

Research article

To compete or to cooperate? Values' impact on perception and action in social dilemma games

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Abstract

Two studies investigated how values affect competitive versus cooperative behavior. Each Study presented a new social-dilemma game, in which participants' interpretations of the dilemma (i.e., their subjective payoff matrix)—and consequently the dominant (i.e., rational) behavioral choice—depended on their values. The Paired Charity Game (Study 1) framed the situation in terms of cooperation. As hypothesized, contribution correlated positively with universalism and benevolence values that reflect concern for others and negatively with power, achievement, and hedonism values that promote self-interests. Furthermore, values, but not traits, predicted the participants' contribution. The Group Charity Game (Study 2) was designed to frame the situation in terms of competition. As hypothesized, contribution correlated positively with emphasizing benevolence over power values. Moreover, the impact of values was stronger when they were rendered accessible, indicating a causal influence of values on behavior. Furthermore, when their value hierarchy was rendered accessible, participants explained their choices in terms of those values that were (a) important to them and (b) relevant to the situation. The findings thus point to the mechanism through which accessible values affect behavior. Taken together, the studies promote our understanding of the value–behavior relationships, by highlighting the impact of values on perception. Copyright © 2010 John Wiley & Sons, Ltd.

Suppose you are a sales person in a telemarketing team. You are paid according to the number of calls you make per day. A co-worker who just joined your team asks for your help and advice. By taking the time to help, you increase her chances of performing well and thus contributing to the overall performance of your team. At the same time, however, the time spent means fewer calls for you, and a direct decrease in your own salary. Furthermore, the new team member, using your knowledge and tips, may improve and eventually outperform you. By keeping your knowledge to yourself you can maintain your high status in the team. Should you help? The answer depends on what is important to you in life. If success and social status are most important, you may view helping your co-worker as an obstacle to personal success. Refraining from helping would be the reasonable decision in this case. In contrast, if caring about others is most important to you, you may perceive this situation as an opportunity to express such care, and thus helping would be the rational choice.

Competition and cooperation are integral parts of most interpersonal and intergroup encounters. When people interact with others they frequently have to decide whether to cooperate with them, often at some cost for themselves, or to compete, possibly at the expense of others. We employ Schwartz's (1992) theory of personal values to explain

individuals' competitive versus cooperative behavior in social dilemma settings. We reason that because values affect the interpretation of social dilemmas, the rational behavior in a dilemma of competition versus cooperation depends on the values important to her. We present two empirical studies that investigate the relationships between values and competitive/cooperative choice in a social dilemma game: Study 1 indicates that the behavior depends on one's values, above and beyond one's personality traits. Study 2 tests the causal relationship between values and choice of cooperative versus competitive behavior.

Past research on competition and cooperation usually focused on situational factors, such as the framing of the situation (Brewer & Kramer, 1986), the saliency of social categorization (e.g., Wit & Kerr, 2002), interpersonal communication, (e.g., Tazelaar, Van Lange, & Ouwerkerk, 2004) and group size (e.g., Brewer & Kramer, 1986; De Cremer & Leonardelli, 2003). Fewer studies investigated the impact of stable individual differences, such as social motives (e.g., Van Lange, 1999), and personality traits, as addressed below.

The current research examines how personal values are related to competitive versus cooperative behavior in two new social-dilemma games. Studying interpersonal (Study 1) and

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intergroup (Study 2) conflicts, both games were designed to create unambiguous situations that allow for the attainment of certain values (i.e., value-relevant situations). Because values represent broad goals that are stable across time and situations, studying their impact on competition versus cooperation could deepen our understanding of these behaviors and the individuals that are likely to endorse them. Whereas previous studies usually focused on few personal attributes (i.e., one or two traits or motives), the current research examines the full set of values, thus studying the full spectrum of motivational goals. Moreover, we investigate not only the relationships between values and competition/cooperation, but also some of the mechanisms through which values affect behavior.

The Nature of Personal Values

Values are trans-situational goals that vary in importance and serve as guiding principles in people's lives (Kluckhohn, 1951; Rokeach, 1973; Schwartz, 1992). They differ from other personal attributes in several ways. First, values transcend specific situations. This feature distinguishes them from norms, attitudes, and specific goals, which usually refer to specific actions, objects, or situations (Schwartz, 1992). Second, values may serve as standards or criteria and provide social justification for choices and behaviors, distinguishing them from traits, interests, and orientations (Bilsky & Schwartz, 1994; Roccas, Sagiv, Schwartz, & Knafo, 2002; Sagiv, 2002). Third, unlike traits and motives, values are inherently desirable and they must be represented cognitively in ways that enable people to communicate about them (Roccas et al., 2002). Fourth, values are ordered by subjective importance, forming a unique system of value hierarchies (Rokeach, 1973; Schwartz, 1992). Finally, most behaviors have implications for multiple values. Hence, it is the *tradeoff* among competing values that is assumed to guide behavior (Schwartz, 1992; Tetlock, 1986). To understand and predict behavior, it is thus important to consider the full spectrum of values (Schwartz, 1996).

To conceptualize and measure values, we use Schwartz's theory of personal values, which has been tested in cross-cultural research in more than 200 samples from over 65 countries (Schwartz, 1992, 2005), and is considered the central theory of personal values (for reviews of value theories see Hitlin & Piliavin, 2004; Rohan, 2000). The theory suggests that values differ in the motivational goals to which they are directed. Schwartz identified 10 value types that form a circular structure. The distinctiveness of the 10 values and their structural relations has been verified in the vast majority of the samples studied. The dynamic relationships among the 10 value types can be summarized as two basic conflicts: The first conflict is between openness to change (self-direction and stimulation) and conservation (tradition, conformity, and security) values. The second conflict, which is of more relevance to this research contrasts self-enhancement (Power, achievement, and Hedonism¹) versus self-transcendence (benevolence and universalism) values. We elaborate on these conflicts below.

¹Hedonism values also share elements of openness to change versus conservation values.

Values and Behavior

As guiding principles in people's lives, values are expected to affect people's behavior. Past research provides rich evidence for the relations between values and behavior. Values were found systematically related to daily behaviors as well as major life choices (a review in Roccas & Sagiv, in press). Few studies investigated the mechanisms through which values are related to behavior. Studying hypothetical social dilemmas, Feather (1995) showed that values predict the valence attributed to each behavioral alternative, which in turn predicts the person's choice. Thinking of the reasons that specific values are important increased the strength of the relations between values and behavior (Maio, Olson, Bernard, & Allen, 2001; Karremans, 2007). In a pioneering study, Verplanken and Holland (2002) demonstrated *causality* in the relation between values and behavior and showed that when experimentally primed to be highly accessible, values predicted value-congruent behavior.

The current research promotes our understanding of the relations between values and behavior, by highlighting the impact of values on perception. Values affect individuals' perception and interpretation of situations and events (Gandal, Roccas, Sagiv, & Wrzesniewski, 2005; Schwartz, Sagiv, & Boehnke, 2000; see also research on might versus morality, e.g., Sattler & Kerr, 1991; Van Lange & Liebrand, 1989). In two empirical studies we investigated how values affect competitive versus cooperative behavioral choices. Each Study presents a new social dilemma game, in which participants' interpretations of the dilemma (i.e., their subjective payoff matrix)—and consequently the dominant (i.e., rational) behavioral choice—depend on their values. In both studies, the cooperative behavior is costly and conflicts with the competitive action that promotes self-interests. The studies thus deepen our understanding of actual behavior when two conflicting motivations are highlighted. We further show that values affect competitive/cooperative behavior above and beyond the effects of traits (Study 1), that increasing the accessibility of individuals' full value hierarchy enhances the impact of values on behavior, and that when their values are highly accessible, individuals explain their behavior in the terms of the values they emphasize (Study 2).

STUDY 1

Values in Social Dilemmas

Past research showed that emphasizing self-transcendence values predicted pro-social behavior such as donating money (Maio & Olson, 1995), acting to promote donations to charity (Joireman & Duell, 2007), engaging in daily pro-social actions (Bardi & Schwartz, 2003), and behaving in ways that others describe as benevolent and honest (Lönnqvist, Leikas, Paunonen, Nissinen, & Verkasalo, 2006). The current research studied the impact of values on cooperation versus competition in social dilemmas—where individuals have to choose between pro-self and pro-social action.

Cooperative versus competitive decisions in social dilemma games have been related to social value orientations (SVO). Values and SVO are conceptually and empirically related. The

Table 1. Payoff matrices of the paired charity game and of the group charity game

Panel A: The paired charity game				
Decision of B	Decision of A			
	Gave the money	Kept the money		
Gave the money	15 +donation (15)	30		
	15 +donation (15)	0 +donation (15)		
Kept the money	0 +donation (15)	15	30	15

Panel B: The group charity game				
Final game result	Ingroup won and its pool has >\$80	Ingroup won and its pool has <\$80	Outgroup won and its pool has <\$80	Outgroup won and its pool has >\$80
Decision of participant				
Did not contribute	Getting total sum collected from 3 groups / 40	Total sum collected from three groups contributed to social cause		Total sum collected from three groups goes to an outgroup
Contributed	Getting total sum collected from 3 groups / 40 minus own contribution	Total sum including own contribution contributed to social cause		Total sum collected including own contribution goes to an outgroup

two constructs also differ in some important ways². Only a few studies explored the role of basic, trans-situational values in competitive and cooperative behavior (Garling, 1999; Probst, Carnevale, & Triandis, 1999). Important limitations seem to cloud the contribution of these studies. In one study behavior was hypothetical: Participants were asked to imagine a social dilemma and state how they would act (Garling, 1999). In another study (Probst et al., 1999) the payoff structure of the games created a vague situation in which it was not clear whether contribution reflected competition or cooperation: Participants could cooperate with ingroup members, while simultaneously competing with outgroup members, and *vice versa*. Also, values were measured at the end of the study, after the decision to compete or cooperate. It could thus be a result of the behavior rather than its cause (*cf.* Bem, 1972). Studies that manipulated participants' perceptions of the frequency of value-related behaviors showed these perceptions affect subsequent value reports (e.g., Salancik & Conway, 1975).

Study 1 was designed to overcome these limitations and expand our knowledge of the ways in which values impact competitive versus cooperative behavior in social dilemma situations. For that aim, we introduce a new dilemma game, The Paired Charity Game, whose payoff structure was designed to have a different subjective valence for different participants, depending on their personal values. Specifically, it was designed so that *competing* would be the "rational"

decision for individuals who emphasize values that reflect self-enhancement and promotion of self-interests; and at the same time, *cooperating* would be the "rational" decision for those who emphasize values that reflect concern for others and transcendence over self-interest. Below we present the game and derive our hypotheses.

The Paired Charity Game

The Paired Charity Game is played in pairs. Each player receives NIS15 (about \$3.50) and has to decide whether to contribute the money to her partner (i.e., cooperate), or keep it for herself (i.e., compete). If player A decides to cooperate, she ends up with NIS15 when her partner chooses to cooperate as well (i.e., contributes his money) or she ends up with no money if her partner decides to compete (i.e., refrains from contributing). If player A decides to compete and save her money, she ends up with NIS30 or NIS15 if her partner cooperates or competes, respectively. In addition, for each player who contributes, the researcher donates another NIS15 to a social cause chosen by the player. Thus, by contributing the NIS15, the player gives up the money she was given, but ensures her favorite social institute or charity gets the same amount. Panel A of Table 1 presents the payoff matrix of the game.

The perceived payoff structure in this game depends on the subjective valence of the donation. Consider first the case where the indirect gain resulting from donation to the social cause has *no valence* for the player. The dominant ("rational") decision in this case is to compete and refrain from contributing: If Player B competes, player A ends up with her original NIS15 (whereas she ends up with nothing if she contributes). If player B contributes, player A ends up with NIS30 if she competes, compared to NIS15 if she contributes. Thus, regardless of her partner's decision, player A gains by competing (i.e., keeping her NIS15).

²Whereas personal values and social value orientations (SVO) both reflect motivation and are empirically related (Joireman & Duell, 2005), the two constructs differ in important ways. First, values are broad, trans-situational goals, whereas SVOs are measured by preferences for specific types of resource allocations (e.g., Samuelson, 1993; Van Lange, 1999). Moreover, although SVOs are viewed as motives, they are inferred from specific patterns of behavior. Values, in contrast, are inferred from individuals' reports of their guiding principles in life. Values are thus de-contextualized measures, and are closer to the phenomenological experience of endorsing major life-goals and motivations. Indeed, personal values are recognized as broader and more general (Joireman & Duell, 2007). Finally, values, but not SVOs, have been studied in a large variety of cultures around the world and found to have similar meanings across cultures.

The picture is quite different, however, when the indirect gain resulting from donation has *high valence* for the participant. If the value of donation is at least as high as the value of having the same amount for herself, Player A faces a different payoff structure, because in her perspective her gain is the sum of what she has and what has been donated due to her decision. If Player B decides to keep the money (i.e., compete), then Payer A has NIS15 for herself if she competes as well, or she has NIS15 donated to her favorite social cause if she contributes. If Player B cooperates, Player A has NIS30 for herself plus NIS15 donated to her partner's cause, if she competes, and NIS15 for herself plus NIS30 donated to both their causes if she cooperates. Thus, if the donation has the same value as money for herself, Player A ends up with the same gains whether she competes or cooperate. If she values donating more than having the same amount for herself, then contributing results in a greater gain. In this case the dominant ("rational") decision for Player A is to contribute.

We postulate that personal values will impact the subjective valence of donating versus keeping the money, and will therefore predict the decision to cooperate or compete in the game. Self-enhancement values reflect the motivation to promote one's own interests: To gain power and control over other people and resources (power), to strive for competence and success (achievement), and to gain personal gratification (hedonism). Emphasizing these values is consistent with attributing greater worth to personal gain than to the welfare of others, and is therefore likely to result in a decision to compete. We thus expect that emphasizing power, achievement, and hedonism values will negatively predict contributing the money. We expect stronger correlations for power values that promote one's own interests even at the expense of others. Competing in the game is a clear way to attain this goal.

In contrast, self-transcendence values reflect the motivation for concern and care for close others (benevolence) and for acceptance, tolerance, and care for all people and for nature (universalism). Emphasizing these values is consistent with attributing high valence to the welfare of others, and therefore to contributing in the game. By making a decision to contribute in the game, individuals can attain their important goals, because they express concern, care, and loyalty toward their partner in the game; and because cooperating allows them to contribute to a social cause important to them, thus helping societal members who are weaker and more in need than they are. We therefore expect that emphasizing benevolence and universalism values will positively predict contribution in the game.

H1a: The decision to contribute in the game (i.e., to cooperate) will correlate positively with emphasizing benevolence and universalism values, and negatively with emphasizing power, and to a lesser extent, achievement and hedonism values.

An Integrative Hypothesis

The circular structure of the relations among the 10 value types allows for the development of an integrative hypothesis. Specifically, if a variable (in this case, cooperative behavior) correlates most positively with one type of values (i.e., benevolence and universalism values) and most negatively with another (i.e., power), then the expected pattern of

correlations with all other values should correspond with the circular value structure: The strength of the correlations should decrease from strongest to weakest in both directions around the circle (Roccas et al., 2002; Sagiv & Schwartz, 1995). Generating an integrated hypothesis deepens our understanding of the relations between values and cooperation versus competition, and decreases the chance of random findings. Moreover, when a whole pattern of associations is predicted, even non-significant correlations provide meaningful information.

H1b: Based on our analysis above, we propose the following order of hypothesized correlations. Ranked from the most positive (10) to the most negative (1): benevolence (9.5); universalism (9.5); tradition (8); conformity (7); security (6); self-direction, (5); stimulation (4); hedonism (3) achievement (2); power (1)³.

Values and Traits

We reasoned above that values are likely to affect behavioral choices in social dilemma games. As stable individual attributes, however, values are inherently confounded with other stable individual differences such as traits, interests, and motives. The role of values in influencing behavior is therefore difficult to disentangle. In the current study we attempt to show that values impact competitive versus cooperative behavior independently of possible effects of personality traits. Traits are "dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions" (McCrae & Costa, 1990, p. 23). Stable personality traits are reflected in individual action and have implications for behavior in numerous social settings (e.g., a review in Barry & Stewart, 1997). The five-factor model (FFM) is the dominant trait model. It aims at comprehensiveness of the main trait factors, and lists five basic factors that describe most personality traits: Neuroticism, openness to experience, extraversion, agreeableness, and conscientiousness.

Previous studies have found correlations between personality traits and cooperative versus competitive behavior in conflict situations. Thus, for example, in interpersonal negotiation individuals low on agreeableness preferred power assertion techniques more than those high on agreeableness (Graziano, Jensen-Campbell, & Hair, 1996). Cooperation in a resource dilemma game correlated positively with agreeableness and negatively with extraversion (Koole, Jager, Van den Berg, Vlek, & Hofstee, 2001). Taking a somewhat different approach, Wolfe & Kasmer (1988) found that the sociability facet of extraversion predicted preference for cooperative activities, whereas the impulsivity facet of extraversion predicted preference for competitive activities.

Previous studies found consistent correlations between traits and values (a review in Roccas et al., 2002). It is thus possible that traits and values are confounded in their impact on cooperative/competitive behavior. Roccas et al. (2002) suggested that even though traits and values are consistently related, they are conceptually distinct constructs, and are likely

³Contribution is expected to correlate equally positively with universalism and benevolence values. Therefore, both are rated 9.5 (the average of 9 and 10, see Sagiv & Schwartz, 1995).

to impact different types of behavior. Specifically, they suggested that since values represent motivational goals, they are relevant to goal-directed acts. Values are hence likely to predict better than traits behaviors over which one has some cognitive control or choice, and can reflect, deliberate, and plan. Conversely, traits should predict better than values spontaneous, intuitive, and emotionally driven actions over which individuals have little cognitive control.

The decision to compete or cooperate in social dilemma situations involves deliberation and reflection, and entails some cognitive control. Because individuals have to choose between competing and cooperating, they are likely to consider their options and make a reasoned decision. Such a decision is likely to reflect the motivational goals they expect to attain by their actions (i.e., their values) even when individuals do not consider their values explicitly. We therefore hypothesize that

H2: Values will predict contribution in the Paired Charity Game over and above possible effects of the five factors of personality traits.

METHODS

Participants

Participants were 46 undergraduate business students (22 women; 18 men, 6 did not report; mean age = 22.67 years), enrolled in an introductory psychology course at an Israeli university. Participation was anonymous and voluntary.

Procedure

The study was conducted in two sections of the same introductory psychology course, taking place on the same day. It was conducted during class time, as part of a session on “stable individual differences in organizations.” It contained two parts, which were presented as two separate studies: One on personality attributes and the other on interpersonal processes. To match the materials of the “two studies” we used a personal 4-digit code. For the “first” study, participants completed values and traits questionnaires. They then received the materials for the “second” study. For the second part of the study, the experimenter gave each student a numbered envelope containing a card with the same number as the one on the envelope and NIS15 (about \$3.50). The participants were asked to take the numbered card from their envelope and save it for later use. The experimenter explained that they would participate in a “game” in pairs. They would not know who their partner is, but that s/he is a fellow student who has a card with a number that matched their own.

The researcher then introduced the game as follows: “Each of you got NIS15, so now you and your partner each have NIS15. You now have to decide what to do with that money. You can decide to keep it to yourself or you can decide to give it to your partner. The money is yours, and if you decide to keep it for yourself, you will be able to do whatever you like with it. If you decide to give it to your unknown partner, he or she will get the money and will be able to do whatever they

want with it. In addition, the researchers will donate NIS15 to a social cause of your choosing. Later you will fill out a questionnaire in which you can choose among several options for donating the money. Please note that you cannot choose to give only some of the money. You need to choose between keeping or giving it all.”

The researcher presented the matrix of the four possible outcomes of the game (see Panel A of Table 1). The participants completed a questionnaire regarding the decision they had to make (see below). Once they made their decision, they were asked to raise their hands and wait. Participants who raised their hands were asked to wait in line to execute their decision. Each of them in turn approached a ballot box. To ensure privacy and anonymity, the ballot box stood behind a screen. Participants put their envelopes—either containing NIS15 or empty—into the box, returned to their seats, and completed a post-decision questionnaire. The instructor reminded them to keep their numbered cards and hand in their questionnaires.

After both sessions of the game had ended, the experimenters grouped together each pair of envelopes that had matching numbers and calculated the amount each participant should be paid. For each envelope containing money, the researchers donated NIS15 to the cause the participant had chosen. The participants were debriefed during the next class. They were paid by an assistant unconnected with the course and were informed about the overall amounts donated to each charity.

Instruments

Values

The participants’ values were assessed by Schwartz Value Survey (SVS, Schwartz, 1992). The 57 value items in the questionnaire had been sampled to cover all ten types of values. Each single value is followed by a short explanatory phrase in parentheses (e.g., WEALTH [material possessions, money]). Participants rated the importance of each value as a guiding principle in their life on a nine-point scale from “opposed to my principles” (−1), through “not important” (0), to “of supreme importance” (7). The asymmetry of the scale reflects the natural distribution of distinctions that individuals make when thinking about the importance of values to them, observed during scale construction. Because values are typically seen as desirable, they generally range from somewhat to very important. The standard indexes recommended by Schwartz (1992) were used to measure the priority given to each value type. Internal reliabilities (alphas) of the ten indexes ranged from .51 to .78, which is in the typical range for values (see Schmitt, Schwartz, Steyer, & Schmitt, 1993).

Traits

To measure personality traits, we used Saucier’s (1994) short version of Goldberg’s (1992) five-factor questionnaire (the Mini-Markers). The instrument consists of eight adjectives measuring each of the five factors (total of 40 adjectives), each answered on a five-point scale ranging from 1 (very uncharacteristic of me) to 5 (very characteristic of me). The internal reliabilities were satisfactory for openness ($\alpha = .76$),

extroversion ($\alpha = .84$), conscientiousness ($\alpha = .73$), and neuroticism ($\alpha = .67$). The reliability of agreeableness was unsatisfactory (.49). An index based on five of the items yielded better reliability (.63). The correlations of agreeableness (measured either with the standard or with the 5-item index) with values replicated earlier findings (Roccas et al., 2002). The correlations of agreeableness with the participant's decision in the game, and the pattern of correlations of agreeableness with the other traits, were very similar when measured either way; the correlation with the decision being slightly stronger with the standard index. Below we report findings for the standard index. Using the 5-item index does not change any of our conclusions.

Pre-Decision Questionnaire

To assure that the rules of the game were clear, the participants were asked to explain the possible results of the game. They then reported their thoughts and feelings regarding the possible decisions, in an open response format and on a checklist (these data were not analyzed in the present study).

Behavioral Decision

The participants reported their decision in two ways: First, they marked which one of the options they would "probably choose" on a seven-point scale ranging from 1 ("keeping the money for myself") to 4 ("I can't decide") to 7 ("donation of the money"). They then reported their final decision of whether or not to contribute their money. The two measures correlated highly ($r = .97$, $p < .001$). Finally, the participants marked one of six social causes, to which they would like the researcher to donate money in their names. The six causes included organizations protecting the environment, animal rights, sexually abused women, physically and mentally abused children, and foreign workers.

RESULTS

Thirty nine (85%) participants contributed their NIS15 to their partners, and 7 did not. We hypothesized that personal values would predict the decision of whether to contribute or not. Table 2 presents the correlations between values and contribution. As hypothesized, the decision to contribute correlated positively with emphasizing universalism ($r = .32$; $p < .01$) and benevolence values ($r = .25$; $p = .05$) and negatively with emphasizing power ($r = -.38$; $p < .01$) hedonism ($r = -.27$; $p < .05$) and achievement values ($r = -.25$; $p < .05$, all one-tailed).

Because the decision of whether to compete or cooperate was dichotomous, we conducted a logistic regression analysis to further test our hypotheses. Because the value types hypothesized to correlate with the decision are conceptually and empirically interrelated, entering all of them to the regression equation would create a multicollinearity problem. We therefore computed an index measuring self-enhancement versus self-transcendence values by subtracting the average of benevolence and universalism values from the average of

Table 2. Correlations of values and traits with contribution in the paired charity game.

Values	Contribution
Power	-.38**
Achievement	-.25*
Hedonism	-.27*
Stimulation	-.18
Self-Direction	.02
Universalism	.32**
Benevolence	.25*
Tradition	.47**
Conformity	-.09
Security	.15
Traits	
Agreeableness	-.15
Conscientiousness	-.06
Neuroticism	-.21
Extroversion	-.08
Openness to experience	.04

Notes: For all correlations with values, individual differences in scale use were controlled by partialing out each respondent's mean rating of all values, as recommended in Schwartz (1992). * $p < .05$; ** $p < .01$ one-tailed.

power, achievement, and hedonism values. When entered to the logistic regression equation, this variable had a significant effect on the likelihood of competing versus cooperating in the paired charity game. Specifically, the odds of respondents' keeping their money increased significantly by a factor of 3.40 for every unit increase in their values (Wald = 6.49; $p < .02$). The findings thus support our first hypothesis.

Unexpectedly, the decision to contribute correlated positively with emphasizing tradition values ($r = .47$; $p < .01$, in a logistic regression Wald = 7.23; $p < .01$). Tradition values reflect a commitment to past rituals and customs, and submission to abstract authorities (e.g., religion). Contribution to charity is often encouraged by religious institutions (Regnerus, Smith & Sikkink, 1998), and could be seen as a way to attain the goals reflected by tradition values. To test our integrative hypothesis we correlated the predicted order of correlations between each value and cooperation, with the observed order and strength of correlations, finding support for the integrative hypothesis ($r_{\text{spearman}} = .91$, $r_{\text{pearson}} = .89$, both $p < .01$).

We further hypothesized that the impact of values on the decision to compete or cooperate would be stronger than that of traits. To assess the overall impact of values versus traits on the cooperation decision, we used a hierarchical regression analysis in which the dependent variable was the decision measured by a continuous scale. When entered into the regression equation at the first step, the five personality traits had no effect on contribution (Adjusted $R^2 = -.03$, F change = .71, ns.). Self-enhancement versus self-transcendence values were added in the second step, explaining 14% of the variance in contribution (F change = 6.63; $p < .05$). When added at the third step, tradition values explained an additional 9% of the variance (F change = 5.10; $p < .05$)⁴. Thus, the findings fully supported our second hypothesis.

⁴A hierarchical logistic regression on the binary choice yielded very similar findings. We report the linear regression which provides information about the overall variance explained.

DISCUSSION

The findings of Study 1 supported our hypotheses. The importance participants attributed to self-enhancement versus self-transcendence values substantially predicted their competition versus cooperation. Moreover, whereas values affected contribution, personality traits had no significant effect on it. This finding is consistent with the claim made by Roccas et al. (2002) that values predict behavior better than traits when behavior is goal-related and cognitively controlled. The decision in the current study was largely cognitively controlled: Participants were encouraged to consider their possible decisions, and to reflect about the possible outcomes of each decision. In past research personality traits (mainly agreeableness and extraversion) were found related to cooperative versus competitive behavior. That traits had no effect on the decision made in this study may reflect the crucial role that cognitive deliberation had in the design of Study 1. The previous studies may have been conducted under conditions of minimal cognitive control that are more likely to be affected by traits (Roccas et al., 2002). Given the small sample of Study 1, however, caution is required in interpreting the lack of impact of traits.

The vast majority of participants in Study 1 chose to cooperate with their unknown partner and contributed the money they received. This strong tendency to cooperate may be due to the multiple motives that promoted cooperation in the game (e.g., helping their partner, contributing to charity). Importantly, these motives all reflect self-transcendence values. The high percentage of cooperation may also reflect the framing of the game, which was mostly in terms of contribution: Participants were handed an amount of money, and they could either donate it or not. Thus, although participants chose whether to cooperate, the game lacked strong elements of competition. To increase the external validity of our findings, Study 2 presents a different game, which frames the situation in terms of competition. In addition, this game focuses on a narrower motive for cooperation versus competition.

We reasoned that values influence competitive/cooperative behavior by affecting the valence of each decision and thus highlighting the decision that allows for the attainment of important motivational goals. This reasoning was not tested directly, however. Moreover, the correlational nature of Study 1 does not allow for causal inference. Study 2 was designed to overcome these limitations as well: We investigate the process through which values affect the cooperative/competitive behavior by exploring the effect of values' accessibility on the relations of values to behavior, and by directly examining the role of values in the *perception* of the situation and of the decision made. Moreover, Study 2 tests the causal effect of values hierarchy on competitive/cooperative behavior.

STUDY 2

The main goal of Study 2 was to test the influence of values on competition versus cooperation in a way that allows for causal inference. To that aim, we investigate the role of value accessibility in affecting the impact of values on cooperative/competitive behavior. We further aimed to take another step

toward understanding the mechanism through which values affect behavior by studying the explanations participants provide for their decision. Finally, we introduce a different social dilemma game, framed in terms of competition.

The Group Charity Game

Like the Paired Charity Game, the Group Charity Game was designed to create clear value-congruent behavioral alternatives. Participants are assigned to one of three 40-people groups. Each group has the task of building up a pool of money to which the participant could contribute any amount between zero and five dollars, resulting in a potential pool size ranging from \$0 to \$200. At the end of the experiment, the group with the most money in its pool would receive the money from all three pools. The sum would be split equally among the winning group's members, regardless of whether or how much, each member contributed. However, to qualify as a winner, the group must not only have accumulated the most money, but this sum must at least equal \$80. If none of the groups met the \$80 criterion, none would win and the money would be donated to a social cause, determined by the preference of the greatest number of the participants. Panel B of Table 1 presents the payoff matrix.

The Group Charity Game was designed to highlight the competition aspect of the situation. It is a competition between groups, one of which is the player's ingroup. Introducing the intergroup competition increases the competition aspect of the game and frames the situation mainly in terms of competition (in contrast to the Paired Charity Game, which highlighted the elements of contribution and framed the situation mainly in terms of cooperation). In addition, this game highlights the possible gains from competing and the cost of cooperating. To further increase the perceived costs of cooperation, participants were asked to contribute their own money to their group pool. Contributing their own money is likely to be perceived by participants as more costly than contributing money that was just handed to them by the experimenter (as in Study 1) without any effort or cost on their part.

This game avoids the ambiguity about whether the participants' behavior was competitive or cooperative which exists in the Inter-group Prisoner Dilemma game played in previous studies (e.g., Probst et al., 1999, see above). In the current game, individuals could "free ride" and enjoy a possible win without contributing: Should their group win, they would enjoy the profit without contributing (and thus do better than outgroup members and ingroup members who contributed). In case their group lost, or came short of \$80, they did not lose anything because they had not contributed. Thus, refraining from contribution serves to attain the goals of self-enhancement values⁵. Because the competitive behavior is not only about winning, but also about beating others, it is more compatible with power values than with achievement or hedonism values, which emphasize self-interest, but not outdoing others.

⁵Contributing to increase in-group's chances to win is rational only if this contribution changes the group's status from lose to tie or from tie to win. This is unlikely with 40 members in each group, who could contribute 0–\$5. None of the participants mentioned this possibility in explaining of their choice, nor during debriefing.

In contrast, those who emphasize benevolence values are likely to attain their goals by donating to their ingroup money pool. By contributing, participants cooperate with their ingroup, thus expressing kindness, loyalty, and help. Moreover, should their group lose, there is a substantial chance that the money will go to a deserving social cause. Contribution in this game is therefore highly compatible with benevolence values that reflect concern and care for ingroup members. It is less compatible with universalism values, that reflect concern for all, because contribution to the ingroup serves to distinct between concern for ingroup and for outgroup members. We therefore hypothesize that:

H1a: Participants who attribute greater importance to benevolence values and less importance to power values will contribute more money to their group's pool than those who attribute less importance to benevolence and more importance to power.

H1b: Integrative hypothesis. We propose the following order of correlations, ranked from the most positive (10) to the most negative (1): benevolence (10); universalism (9); tradition (8); conformity (7); security (6); self-direction (5); stimulation (4); hedonism (3) achievement (2); power (1).

Causal Effects of Values

Another main goal of Study 2 was to test the causality of the relations between values and contribution. The study was designed to allow for causal inference by using cognitive priming procedures. As numerous studies in social cognition have shown, any knowledge structure is likely to exert more influence on individuals' judgments and behaviors when it is highly accessible in memory than when it is not (see Higgins, 1996, for a review). Values are typically assumed to be available in the sense that they are stored in memory (e.g., Schwartz, 1992). When accessible, values may direct attention to features in the situation that provide opportunities for goal attainment, thus guiding people to perceive situations as occasions for value-relevant action. Hence, a manipulation of the temporary accessibility of values can serve as a test of their causal influence, an approach that has been used in addressing the causal influence of other individual difference variables (for a review, see Schwarz, 1987).

Previous studies found a stronger relationship between values and behaviors for individuals who values were chronically accessible (e.g., Assor, 1998; Bardi, 1998). In the current study we manipulated the temporary accessibility of the participants' values and predicted that values would affect the cooperation/competition choice more when they were rendered highly accessible. Cognitive priming was used to manipulate temporary accessibility of values and examine its impact on behavior previously (Roccas, 2003; Roccas, Schwartz, & Amit, in press; Verplanken & Holland, 2002). In these studies, the researchers primed one type of values—either explicitly or implicitly—and showed that individuals acted in ways compatible with that value type—to the extent that it was central or important for them. In the current study we took a somewhat different approach, priming the entire hierarchy of personal values. In everyday life, it is often the

hierarchy among various important values that influences choices and behavior. Rendering the whole value hierarchy highly accessible allows us to maintain the relative importance of each value and examine how tradeoffs between values predict the competitive/cooperative behavior.

The experiment had two parts. In the first, participants completed several questionnaires, including the value instruments. Two weeks later, they came back to the laboratory and participated in the Group Charity Game. Half of the participants reported their values (again) immediately prior to playing the game (high temporary accessibility), whereas the others first played the game, and then reported their values (low temporary accessibility). Importantly, in both conditions, we assessed participants' values using the questionnaires they completed 2 weeks prior to the game. The second questionnaire served only to render values accessible. After deciding whether, and how much, of their own money they would like to contribute to their group (contribution decision) the participants were asked to explain their decision. We therefore hypothesized that:

H2: The impact of values on the cooperative/competitive behavior will be stronger when participants' values are rendered temporarily accessible than when they are not.

The Mechanism Relating Accessible Values to Behavior

When value hierarchies are accessible, they are likely to direct attention to those features in the situation that allow for the attainment of important values and goals. Hence, in explaining their choices, participants should be likely to refer mainly to the values important to them, and this tendency should be more pronounced when the value hierarchies are rendered highly accessible (i.e., in the high-accessibility condition). Thus, while Study 1 assumed that individuals are influenced by their values in interpreting a situation and making a behavioral choice, Study 2 directly investigated this mechanism. We hypothesized that:

H3: Participants will explain their decisions in terms involving their dominant values, in particular when these values have been rendered temporarily accessible.

METHODS

Participants and Design

Eighty one undergraduates (49 women; 32 men; mean age = 19.57 years) enrolled in introductory psychology courses at a Midwestern university participated in this study. All were European-Americans. The experiment followed a 3 (values: high in power; high in benevolence; mixed) × 2 (value accessibility: high; low) factorial between-participants design. Participants were randomly assigned to the accessibility condition, whereas the values factor reflects individual differences, as assessed 2 weeks prior to the experiment.

Procedure

Two weeks prior to the actual experiment, all participants completed the SVS and a number of other questionnaires.

Participants were assigned to the high-in-benevolence-values, high-in-power-values, and mixed-values conditions based on their SVS scores in this first session (see below). For the experiment proper, participants came to the lab individually. They were informed that they would be playing a game, which was introduced as follows. Each participant is assigned to one of three groups of 40 members. Each group has a money pool, to which the participant can choose to contribute any amount between \$0 and \$5 of his or her own money. At the end of the game, the group with the most money in its pool—provided that it has at least \$80—wins the game. The winning group receives the money from all three pools to be split equally among all its members, regardless of how much, if at all, they contributed. If no group reaches the \$80 criterion, the money will be donated to a cause chosen by the largest number of participants.

Before making their decisions, participants were presented with several examples of possible outcomes, to verify their understanding of the game and its rules. Next, participants decided how much they wanted to contribute to their group's pool (contribution decision). Participants were asked to explain their decisions (see below). To manipulate the temporary accessibility of their values, half of the participants completed the SVS before they played the game (high accessibility), whereas the other half completed it after they played the game (low accessibility). At the end of experimental session, participants were debriefed and thanked.

Donations

Following the completion of the study, the experimenter counted participants' cash contributions. No group reached the \$80 criterion⁶. Hence, the money was donated to the cause chosen by the largest number of participants. Most participants (80%) chose to donate to "a charity organization"; 13% and 7% chose "environmental organizations" or "research," respectively. Thus, all contributions (a total of \$146) were donated to United Way.

Instruments

Values

The participants' values were assessed with the same questionnaire used in Study 1. One value ("being a parent") was added, for a total of 58 items. The same questionnaire was used in the pre-experimental and experimental sessions, as described above. Indexes of the importance of each value type were computed by averaging the importance ratings of the specific values representative of that type. Internal reliabilities (α s) were .75 for power and .73 for benevolence.

Explanations

After the participants made their contribution decision, they were asked to explain their decision in an open response format. We created two indices for the content of participants' explanations for their contribution decision, namely an index

of explanations that fit benevolence goals (expressions like contribution, charity, help, improve someone's condition), and an index of explanations that fit power goals (expressions like win, profit, loss, self-interest). To validate this list, the first author prepared a list of value-related words and expressions that participants had included in their explanations. The list was presented to three judges, all experts in value theory and blind to the goals of the present research. For each word, the judges were asked whether it could represent benevolence or power values. We included in the index words and expressions that all three judges agreed on. On each index, participants received a score of 1 if at least one of the words above was used in explaining the decision, or a score of 0 if none of these words was used.

RESULTS

Values and Contribution

As expected, contribution in the Group Charity Game correlated positively with benevolence values ($r = .22$, $p < .05$ one-tailed) and negatively with power values ($r = -.36$, $p < .005$, one-tailed). Unexpectedly, but consistent with the findings of Study 1, contribution also correlated positively with tradition values ($r = .30$, $p < .01$). To test our integrative hypothesis we correlated the hypothesized order of correlations between each value type and the decision to cooperate with the observed order and strength of correlations. The findings provide support for the integrative hypothesis ($r_{\text{spearman}} = .81$, $r_{\text{pearson}} = .83$, both $p < .01$).

Values, Accessibility and Contribution

Participants' Value Profiles

We assigned participants to the different value conditions on the basis of their value profiles, assessed 2 weeks prior to the experiment. Previous research indicated a universal tendency to endorse benevolence values more strongly than power values: Surveying teachers and students from 56 countries Schwartz and Bardi (2001) found that, on average, benevolence values ranked the most important and power values ranked among the least important. Consistent with these findings, our participants endorsed benevolence values more strongly ($M = 4.95$) than power values ($M = 2.28$)⁷.

We aimed to create experimental groups that include individuals who strongly endorsed either benevolence or power values, and to achieve a division of the sample into three groups of roughly similar size. Thus, we considered not only the ratings of benevolence and power values, but also the gap between them. Specifically, we assigned participants to the high benevolence group when their mean rating of benevolence values (a) was higher than 5.00 and (b) exceeded their ratings of power values by at least 3 scale points. We assigned

⁷The difference in favor of benevolence values was greater than found in Study 1. This is consistent with findings that business students (Study 1) emphasize power more and benevolence less than psychology students (e.g., Sagiv & Schwartz, 2000).

participants to the high power group when (a) their mean rating of power values was higher than 3.00, and (b) their mean rating of benevolence values was less than 3 points higher than their rating of power values. All remaining participants were assigned to the mixed group. Below we report the data for all three values groups but test the key hypotheses with planned contrasts for participants who emphasize benevolence or power values, respectively.

Values, Accessibility and Contribution Decision

To test our hypotheses we conducted a 3×2 ANOVA (value group \times accessibility condition). We first tested the main effect of values. We then conducted a series of planned contrasts to test the hypothesized interaction effect and the simple effects that explain it (for the advantage of using focused test (i.e., contrasts) see Rosenthal & Rosnow, 1985). We examined (1) whether participants high in benevolence contributed more when their values were rendered highly accessible than when they were not, and (2) whether participants high in power contributed less in the high than in the low accessibility condition. We also examined whether the impact of values was stronger in the high accessibility condition (3) than in the low accessibility condition (4). Finally, we tested an interaction contrast (5).

Likelihood of Contributing

The top panel of Table 3 shows the percentage of participants who decided to contribute any money to their group's pool. Overall, participants who emphasized benevolence values were twice as likely to contribute (85.7%) than participants who emphasized power values (41.7%), with mixed values participants falling in between (55.2%); $F(2,75) = 6.42$, $p = .003$, for the main effect of participants' value orientation. As predicted, rendering participants' values accessible increased the percentage of contributors among participants emphasizing benevolence from 71.4 to 100%, $t(75) = 1.66$, $p = .05$, one-tailed, for the planned contrast. This manipulation decreased the percentage of contributors among participants emphasizing power from 50 to 30%, although this difference was not significant ($t(75) = 1.06$, ns). Finally, the difference between participants assigned to the benevolence or power conditions was reliable in the high accessibility condition.

$t(75) = 3.71$, $p < .0005$, one-tailed, but not in the low accessibility condition, $t(75) = 1.24$, ns. This pattern of results is reflected in a significant interaction of value orientation (the two extreme groups) and value accessibility, $t(75) = 1.90$, $p < .05$, one-tailed.

Average Contributions

The second panel of Table 3 shows participants' average contributions as a function of experimental condition. As hypothesized, a 3×2 ANOVA (value orientation \times accessibility) yielded a significant main effect for values; $F(2,75) = 7.78$, $p < .001$. Overall, participants who emphasized benevolence values contributed more money ($M = \$2.29$) than those who emphasize power values ($M = \$0.71$), with participants who reported mixed values falling in between ($M = 1.28$).

Planned contrasts indicate that participants who emphasized benevolence values contributed more when their values were rendered accessible ($M = \$2.79$) than when they were not ($M = \$1.79$); $t(75) = 1.81$, $p < .05$, one-tailed. Similarly, participants who emphasized power values tended to contribute less under high ($M = \$0.50$) than under low ($M = \0.86) accessibility conditions, although this difference was insignificant, $t < 1$. Again, the difference between the power and benevolence value conditions was more pronounced when the participants' values were rendered accessible, $t(75) = 3.78$, $p < .00005$, one-tailed, than when they were not, $t(75) = 1.68$, $p < .05$, one-tailed. This pattern is reflected in an interaction of value orientation and accessibility, $t(75) = 1.66$, $p = .05$, one-tailed.

Contributions Exceeding \$2

Given that participants were told that each group had 40 members, the groups could reach the \$80 criterion if each member contributed \$2. Contributions that exceed \$2 therefore indicate an altruistic decision to contribute more than the "fair" share. Overall, 39.3% of the participants high in benevolence contributed more than \$2, whereas only 4.2% of the participants high in power values did so, with mixed-values participants falling in between (20.7%); $F(2,75) = 5.16$, $p < .008$ for the main effect of values. Participants high in benevolence values were somewhat more likely to contribute more than \$2 when their values were rendered accessible

Table 3. Participant's contribution as a function of value profiles and experimental condition.

Value profile	High power	Mixed	High benevolence
A. Likelihood of Contributing	(Proportions)		
All sample	41.7% ($n = 24$)	55.2% ($n = 29$)	85.7% ($n = 28$)
Low accessibility	50% ($n = 14$)	50% ($n = 12$)	71.4% ($n = 14$)
High accessibility	30% ($n = 10$)	59% ($n = 17$)	100% ($n = 14$)
B. Average Contributions	(in dollars)		
All sample	.71 ($n = 24$)	1.28 ($n = 29$)	2.29 ($n = 28$)
Low accessibility	.86 ($n = 14$)	1.42 ($n = 12$)	1.79 ($n = 14$)
High accessibility	.50 ($n = 10$)	1.18 ($n = 17$)	2.79 ($n = 14$)
C. Contributions exceeding \$2	(Proportions)		
All sample	4% ($n = 24$)	21% ($n = 29$)	39% ($n = 28$)
Low accessibility	7% ($n = 14$)	33% ($n = 12$)	28% ($n = 14$)
High accessibility	0% ($n = 10$)	12% ($n = 17$)	50% ($n = 14$)

(50%) than when they were not (28.6%), although this difference was insignificant, $t(75) = 1.43$, ns. Conversely, participants high in power values were insignificantly less likely to contribute more than \$2 when their values were rendered accessible (0%) than when they were not (7.1%), $t < 1$. Again, the difference between those high in benevolence or power values was more pronounced under high, $t(75) = 3.06$, $p < .0006$, one-tailed, than under low accessibility conditions, $t(75) = 1.43$, ns. However, the predicted interaction was insignificant, $t(75) = 1.29$, ns.

Perception of the Situation as an Underlying Mechanism Relating Values to Behavior

We reasoned that when accessible, values lead individuals to identify those features in the situation that allow for the attainment of their important goals. We therefore hypothesized that in explaining their behavior, participants would refer to features of the situation that reflect their dominant values. Specifically, we reasoned that participants high in benevolence values would explain their decision in terms of benevolence concepts (e.g., help, contribution to others, charity), whereas participants high in power values would explain their decision in terms of power concepts (e.g., profit, loss, self-interest). We hypothesized that this pattern would be more pronounced under the high-accessibility condition.

Recall that participants received a score of 1 on the “benevolence concept” index, and a score of 1 on the “power concept” index, when their explanation mentioned any benevolence or power concept, respectively. Table 4 shows the relevant data. Overall, participants high in benevolence values were more likely to mention benevolence concepts ($M = .64$) than were participants high in power values ($M = .30$), with mixed-value participants falling in between ($M = .36$); $F(2,75) = 4.39$, $p < .02$, for the value main effect. Unexpectedly, participants were equally likely to mention power concepts regardless of value orientation, $F(2,75) < 1$.

As hypothesized, participants who emphasized benevolence values were more likely to mention benevolence concepts in the high-accessibility condition ($M = .86$) than in the low-accessibility condition ($M = .43$), $t(75) = 2.52$, $p < .01$. Conversely, participants in the high-power group were less likely to explain their decision in terms of benevolence concepts in the high than in the low-accessibility condition ($M = .00$ vs. $.54$), $t(75) = 2.85$, $p < .003$. This pattern is reflected in a significant interaction, $t(75) = 3.81$, $p < .001$.

Finally, participants in the high-power group tended more to explain their contribution in terms of power concepts in the high-accessibility condition ($M = .70$) than in the low-accessibility condition ($M = .15$). $t(75) = 2.83$, $p < .003$.

Conversely, participants in the high-benevolence groups were somewhat less likely to explain this decision in terms of power concepts in the high-accessibility condition ($M = .36$) than in the low-accessibility condition ($M = .50$), $t(75) F < 1$. This pattern is again reflected in a significant interaction, $t(75) = 2.65$, $p < .005$. Thus, as hypothesized, the findings indicate that people understand social situations in terms of their important values. When the hierarchy of their values was highly accessible, individuals thought of the social dilemma game—and explained their decision of whether to compete or cooperate—in terms of those values that were more important to them.

To further explore the role of explaining the behavior in terms of values, we repeated the 3×2 (value group \times accessibility condition) ANOVA analysis, and added as two covariates the explanation of the behavior in terms of benevolence (0 = no, 1 = yes) and in terms of power values (0 = no, 1 = yes). The covariate for “benevolence terms” predicted choice significantly ($F = 19.81$), whereas the covariate of “power terms” was insignificant ($F = 1.86$). The main effect of values on contribution was significant ($F = 3.69$; $p = .03$) but weaker than in the original analysis ($F = 7.78$; $p < .001$, see above). Thus, it seems that using benevolence values terms to account for the behavior partly explains the effect of values on contribution.

DISCUSSION

The findings of Study 2 indicate that individuals’ values influenced their behavior in the Group Charity social-dilemma game. Participants who emphasized benevolence values were more likely than those who emphasized power values to cooperate rather than compete with others. Specifically, they were more likely to make a contribution; they contributed a larger sum on average, and they were more likely to contribute beyond their “fair” share (i.e., \$2).

These observations alone, however, do not necessarily indicate a causal influence of values. To address this issue, we manipulated the temporary accessibility of participants’ values. As hypothesized, the impact of values on the behavior was more pronounced when the participants’ values were rendered highly accessible. Participants who emphasized benevolence values were more likely to make some contribution, were more likely to contribute more than their fair share (i.e., \$2), and contributed more on average under high than under low accessibility conditions. In contrast, participants who emphasized power values were somewhat less likely to make any contribution, were less likely to contribute more than their fair share, and contributed less on

Table 4. Using benevolence and power terms in explanations of contribution decision as influenced by value profile and experimental condition.

Explanation	Benevolence terms			Power terms		
	High power	Mixed	High benevolence	High power	Mixed	High benevolence
All sample	.30 ($n = 24$)	.36 ($n = 29$)	.64 ($n = 28$)	.39 ($n = 24$)	.32 ($n = 29$)	.43 ($n = 28$)
Low accessibility	.54 ($n = 13$)	.42 ($n = 12$)	.43 ($n = 14$)	.15 ($n = 13$)	.08 ($n = 12$)	.50 ($n = 14$)
High accessibility	.00 ($n = 10$)	.31 ($n = 17$)	.86 ($n = 14$)	.70 ($n = 10$)	.50 ($n = 17$)	.36 ($n = 14$)

average under high than under low accessibility conditions. These differences, however, were weaker and insignificant.

The asymmetry in the effects of accessibility on power versus benevolence values may reflect the fact that participants in the power group tended to attribute fairly high importance to benevolence values as well. These participants emphasized power more than others and benevolence less than others—but some of them rated benevolence as more important to them than power. One could argue that rendering their personal value hierarchy accessible could have led these participants to act on their benevolence values and contribute.

However, rendering their value hierarchy highly accessible served to activate the importance participants attributed to both benevolence and power values. We reason that the “translation” from values to behavior depends on the nature of the behavior in question. In the current study, contribution conflicted with promoting self-interests and entailed monetary cost. It is therefore likely that a small “amount” of importance attributed to power values was enough to lead a person to refrain from contributing, whereas a much larger “amount” of benevolence values was required to yield contribution. Thus, we suggest that it is the importance attributed to values *relatively to others* that predict behavior. Indeed, the pattern of results for the “high power” group in Study 2 was consistent with our hypothesis. The weak effects could be alternatively explained, at least partially, by a floor effect (see below).

Overall, the findings of Study 2 provide strong support for the impact of values on behavior. Interestingly, values predicted contribution even in the low accessibility condition. Thus, although accessibility plays an important role in the relationships between values and behavior, values may affect behavior even without being rendered accessible. This may indicate that for some people, important values are chronically accessible (Assor, 1998; Bardi, 1998;). Alternatively, this finding may indicate that values affect behavior automatically, even without explicit cognitive awareness (Sagiv & Schwartz, 1995). Future research could further explore these processes.

The effect of values on behavior even in the low accessibility condition is an intriguing finding. It limits, however, the strengths of the accessibility effect, because it creates a ceiling (for benevolence values) or a floor effect (for power values). Thus, for example, in the low accessibility condition, 71% of those in the high benevolence group contributed some amount. As hypothesized, the proportion was higher in the high accessibility condition. In fact, all (100%) participants high in benevolence contributed in this condition. Nevertheless, because so many contributed in the low accessibility condition, the increase yielded an effect only one-tailed significant.

Finally, Study 2 took a first step toward understanding the mechanism through which accessible values affect behavior. When their values were highly accessible to them, participants who emphasized benevolence values used mainly benevolence terms (e.g., contribution, helping others, charity) to explain their decision, whereas those who emphasized power values used mainly power terms (e.g., profit, winning, self-interests). In contrast, the participants’ explanations were not significantly connected with their values under the low-accessibility condition. Interestingly, the accessibility effects were stronger when values predicted the explanation for the behavior, than when they predicted the behavior. This is consistent with the

idea that while acting according to one’s values is possible even when these values are not temporarily accessible, explaining the behavior in terms of values is possible only to the extent that they are highly accessible.

GENERAL DISCUSSION

We investigated the impact of values on the perception and behavioral choice in cooperation versus competition dilemmas. We employ an integrative value framework to predict behavioral patterns in two new social-dilemma games that simulate interpersonal (Study 1) and intergroup (Study 2) conflict. Overcoming some limitations of past research, the two games were designed to provide unambiguous situations in terms of the values that could be attained by competing or cooperating. The Paired Charity Game (Study 1) framed the conflict situation in terms of cooperation—by donating the money given to them participants could contribute to others. Contribution correlated positively with universalism and benevolence values that emphasize concern and care for others, and negatively with self-enhancement values (power, achievement, and hedonism) that promote the interest of the self. The Group Charity Game (Study 2) was designed to frame the situation in terms of competition. It highlighted participants’ chances to lose their money (if they contributed) or to win out over others (if they did not contribute). This game thus created a situation relevant mainly to power values that reflect the motivation to control, win and outdo others, versus benevolence values that reflect concern and care for ingroup members. As predicted, contribution correlated positively with emphasizing benevolence over power values.

The two studies further point to the mechanisms through which values affect behavior. Study 1 investigated the impact of the full spectrum of motivational goals, demonstrating the usefulness of considering the tradeoffs between conflicting motivations in predicting behavior and of relying on a comprehensive perspective to study the impact of values. The findings indicated that values, but not traits, affected the participants’ contribution decision in the Paired Charity Game. The Study thus refines our understanding of the commonalities and differences between values and traits, and of their distinctive impact on behavior in social dilemmas. Our findings are consistent with Roccas et al.’s (2002) proposition, that values predict behavior when individuals reflect on and plan their actions.

Study 2 examined the affect of values on behavior under low versus high accessibility. The findings indicate that rendering values accessible strengthens their impact on behavior. The effects of accessibility were not always as strong as would ideally be. We reasoned that this may be, in part, because values predicted behavior in the low accessibility condition as well, thus limiting the effect of the interaction. To partly overcome this limitation, we showed that the pattern of findings was highly consistent across the three indicators of contribution: Likelihood of contribution, likelihood of large contribution, and average contribution.

The findings of Study 2 further point to the mechanism through which accessible values affect behavior. We showed that when the respondents’ value hierarchy was accessible, they explained their choices in terms of those values that were

(a) important to them and (b) relevant to the situation. Thus, accessible values influence behavior by directing attention to certain features of the situation, leading to actions that promote goal attainment. These findings are consistent with recent research indicating that personal values affect people's perceptions of their inner conflicts (Sverdlik, 2009).

Our findings also contribute to social-dilemma research. When faced with social dilemmas, participants often act in ways that are considered irrational (i.e., cooperate when they could gain as much by refraining from contribution). By taking a value perspective and considering the full spectrum of motivational goals researchers may realize that contribution choices are often congruent with participants' central values and goals, and could be therefore rational (see Camerer & Fehr, 2006). Research on norms (e.g., Biel & Thøgersen, 2007) suggested that when activated, norms might predict seemingly irrational behavior. Our findings similarly suggest that when important values are activated they yield congruent choices. Studying the same social dilemma (e.g., prisoner dilemma) in different contexts (e.g., the original prisoners' context versus an economic context of firm competition) may activate different values and hence promote different action.

We studied actual behavior exhibited by participants in an interpersonal or intergroup conflict. This strength is also a limitation, however, because the behaviors studied took place in a laboratory context. Future studies should investigate the impact of values in real-life situations. Our findings might be limited in other ways as well. For example, past research has suggested that people are less likely to express value-congruent behavior when high costs are involved or if a strong social norm blocks the behavior (Bardi & Schwartz, 2003). Similarly, in cultures that emphasize acting upon social norms or expectations, the relations between personal values and behavior may be weaker than in cultures that promote autonomous decisions. The current study examined two Western cultures (Israel and the US); future research may fruitfully focus on Asian collectivist cultures.

The findings of the current research also have practical implications. Cooperation and competition could each be beneficial, even crucial, to social groups and organizations. Some situations call for competition (e.g., a school promoting athletic accomplishments), whereas others require cooperation (e.g., a community trying to preserve the environment). Societies and organizations in them may analyze their tasks and decide which type of behavior they would like to encourage. They can then select or assign members based on their values—assign individuals who emphasize power values when competition is called for, but choose candidates who emphasize benevolence for tasks that require teamwork and cooperation.

Our findings further highlight the importance of making individuals' values accessible to them. In addition, social leaders should consider that individuals may be unaware of the "payoff matrix" underlying their choices. Leaders should therefore highlight those features in the situation that allow individuals to express their values and attain their goals. Consider the case of a television program that aims to raise money to help survivors of an environmental disaster. The organizers could first ensure that the viewers' value hierarchies are highly accessible to them (e.g., by having a panel discussion on important life-goals). They can then frame the

contribution in ways that emphasize the opportunities to help and benefit others—that is, to attain benevolence and universalism values. Alternatively, if they wish to attract viewers who emphasize power and achievement values, the organizers could frame the contribution as an opportunity to attain status and prestige. For example they can publicize the names of those who made the largest contributions or issue impressive certificates.

ACKNOWLEDGEMENTS

This project was supported by a grant from The Israeli Science Foundation (774/06) and from the Recanati Fund of the School of Business Administration at the Hebrew University to the first author and by a grant from The Israel Foundation Trustees to the second author. The authors thank Shalom Schwartz, Sonia Roccas, Adi Amit, Adi Katzav, Anat Bardi, Ariel Knafo, Gila Melech, and Naomi Struch for their comments on earlier drafts of this paper.

REFERENCES

- Assor, A. (1998). Value accessibility and teachers' ability to encourage independent and critical thought in students. *Social Psychology of Education, 2*, 1–24.
- Bardi, A. (1998). January The relations between values and behaviors in daily situations: A construct accessibility perspective. *Paper presented at the International Research Workshop on Values: Psychological Structure, Behavioral Outcomes, and Intergenerational Transmission*. Maale-Hahamisha, Israel.
- Bardi, A., & Schwartz, S. H. (2003). Values and behavior: Strength and structure of relations. *Personality and Social Psychology Bulletin, 29*, 1207–1220.
- Barry, B., & Stewart, G. L. (1997). Composition, process, and performance in self-managed groups: The role of personality. *Journal of Applied Psychology, 82*, 62–78.
- Biel, A., & Thøgersen, J. (2007). Activation of social norms in social dilemmas: A review of the evidence and reflections on the implications for environmental behavior. *Journal of Economic Psychology, 28*, 93–112.
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz. (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–62). New York: Academic Press.
- Bilsky, W., & Schwartz, S. H. (1994). Values and personality. *European Journal of Personality, 8*, 163–181.
- Brewer, M. B., & Kramer, R. M. (1986). Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing. *Journal of Personality and Social Psychology, 50*, 543–549.
- Camerer, C. F., & Fehr, E. (2006). When does "economic man" dominate social behavior? *Science, 311*, 47–52.
- De Cremer, D., & Leonardelli, G. J. (2003). Cooperation in social dilemmas and the need to belong: The moderating effect of group size. *Group Dynamics: Theory, Research, and Practice, 7*, 168–174.
- Feather, N. T. (1995). Values, valences, and choice: The influence of values on the perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology, 68*, 1135–1151.
- Gandal, N., Roccas, S., Sagiv, L., & Wrzesniewski, A. (2005). Personal value priorities of economists. *Human Relations, 58*, 1227–1252.
- Garling, T. (1999). Value priorities, social value orientations and cooperation in social dilemmas. *British Journal of Social Psychology, 38*, 397–408.
- Goldberg, L. (1992). The development of markers for the big-five factor structure. *Personality Assessments, 4*, 26–42.
- Graziano, W. G., Jensen-Campbell, L. A., & Hair, E. C. (1996). Perceiving interpersonal conflict and reacting to it: The case for agreeableness. *Journal of Personality and Social Psychology, 70*, 820–835.
- Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability and salience. In E. T. Higgins, & E. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles*. New York: The Guilford Press.
- Hitlin, S., & Piliavin, J. A. (2004). Values: Reviving a dormant concept. *Annual Review of Sociology, 30*, 359–393.

- Joireman, J., & Duell, B. (2005). Mother Theresa vs. Ebenezer Scrooge: Mortality salience leads proselves to endorse self-transcendent values (unless proselves are reassured). *Personality and Social Psychology Bulletin*, 31, 307–320.
- Joireman, J., & Duell, B. (2007). Self-transcendent values moderate the impact of mortality salience on support for charities. *Personality and Individual Differences*, 43, 779–789.
- Karremans, J. C. (2007). Considering reasons for a value influences behavior that expresses related values: An extension of the value-as-truisms hypothesis. *European Journal of Social Psychology*, 37, 508–523.
- Kluckhohn, C. (1951). Values and value orientations in the theory of action: An exploration in definition and classification. In T. Parsons, & E. Shils (Eds.), *Toward a general theory of action* (pp. 388–433). Cambridge, MA: Harvard University Press.
- Koole, S. L., Jager, W., Van den Berg, A. E., Vlek, C. A. J., & Hofstee, W. K. B. (2001). On the social nature of personality: Effects of extraversion, agreeableness, and feedback about collective resource use on cooperation in a resource dilemma. *Personality and Social Psychology Bulletin*, 27, 289–301.
- Lönqvist, J.-E., Leikas, S., Paunonen, S. V., Nissinen, V., & Verkasalo, M. (2006). Conformism moderates the relations between values, anticipated regret, and behavior. *Personality and Social Psychology Bulletin*, 32, 1469–1481.
- Maio, G. R., & Olson, J. M. (1995). Relations between values, attitudes, and behavioral intentions: The moderating role of attitude function. *Journal of Experimental Social Psychology*, 31, 266–285.
- Maio, G. R., Olson, J. M., Allen, L., & Bernard, M. M. (2001). Addressing discrepancies between values and behavior: The motivating effect of reasons. *Journal of Experimental Social Psychology*, 37, 104–117.
- McCrae, R. R., & Costa, P. T. (1990). *Personality in adulthood*. New York: Guilford.
- Probst, T. M., Carnevale, P. J., & Triandis, H. C. (1999). Cultural values in intergroup and single-group social dilemmas. *Organizational Behavior and Human Decision Processes*, 77, 171–191.
- Regnerus, M. D., Smith, C., & Sikkink, D. (1998). Who Gives to the Poor? The influence of religious tradition and political location on the personal generosity of Americans toward the poor. *Journal for the Scientific Study of Religion*, 37, 481–493.
- Roccas, S. (2003). Identification and status revisited: The moderating role of self-enhancement and self-transcendence values. *Personality and Social Psychology Bulletin*, 29, 726–736.
- Roccas, S., & Sagiv, L. (in press) Personal values and behavior: Taking the cultural context into account. *Social and Personality Psychology Compass*.
- Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. (2002). Basic values and the five factor model of personality traits. *Personality and Social Psychology Bulletin*, 28, 789–801.
- Roccas, S., Schwartz, S. H., & Amit, A. (in press) Personal value priorities and national identification. *Political Psychology*.
- Rohan, M. (2000). A rose by any name? The value construct. *Personality and Social Psychology Review*, 4, 255–277.
- Rokeach, M. (1973). *The nature of human values*. New York: Free Press.
- Rosenthal, R., & Rosnow, R. L. (1985). *Contrast analysis: Focused comparisons in the analysis of variance*. Cambridge: Cambridge University Press.
- Sagiv, L. (2002). Vocational interests & basic values. *Journal of Career Assessment*, 10, 233–257.
- Sagiv, L., & Schwartz, S. H. (1995). Value priorities and readiness for out-group social contact. *Journal of Personality and Social Psychology*, 69, 437–448.
- Sagiv, L., & Schwartz, S. H. (2000). Values priorities and subjective well-being: Direct relations and congruity effects. *European Journal of Social Psychology*, 30, 177–198.
- Salancik, G. G., & Conway, M. (1975). Attitude inferences from salient and relevant cognitive content about behavior. *Journal of Personality and Social Psychology*, 32, 829–840.
- Samuelson, C. D. (1993). A multi-attribute approach to structural change in resource dilemmas. *Organizational Behavior and Human Decision Processes*, 55, 298–324.
- Sattler, D., & Kerr, N. L. (1991). Might vs. morality explored: Motivational and cognitive bases for social motives. *Journal of Personality and Social Psychology*, 60, 756–765.
- Saucier, G. (1994). Mini markers: A brief version of Goldberg's unipolar big five markers. *Journal of Personality Assessment*, 63, 506–516.
- Schmitt, M. J., Schwartz, S. H., Steyer, R., & Schmitt, T. (1993). Measurement models for the Schwartz Values Inventory. *European Journal of Psychological Assessment*, 9, 107–121.
- Schwartz, N. (1987). Geschlechtsrollenorientierung und die Einstellung zu Gewalt gegen Frauen: Informationsaktivierung als Alternative zu ex post facto - Versuchsplänen. [Gender role orientation and attitudes toward violence against women: Priming procedures as an alternative to ex post facto - designs]. *Psychologische Rundschau*, 38, 145–154.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theory and empirical tests in 20 countries. In M. Zanna. (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). New York: Academic Press.
- Schwartz, S. H. (1996). Value priorities and behavior: Applying of theory of integrated value systems. In C. Seligman, J. M. Olson, & M. P. Zanna (Eds.), *The psychology of values: The Ontario Symposium* (Vol. 8, pp. 1–24). Hillsdale, NJ: Erlbaum.
- Schwartz, S. H. (2005). Basic human values: Their content and structure across countries. In A. Tamayo, & J. B. Porto (Eds.), *Valores e comportamento nas organizações [Values and behavior in organizations]* (pp. 21–55). Petrópolis, Brazil: Vozes.
- Schwartz, S. H., & Bardi, A. (2001). Value hierarchies across culture: Taking similarities perspective. *Journal of Cross-Cultural Psychology*, 32, 268–290.
- Schwartz, S. H., Sagiv, L., & Boehnke, K. (2000). Worries and values. *Journal of Personality*, 68, 309–346.
- Sverdlik, N. (2009). *Understanding internal conflicts through a personal values perspective: The content of conflicts and conflicts intensity*, Manuscript submitted for publication.
- Tazelaar, M. J. A., Van Lange, P. A. M., & Ouwerkerk, J. W. (2004). How to cope with noise in social dilemmas: The benefits of communication. *Journal of Personality and Social Psychology*, 87, 845–859.
- Tetlock, P. E. (1986). A value pluralism model of ideological reasoning. *Journal of Personality and Social Psychology*, 50, 819–827.
- Van Lange, P. A. M. (1999). The pursuit of joint outcomes and equality in outcomes: An integrative model of social value orientation. *Journal of Personality and Social Psychology*, 77, 337–349.
- Van Lange, P. A. M., & Liebrand, W. B. G. (1989). On perceiving morality and potency: Social values and the effects of person perception in a give-some dilemma. *European Journal of Social Psychology*, 3, 209–225.
- Verplanken, B., & Holland, R. W. (2002). Motivated decision making: Effects of activation and self-centrality of values on choices and behavior. *Journal of Personality and Social Psychology*, 82, 434–447.
- Wit, A. P., & Kerr, N. L. (2002). "Me versus just us versus us all" Categorization and cooperation in nested social dilemmas. *Journal of Personality and Social Psychology*, 83, 616–637.
- Wolfe, R. N., & Kasmer, J. A. (1988). Type versus trait: Extraversion, impulsivity, sociability, and preferences for cooperative and competitive activities. *Journal of Personality and Social Psychology*, 54, 864–871.