity	80%	58%	45%	70%
	($n = 74$)	($n = 35$)	($n = 5$)	($n = 114$)
Self-benefit	13%	28%	36%	20%
	($n = 12$)	($n = 17$)	($n = 4$)	($n = 33$)
Partner benefit	8%	13%	18%	10%
	($n = 7$)	($n = 8$)	($n = 2$)	($n = 17$)

Note. Actual frequencies are in parentheses.

138) $= 6.85$, $p < .01$. Taken together, these analyses provide evidence in support of the value-reciprocity hypothesis.[10]

Although less relevant to the primary hypothesis, one-way ANOVAs revealed a main effect of social value orientation on (a) the level of cooperation expected from the partners, $F(2, 160) = 7.13$, $p < .001$, and (b) own cooperation, $F(2, 160) = 9.55$, $p < .001$. Prosocials ($M = 3.02$, $SD = 1.19$) expected greater cooperation from others than did individualists ($M = 2.28$, $SD = 1.42$) or competitors ($M = 2.09$, $SD = 1.51$). Also, prosocials ($M = 2.90$, $SD = 1.40$) exhibited greater cooperation than did individualists ($M = 1.98$, $SD = 1.46$) or competitors ($M = 1.54$, $SD = 1.44$). For expectations regarding both others' cooperation and own cooperation, there was a significant contrast of prosocials versus individualists and competitors, Fs$(1, 160) = 14.06$ and 18.26, respectively, ps $< .001$, but no significant contrast of individualists versus competitors, Fs$(1, 160) = 0.20$ and 0.83, respectively, ps $= ns$. These findings are consistent with previous research (e.g., Van Lange & Kuhlman, 1994).

General Discussion

This research addresses the meaning of social value orientation, seeking to extend and complement traditional models that almost exclusively have conceptualized differences among prosocial, individualistic, and competitive orientations in terms of the manner in which individuals evaluate outcomes for others (Model 1). On the basis of prior studies of behavioral assimilation, I provided a framework for conceptualizing prosocial orientation in terms of maximization of equality in outcomes (Model 2) or in terms of both maximization of joint outcomes and equality in outcomes (Model 3), the integrative model of social value orientation.

Consistent with the integrative model of social value orientation, Study 1 revealed that, relative to individualists and competitors, prosocials assigned greater weight to both outcomes for others and equality in outcomes. Consistent with interaction-relevant implications of the integrative model of social value orientation, Study 2 revealed that, relative to individualists and competitors, prosocials exhibited greater reciprocity with others varying in the degree of cooperation. Finally, Study 3 revealed that prosocials were more strongly inclined than individualists and competitors to exhibit the same level of cooperation as they expected from their partners. The results of Studies 2 and 3 provide evidence in support of the

value-reciprocity hypothesis. Thus, these findings provide good support for the integrative model of social value orientation and indicate that well-established conceptualizations of social value orientation in terms of MaxJoint, MaxOwn, and MaxRel are too limited to fully comprehend the basic motivational differences underlying prosocial, individualistic, and competitive orientations.

The integrative model of social value orientation has several interesting implications. First, in addition to behavioral assimilation, prior research has revealed that prosocials sometimes exhibit tendencies toward overassimilation, coming to behave even more noncooperatively than others who have made some noncooperative choices (e.g., Kelley & Stahelski, 1970). This latter pattern can be understood in terms of their strong desire to restore equality in outcomes. Accordingly, the broader implication of this integrative model is that, when feelings of justice or fairness are seriously violated, prosocials may behave much more noncooperatively (although this behavior is understandable from a fairness point of view) than one would expect on the basis of a model in which prosocial orientation is considered to be synonymous with cooperation or MaxJoint outcomes. Thus, the integrative model of social value orientation helps one understand that prosocials may behave in a somewhat less forgiving manner than one would predict from the traditional models of social value orientation.

Second, prior research has revealed that, relative to individualists and competitors, prosocials more strongly evaluate cooperative and noncooperative others in terms of morality, associating cooperation with goodness and noncooperation with badness. Conversely, relative to prosocials, individualists and competitors evaluate these others more strongly in terms of might, associating cooperation with weakness and unintelligence and noncooperation with strength and intelligence (i.e., the might versus morality effect; Liebrand et al., 1986; see also Sattler & Kerr, 1991; Van Lange & Kuhlman, 1994). This effect typically has been explained by differences in MaxJoint versus MaxOwn–MaxRel orientations, assuming that prosocials view cooperative and noncooperative others in terms of the degree to which they inflict harm on others

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[10] I also examined possible gender effects, both in the analysis of expected reciprocity, expected self-benefit, and expected partner benefit and in the analysis of cooperation and expected cooperation from the partners. These analyses revealed no significant effects involving gender.

and the collective as a whole and that individualists and competitors view these others in terms of the degree to which they are capable of attaining good outcomes for the self (cf. Liebrand et al., 1986). The integrative model of social value orientation provides an additional explanation, assuming that prosocials versus individualists and competitors differ in terms of MinDiff orientations. Because prosocials tend to expect cooperation from others and to exhibit cooperation themselves, they are likely to view noncooperative (vs. cooperative) others as unfair and exploitative; thus, they should emphasize differences in morality. Because individualists and competitors tend to expect noncooperation from others and to exhibit noncooperation themselves, they are likely to view noncooperative (vs. cooperative) others as unexploitable, sensible, and strong, rather than as exploitative and unfair; thus, they should emphasize differences in terms of might.

Third, the model that conceptualizes prosocial orientation in terms of the maximization of joint outcomes (i.e., Model 1) suggests that individuals who adopt this orientation are unlikely to make choices that are detrimental to collective outcomes. However, given that prosocials are also concerned with equality in outcomes, this may not necessarily be true, especially in situations in which the desire for equality in outcomes is to some degree incompatible with short-term or long-term collective outcomes. For example, prosocials may be more likely than individualists and competitors to respond to incidental violations of justice in a manner detrimental to the functioning of dyads and groups (e.g., violations of distributive and procedural justice; Lind & Tyler, 1988; Thibaut & Walker, 1975; Tyler, 1994). Also, in the context of negotiations, a strong need for equality and fairness is likely to result in compromises, which frequently yield collective outcomes that are inferior to those obtained when some violation of equality is taken for granted (cf. Carnevale & Pruitt, 1992). These are examples of situations in which prosocials may actually behave in a manner that is (at least somewhat) detrimental to the well-being of the dyad or group as a whole as well as to long-term personal well-being.

Finally, Study 3 revealed that the majority of prosocials (80%) exhibited exactly the same level of cooperation as they expected from their partners; these percentages were substantially lower for individualists (58%) and competitors (45%). As noted earlier, the well-established link between cooperation and expectations regarding others' cooperation has been explained in terms of assumed similarity (Dawes et al., 1977) and post hoc justification (Messé & Sivacek, 1979). However, the desire to attain equality in outcomes has received little theoretical attention. These findings (the findings of Study 3, in combination with the findings of Studies 1 and 2) suggest that the pursuit of both joint outcomes and equality in outcomes further contributes toward explaining the well-established link between own cooperation and expectations regarding partners' cooperation. This is important because the single-trial prisoner's dilemma has become a popular research tool for examining cooperation in the absence of strategic or long-term considerations. Although reciprocity often has been claimed to be important in iterated prisoner's dilemmas (Komorita & Parks, 1995), I suggest that reciprocity (or the tendency to enhance expected equality in outcomes) also is likely to guide behavior in single-trial prisoner's dilemmas.

Before closing, it is appropriate to briefly consider some limitations of these studies and issues for future research. One limitation is that the measurement of social value orientation took place just before the social dilemma task and the choice task (Studies 2 and 3, in particular) and that these tasks shared important methodological features (i.e., they all were derived from the experimental game approach to interdependence). At the same time, the links of social value orientation with the weight assigned to outcomes for others and equality in outcomes were also present, although somewhat less pronounced, when these tasks were separated by 19 months (albeit the Time 2 session included a measure of social value orientation). It also is noteworthy that the various tasks, although derived from the experimental game literature, were fairly multifaceted (i.e., assessment of three different weights with the Ring Measure of Social Values and a sequential and a simultaneous, single-trial prisoner's dilemma). Nevertheless, it would be fruitful to test implications of the integrative model of social value orientation using measurement techniques that extend those inspired by the experimental game methodology and to assess social value orientation a substantial amount of time before the social dilemma task or a related task.

These findings may help integrate several lines of research. Because the prosocial orientation represents both enhancement of joint outcomes and equality in outcomes, the concept of social value orientation may illuminate the understanding of the motivations underlying various interaction-relevant phenomena, including negotiation (e.g., yielding and compromising), responses to violations of justice (e.g., procedural and distributive forms of justice), and problem solving in ongoing relationships (e.g., accommodation in close relationships). In other words, the predictive and explanatory power of social value orientation is by no means limited to domains of social interaction that are traditionally captured by the concepts of cooperation and competition.

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