

Social identification effects in social dilemmas: a transformation of motives

DAVID DE CREMER* and MARK VAN VUGT
University of Southampton, UK

Abstract

Three experimental studies were conducted to examine two alternative explanations for the widely established positive effect of social identification in promoting cooperation in social dilemmas. We hypothesised that social identification effects could be either ascribed to (1) an increase in the value assigned to the collective good (i.e. goal-transformation hypothesis) or (2) an enhancement of trust in the cooperation of other group members (i.e. goal-amplification hypothesis). To disentangle these two explanations, we examined the effects of social identification on the contributions to a public good of people with a different social value orientation (i.e. pre-existing differences in preferred outcome distribution between self and others). Following the goal transformation hypothesis, we predicted that an increased group identification would raise contributions, in particular for people essentially concerned with their personal welfare (i.e. pro-self value orientation). Alternatively, following the goal amplification hypothesis it was expected that increased group identification would primarily affect decisions of people concerned with the collective welfare (i.e. prosocial value orientation). The results of all three studies provided support for the goal-transformation rather than goal-amplification hypothesis, suggesting that 'selfish' individuals can be encouraged to cooperate by increasing the salience of their group membership. Copyright © 1999 John Wiley & Sons, Ltd.

Why do people cooperate in groups? This question is fundamental to a variety of problems whereby the narrow interests of individuals are in conflict with the broader interests of the collective. Such problems are generally known as *social dilemmas*, and they entail conflicts involving both the distribution of scarce resources and the provision of public goods (Messick & Brewer, 1983; Komorita & Parks, 1994; Van Lange & Messick, 1996). In public goods conflicts, an individual is personally better off if other group members make efforts to create a particular common good (e.g. volunteering to pay for a taxi, to write a departmental strategic plan or participate in a

*Correspondence to: D. De Cremer, Department of Psychology, University of Southampton, Highfield, Southampton SO17 1BJ, UK. e-mail: ddc@psy.soton.ac.uk

Neighbourhood Crime Watch programme), because no individual can be excluded from the good once it is provided. However, if too few people make a contribution, the collective good might not be provided and everyone in the group is worse off.

How can voluntary cooperation be promoted in such situations? According to social dilemma theorists, one of the most promising solutions is to strengthen the group ties and increase people's identification with the group, so that members become motivated to contribute to the group welfare (Edney, 1980; Kramer, 1991). Earlier research has convincingly demonstrated the beneficial effects of social identification on cooperation (see Brewer & Schneider, 1990, for a review). Little research, however, has been done to unravel possible explanations for the role of social identification in social dilemmas. For example, does a high level of group identification increase concerns with the group welfare or does it increase the expectation that people's efforts are reciprocated by others? The present research is among the first to systematically investigate why social identification might promote voluntary cooperation in social dilemmas. To distinguish between different interpretations we examine how people who differ in social value orientation respond to information highlighting their group identification. Social value orientation is a stable individual difference variable which refers to the value people assign to their personal welfare versus the collective welfare (Messick & McClintock, 1968; Van Lange & Kuhlman, 1994).

SOCIAL IDENTIFICATION PROCESSES IN SOCIAL DILEMMAS

An important psychological process that may provide a basis for solving social dilemmas is the extent to which individual decision makers identify with their group and use this identification as a reference point for their decision behaviour (Brewer, 1979; Brewer & Schneider, 1990; Messick & Brewer, 1983). Members who strongly identify with their group have been shown to invest more in public goods dilemmas and exercise greater restraint in resource dilemmas than low-identifying group members, both in laboratory and field dilemmas (Brewer & Kramer, 1986; Kramer, 1991; Kramer & Brewer, 1984; Kramer & Goldman, 1995; Kramer, Pommerenke & Newton, 1993; Van Vugt & De Cremer, *in press*; Wit & Wilke, 1992). But exactly how does social identification influence actions in social dilemmas?

A first possible explanation may be that social identification blurs the distinction between people's personal welfare and the welfare of others or the group as a whole (cf. Brewer, 1979; Kramer & Brewer, 1986). An increased group identification may reduce the psychological distance between the group members so that they perceive each other as similar in terms of their goals and achievements (Tajfel & Turner, 1986; Turner, 1982; Turner, Hogg, Oakes, Reicher & Wetherell, 1987). Consequently, people will become motivated to achieve positive outcomes for their group rather than for themselves, which results in greater contributions to the collective good. Following this argument, social identification is believed to give rise to *transformation of motivation* (cf. interdependence theory; Kelley & Thibaut, 1978), whereby the self-interest at the personal level is redefined at the collective level and the outcomes for self and others in the group become practically interchangeable. This transformational interpretation is consistent with Brewer's (1979) claim about the effects of social identification: 'The reduced differentiation between one's own and others'

outcomes associated with ingroup formation provides one mechanism for increasing the weight given to collective outcomes in individual decision making' (p. 322).

A possible alternative interpretation for the beneficial effects of social identification is that it enhances perceptions of *trust* in other group members (Brann & Foddy, 1987; Brewer, 1979, 1981; Kerr, 1996; Kramer, Brewer & Hanna, 1996; Kramer & Goldman, 1995). One of the major obstacles for cooperation in social dilemmas is that group members do not expect their efforts to be reciprocated by others in their group (Pruitt & Kimmel, 1977; Yamagishi, 1986). Accordingly, people will not make an effort themselves for fear that their contribution will be wasted. An increased group identification may reverse this expectation as group members will be viewed as more cooperative and trusting. Research on ingroup bias (Brewer, 1979) has indeed shown that fellow group members are perceived in more desirable ways (i.e. trustworthy, honesty) than members of other groups, and this is even more so when group members identify strongly with their group (Kelly, 1988; Tajfel & Turner, 1986). Thus, according to this interpretation, a heightened social identification promotes contributions to a public good because it raises the expectation that a sufficient number of other group members will cooperate as well.

Which of these explanations—trust or transformation—might account for the obtained results of social identification in social dilemmas? Although the literature suggests that these two are the most plausible explanations for the social identification effect in social dilemmas (Kramer, 1991), there is no consistent empirical support to back either one of these claims. First, while a great number of theorists assume that social identification leads to a motivational change (i.e. from a concern with personal to a concern with the collective welfare; Brewer, 1979), this explanation has not yet been empirically tested. Furthermore, rather inconsistent results have been obtained in research testing the relation between social identification and trust, both group-based and reciprocal trust (Kramer & Brewer, 1984; Kramer & Goldman, 1995). One possible way to examine the validity of these explanations is to look at how social identification influences social dilemma decisions of people with pre-existing motivational differences in concern for personal versus collective welfare (i.e. social value orientation).

SOCIAL VALUE ORIENTATION AND COOPERATION

Social value orientation is a stable individual difference variable, which refers to the way people evaluate outcomes for themselves and others in interdependent situations (Kuhlman & Marshello, 1975; Messick & McClintock, 1968; Van Lange & Liebrand, 1991). A variety of social value orientations have been identified (e.g. Knight, Dubroz & Chao, 1985), but a distinction is generally made between three types of orientations: Cooperation, competition, and individualism (e.g. Parks, 1994; Van Lange & Kuhlman, 1994). Cooperative or '*prosocial*' individuals (see Van Lange & Liebrand, 1991) are primarily concerned with maximising the outcomes for both self and others, whereas competitive individuals pursue to maximise the difference between outcomes for self versus others. Finally, people with individualistic orientations pursue to maximise their own outcome with no regard for the outcomes of others. The latter two orientations are usually combined to form a group of people with essentially

'proself' orientations (Kramer, McClintock & Messick, 1986; McClintock & Liebrand, 1988; Van Lange & Kuhlman, 1994; Van Vugt, Van Lange & Meertens, 1995).

These differences in orientations determine the way people transform and respond to interdependent situations such as social dilemmas. Both in experimental (e.g. Kramer *et al.*, 1986, Van Lange & Kuhlman, 1994) and field research (e.g. negotiation, transportation, intimate relationships; e.g. De Dreu & Van Lange, 1995; Van Lange, Agnew, Harinck & Steemers, 1997; Van Vugt *et al.*, 1995) it has been established that people with prosocial orientations are systematically more cooperative than people with proself orientations (i.e. individualists and competitors). Moreover, compared to proselfs, prosocials express a greater concern with the welfare of others and the group as a whole (e.g. Joireman, Van Lange, Kuhlman, Van Vugt & Shelley, 1997; Samuelson, 1993).

SOCIAL VALUE ORIENTATION AS A MODERATOR OF SOCIAL IDENTIFICATION

How would an increased social identification affect the contribution decisions of people with a different social value orientation, and what does it mean for the proposed interpretations of social identification effects in social dilemmas?

The fundamental assumption of the current research is that the effects of social identification will be different for people who are primarily concerned with the welfare of themselves (i.e. proselfs) or the group as a whole (i.e. prosocials). In other words, people's social value orientation is expected to moderate the relation between social identification and cooperation (cf. Baron & Kenny, 1986). Moreover, the shape of this relationship might reveal which of the proposed mechanisms—trust or transformation of motivation—is more likely to account for the impact of social identification in social dilemmas. Based upon the reasoning above, we advance two competing hypotheses regarding the role of social identification processes in shaping the contributions of people with a different social value orientation.

First, if the effects of social identification are due to a transformation of motivation then we might expect that an increased sense of group identity will particularly affect the decisions of people who would normally not be willing to contribute (i.e. people with proself orientations). When group identification is high, their focus will shift from a concern with their personal outcomes to the outcomes for the group as a whole. They will start to assign greater value to the establishment of the collective good and therefore become motivated to contribute (i.e. goal-transformation; cf. Kramer & Goldman, 1995). Moreover, following this *goal-transformation* hypothesis we would not expect prosocials to be very sensitive to social identification effects as they are already primarily concerned about the welfare of the group rather than their personal welfare (i.e. prosocials' motives are directed towards maximising joint outcomes, see Messick & McClintock, 1968). Thus, strengthening their level of group identification should not further encourage them to cooperate.

Conversely, if social identification increases trust in others then we would expect to find a reverse effect for prosocials and proselfs. Following the logic underlying Pruitt and Kimmel's (1977) goal/expectation theory, enhancing trust might increase

cooperation, but only among those who are indeed concerned with the group welfare, and wish to achieve the goal of mutual cooperation (i.e. people with prosocial orientations). Despite the fact that prosocials want to establish mutual cooperation, their contribution efforts may be somewhat inhibited by the fact that they do not expect many others in their group to reciprocate their cooperation. Yet when group membership is salient they might develop greater trust in others and this will positively affect their contribution intention (cf. Pruitt & Kimmel, 1977). Thus, according to this interpretation, social identification is likely to *amplify* the cooperative intentions of people with a prosocial orientation by enhancing their trust in others. Consequently, people may feel that the public good is attainable for the group, and that their contribution will make a noticeable difference (i.e. personal and collective efficacy; Kerr, 1992, 1996).

Following this *goal-amplification* hypothesis (cf. Kramer & Goldman, 1995), however, we do not expect people with a proself orientation to be very sensitive to social identification effects as they lack the motivation to cooperate in the first place, and therefore an enhanced trust in others' cooperation will not make a difference to their decisions.

In Figure 1 we depict the hypothesised relationships between social identification and social value orientation in the context of a public goods dilemma. As can be seen from these figures, we first predict an overall effect for social identification such that when group identification is high a greater percentage of group members will contribute than when group identification is low (*Hypothesis 1*). Moreover, a main effect for social value orientation is expected such that a greater proportion of prosocials than proselfs will contribute (*Hypothesis 2*).

Finally, an interaction between social identification and social value orientation is expected. If the goal-transformation hypothesis is correct then we predict that when group identification is high a greater percentage of proselfs will contribute than when group identification is low; moreover, among prosocials the proportion of contributors should remain relatively similar across levels of group identification (*Hypothesis 3a*). The predicted effect is depicted in Figure 1(a).

In contrast, if the goal amplification hypothesis is accurate, particularly prosocials should contribute more when group identification is high rather than low; moreover, among proselfs the proportion of contributors should remain roughly the same between the group identification conditions (*Hypothesis 3b*). This is illustrated in Figure 1(b).

INTRODUCTION TO STUDY 1

In the first study we utilised the traditional step-level public goods paradigm (Van de Kragt, Orbell & Dawes, 1983) to test the hypotheses outlined above. In this public goods task, small groups are formed in the laboratory and each of its members is provided with a monetary endowment which they can either keep for themselves or invest in a common good (i.e. a group bonus). The provision of the bonus is contingent upon a minimum number of contributors (i.e. provision point), and once achieved is distributed equally among both contributing and noncontributing members (for further details, see Van de Kragt *et al.*, 1983).

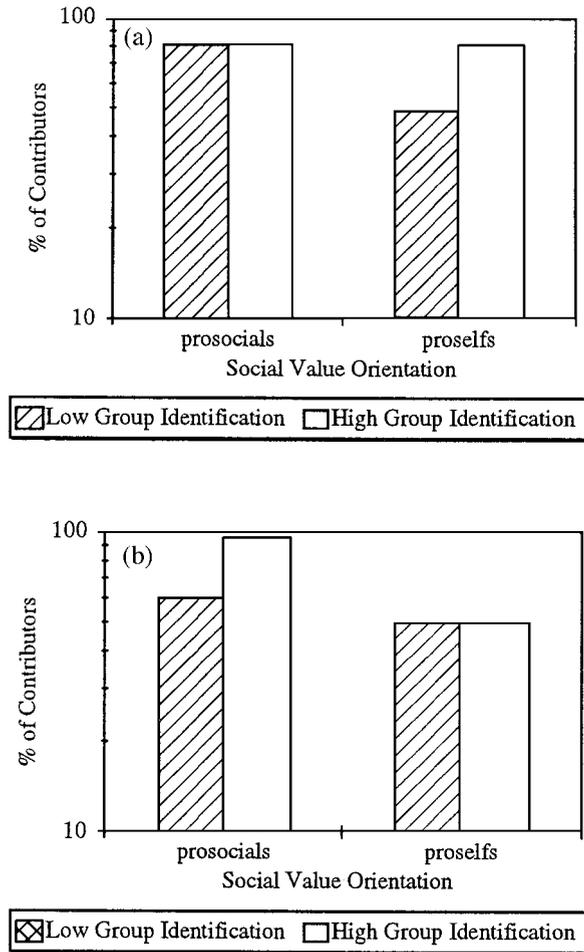


Figure 1. (a) The expected interaction between social value orientation and social identification based upon the goal-transformation hypothesis. (b) The expected interaction between social value orientation and social identification based upon the goal-amplification hypothesis

Method

Participants and Design

Participants were 62 male and 33 female undergraduate students from Southampton University (SU), all between 18 and 21 years of age, who participated voluntarily in the study (i.e. one student failed to indicate gender). For each experimental session six participants were invited simultaneously to the laboratory. Before starting with the experimental session, each participant's social value orientation was assessed. Subsequently, after receiving the experimental instructions we manipulated the level of group identification and varied the provision point of the good. Accordingly, the experiment utilised a 2 (Social value orientation: Prosocials versus proselfs) \times 2

(Group identification: Low versus high) \times 2 (Provision point: Low versus high) between-participants design.¹

Procedure

Upon arrival at the laboratory, participants were seated in separate experimental cubicles. Each cubicle was provided with a computer, table, and chair.

Assessment of Social Value Orientation

As a first task, they completed a written version of the nine-item Decomposed Games measure to assess their social value orientation (Messick & McClintock, 1968; Van Lange & Kuhlman, 1994). The Decomposed Games instrument has excellent psychometric qualities. It is internally consistent (e.g. Liebrand & Van Run, 1985; Parks, 1994), reliable over substantial time periods (Eisenberger, Kuhlman & Cotterell, 1992), and is not related to measures of social desirability or indices of mood (e.g. Kuhlman, Camac & Cunha, 1986; Platow, 1992, unpublished manuscript; Van Lange, Otten, De Bruin & Joireman, 1997; Van Lange & Liebrand, 1991). Moreover, there is evidence for its ecological validity in various domains (e.g. De Dreu & Van Lange, 1995; Van Lange, Van Vugt, Meertens & Ruiter, 1998; Van Vugt *et al.*, 1995).

The task consists of nine items, each containing three alternative outcome distributions with points for oneself and an (anonymous) other. Each outcome distribution represents a particular orientation. An example is the choice between alternative A: 500 points for self and 500 points for other, B: 560 points for self and 300 for other; and C: 500 points for self and 100 for other. Option A represents the *cooperative* or *prosocial* orientation, because it provides an equal distribution of outcomes (i.e. 500 for self and other). Option B represents the *individualistic* option because own outcomes are maximised (560 versus choice A and C, i.e. both 500) irrelative of other's outcomes. Finally, option C represents the *competitive* orientation because this distribution maximises the difference between own outcome and other's outcomes (Choice C: $500 - 100 = 400$, versus A: $500 - 500 = 0$, and B: $560 - 300 = 260$).

Participants are classified as prosocial, individualistic or competitive when at least six choices (out of nine) are consistent with one of the three orientations (e.g. McClintock & Allison, 1989; Van Lange & Kuhlman, 1994; Van Vugt *et al.*, 1995). In the present study, out of a total number of 96 individuals, 56 (59 per cent) were identified as prosocials, 26 (27 per cent) as individualists, and nine (9 per cent) as competitors. On the basis of the above criterion, five (5 per cent) individuals could not be classified and were therefore excluded from further analyses. The individualists and competitors were combined to form one group of proself people ($N = 35$).

¹According to previous research people's decisions to contribute might be influenced by the difficulty of getting the bonus (Dawes, Orbell, Simmons & Van de Kragt, 1986). As there were no real *a priori* expectations concerning the influence of this factor on contribution size, we introduced Provision point as an exploratory factor to the design.

Introduction to Public Goods Dilemma

After completing the Decomposed Games, participants were told—via the computer screen—that many social problems in contemporary society represent a social dilemma. To illustrate this, some real-life examples were given and it was explained that the purpose of the present study was to examine how people in such situations make decisions. In order to examine this, participants were required to take part in a public goods dilemma. Thereafter, participants received instructions about the one-shot public goods dilemma task (for similar instructions, see Van de Kragt *et al.*, 1983). They were provided with information about the rules of the task and the possible outcomes for themselves and the group. They were told that they would be acting as a single six-person group and that the group had the opportunity to earn a group bonus. Therefore at the start of the experiment, each participant received an endowment of £3, which they could either keep for themselves or contribute to the group in order to obtain a group bonus of £30 (i.e. £5 per group member). It was explained that a certain number of contributors was required to obtain the group bonus and that if the group would be successful each member would receive the bonus regardless of whether they had contributed their endowment. Thus, if participants kept their endowment, then the value of this endowment was definitely theirs, and if the group was successful they would receive part of the group bonus as well. However, if the group failed then those who contributed would lose their endowment, and the others who kept their endowment would lose or gain nothing. This situation is thus characterized by *impossibility of exclusion* in a sense that once the bonus is provided anyone can enjoy it, regardless whether he or she contributed or not. This property creates a temptation for participants to *free-ride*, that is, to profit from the contributions of others without making a contribution themselves.

Manipulation of Provision Point

After explaining these rules, the manipulation of provision point was induced. In half of the experimental conditions participants were informed that at least five group members had to contribute their endowment in order to obtain the group bonus (high provision point). In the other half, participants were informed that at least two group members had to contribute their endowment (low provision point). Thereafter, participants were asked various questions about the instructions and provided with the correct answers to ensure their understanding of the experiment.

Manipulation of Group Identification

Social identification was manipulated by using a modified procedure as the one introduced by Kramer and Brewer (1984, Experiments 1 and 2) and Kerr (1992). Participants were first informed that the present experiment was run conjunctly at different universities in southern England. In the high group identification-condition, participants were told that the purpose of the study was to *compare* contribution decisions of student groups at Southampton University with those of student groups at the other participating universities. Moreover, participants were informed that all

members participating in their group were students from Southampton University. This experimental condition creates a sense of collective identification, because all individuals with access to the public good share the same group membership (see Kramer & Brewer, 1984; Turner *et al.*, 1987). In the low group identification-condition students were informed that the purpose of the study was to examine *individual* contribution decisions among students in general. Hence, a differentiation among group members is created, reinforcing a more personalised identity (Turner, 1982; Turner *et al.*, 1987). The distributions of prosocials and proselfs were fairly similar between the high identification-condition (60 per cent versus 40 per cent, respectively) and the low identification-condition (64 per cent versus 36 per cent, respectively).

After this manipulation, two group identification questions were asked: (1) 'How much do you identify yourself with your group members?' and (2) 'Do you think that you have more in common with the members of this group than with members of other groups?' (both 7-point scales, 1 = not at all, 7 = very much). These questions were fairly strongly correlated ($r = 0.53$, $p < 0.001$), which allowed us to average them into one identification score.

Consequently, the group identification score was subjected to a 2 (Social value orientation: Prosocials versus proselfs) \times 2 (Group identification: Low versus high) ANOVA. This analysis revealed a significant main effect for group identification, $F(1,87) = 7.81$, $p < 0.01$. Participants in the high identification-condition ($M = 4.44$, $SD = 1.40$) identified stronger with their group members than participants in the low identification-condition ($M = 3.63$, $SD = 1.52$), which showed that our group identification manipulation worked.

Also, a significant main effect for social value orientation was found, $F(1,87) = 5.64$, $p < 0.05$. Prosocials ($M = 4.31$, $SD = 1.43$) identified stronger with their fellow group members than proselfs ($M = 3.46$, $SD = 1.55$). No significant interaction between group identity and social value orientation was found, $F(1,87) < 1$.

Contribution Decision

Finally, participants were asked if they were willing to contribute their endowment (1) or not (2).

After each of the group members made their decision, the experiment was terminated, and participants were debriefed and thanked for their cooperation.

Results

To examine our hypotheses, we performed a 2 (Social value orientation: Prosocials versus proselfs) \times 2 (Group identification: Low versus high) analysis of frequencies on the contribution decisions.²

²A preliminary analysis revealed no significant main effect of provision point or interaction effects with other factors. Because of this and because there were no *a priori* expectations about how provision point might affect the relation between social identification and social value orientation we decided to exclude this factor from further analyses.

In accordance with Hypothesis 1 that strong identification with the group would enhance contributions, a significant main effect for group identification was found, $\chi^2 = 4.47$, $df = 1$, $p < 0.05$. As predicted, high identifiers (88 per cent) contributed more often than low identifiers (70 per cent). Furthermore, the analysis also revealed a significant main effect for social value orientation, $\chi^2 = 9.10$, $df = 1$, $p < 0.005$. Consistent with Hypothesis 2, prosocials (89 per cent) contributed more often than proselfs (63 per cent).

Finally, and most importantly, a significant interaction between social value orientation and group identification emerged, $\chi^2 = 4.47$, $df = 1$, $p < 0.05$. Among the prosocials there was no difference in the number of contributors when group identification was high (93 per cent) rather than low (86 per cent), $\chi^2 = 0.74$, $df = 1$, ns. In contrast, among the proselfs there were many more people contributing when identification was high (79 per cent) rather than low (44 per cent), $\chi^2 = 4.60$, $df = 1$, $p < 0.05$. Furthermore, no significant difference in contributions was found between prosocials and proselfs when identification was high, $\chi^2 = 1.96$, $df = 1$, ns. However, when identification was low prosocials contributed more than proselfs, $\chi^2 = 8.61$, $df = 1$, $p < 0.005$. These findings provide support for the goal-transformation hypothesis rather than goal-amplification hypothesis by showing that group identification primarily affected the decisions of people with proself orientations (Hypothesis 3b).³

Summary

Study 1 provided good support for the main effects of social identification (Hypothesis 1), social value orientation (Hypothesis 2) as well as for the interaction

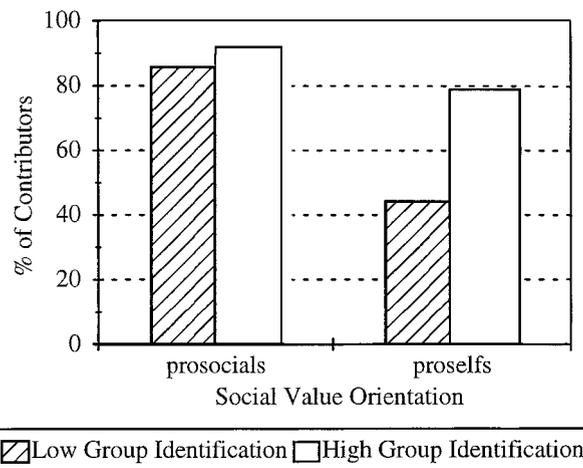


Figure 2. Percentage of contributors as function of social value orientation and level of group identification in Study 1

³Because the number of competitors was very small in each of the three studies, we also performed analyses in which individualists were compared to prosocials. Across all three studies these analyses revealed that the critical interaction between group identification and social value orientation remained significant. The mean values showed again that individualists contributed more when group identification was high rather than low, whereas for prosocials there was no significant difference in contributions between the high and low identification condition.

(Hypothesis 3). The pattern of this interaction reveals support for the goal transformation hypothesis rather than for the goal-amplification hypothesis in that proselves were more sensitive to an increased group identification than prosocials.

INTRODUCTION TO STUDY 2

Study 2 extended and complemented the first study in two ways. First, although the first study provides stronger support for the transformation hypothesis than for the amplification hypothesis this may well be influenced by the particular design of Study 1. In Study 1 participants were asked if they wished to contribute their endowment, which nearly 90 per cent of prosocials did. Given the high percentage of contributions made within this group, it may not be surprising that we did not obtain an effect of group identification on prosocials' contribution decisions. Accordingly, to eliminate possible ceiling effects in Study 2 we asked the participants to make a continuous rather than a dichotomous contribution decision. Thus, participants could decide to contribute any amount between 0 and 300 pence to establish a group bonus.

Second, Study 1 revealed no differences in contribution decisions resulting from the manipulation of provision point. Because of this, and because this factor was not central to our hypotheses we fixed the provision point in Study 2 at an intermediate level of task difficulty.

Method

Participants and Design

Participants were 93 undergraduate students (50 female and 43 male) from Southampton University, all aged between 18 and 21 years. They participated voluntarily, and were each paid £2 for their participation.

Procedure

The procedure was virtually the same as the one used in Study 1.

Assessment of Social Value Orientation

As in Study 1, social value orientation was assessed by using the Decomposed Games method (Van Lange & Kuhlman, 1994), and participants were classified as prosocial, individualistic or competitive when at least six choices (out of nine) were consistent with one of those three orientations. Accordingly, out of a total number of 93 individuals, 61 (66 per cent) were identified as prosocials, 22 (24 per cent) as individualists and three (4 per cent) as competitors. The distribution of social value orientations was fairly similar to the one obtained in Study 1. On the basis of the

above criterion, seven (6 per cent) individuals were removed from further analysis because they could not be classified.

Introduction to Public Goods Dilemma

The introduction of the one-shot dilemma game was similar to the one used in Study 1 (e.g. explanation of outcomes, practical illustration, etc.) with a few modifications. In Study 2 the amounts of money were depicted in pence rather than in pounds. Thus, participants received an endowment size of 300 pence, and were free to contribute any amount between 0 and 300 pence. Moreover, it was made clear that the group as a whole should have to contribute 1200 pence or more to obtain a group bonus of 500 pence per group member, which was then given to all people regardless of the amount they contributed.

The same manipulation of social identification was used as in Study 1. Thus, in the high identification-condition people were informed that the experiment was aimed at comparing contribution decisions of student groups from different universities, whereas in the low identification-condition the purpose was to make individual comparisons among students in general. The distributions of prosocials and proselfs were similar in the high identification-condition (75 per cent versus 25 per cent, respectively) and the low identification-condition (67 per cent versus 33 per cent, respectively).

After this manipulation, three questions were given to measure group identification (taken from Brown, Condor, Mathews, Wade & Williams, 1986 and Ellemers, van Knippenberg, De Vries & Wilke, 1988): (1) 'How much do you identify yourself with this group?' (2) 'Do you consider yourself as belonging to this group?' and (3) 'Do you think the members of this group are well suited to each other?' (all 7-point scales; 1 = not at all, 7 = very much). These three items were grouped into one identification score (*Cronbach's* $\alpha = 0.77$) and subjected to a 2 (Social value orientation: Prosocials versus proselfs) \times 2 (Group identification: High versus low) ANOVA. This analysis revealed a significant main effect for group identification, $F(1,82) = 19.30, p < 0.001$, showing that our manipulation had been effective. Participants in the high identification-condition ($M = 4.02, SD = 1.09$) identified more strongly with their fellow group members than participants in the low identification-condition ($M = 3.04, SD = 0.93$). No significant main effect for social value orientation, $F(1,82) < 1$, or significant interaction between group identification and social value orientation, $F(1,82) < 1$, was found.

Contribution Decisions

Subsequently, participants were asked how much of their 300 pence endowment they were willing to contribute to the group to provide the group bonus. After each participant made their decision they were debriefed about the purpose of the experiment. Subsequently, they each received £2 (regardless of task performance) and were thanked for their cooperation.

Results

Contribution Decisions

To examine our hypotheses we performed a 2 (Social value orientation: Prosocials versus proselfs) \times 2 (Group identification: Low versus high) ANOVA on the contribution decisions. Consistent with Hypothesis 1, a significant main effect for group identification was found, $F(1,82) = 10.42$, $p < 0.005$. Participants in the high identification-condition ($M = 213.10$, $SD = 47.34$) contributed more than participants in the low identification-condition ($M = 180.02$, $SD = 56.67$). Following Hypothesis 2, the analysis also revealed a significant main effect for social value orientation, $F(1,82) = 4.12$, $p < 0.05$. As expected, prosocials ($M = 202.21$, $SD = 49.07$) contributed more than proselfs ($M = 181.44$, $SD = 66.06$).

Finally, a significant interaction between social value orientation and group identification was found, $F(1,82) = 6.54$, $p < 0.05$ (see Figure 3). Additional tests revealed that for prosocials there were no differences in contribution size when group identification was high rather than low ($M = 211.61$, $SD = 47.55$ versus $M = 194.24$, $SD = 49.64$, respectively, $t(59) = -1.39$, ns.). In contrast, proselfs were found to contribute significantly more when identification was high rather than low ($M = 216.07$, $SD = 50.58$ versus $M = 137.36$, $SD = 57.74$, respectively, $t(23) = -3.36$, $p = 0.001$). Furthermore, prosocials did not contribute significantly more than proselfs when identification was high, $t(43) = -0.28$, ns. However, when identification was low prosocials contributed significantly more than proselfs, $t(44) = 3.16$, $p < 0.005$. This finding gives further support to the goal transformation hypothesis (Hypothesis 3b) relative to the goal-amplification hypothesis (Hypothesis 3a).

Summary

Study 2 provided further support for the impact of social identification and social value orientation in public goods dilemmas. Moreover, the interaction between these

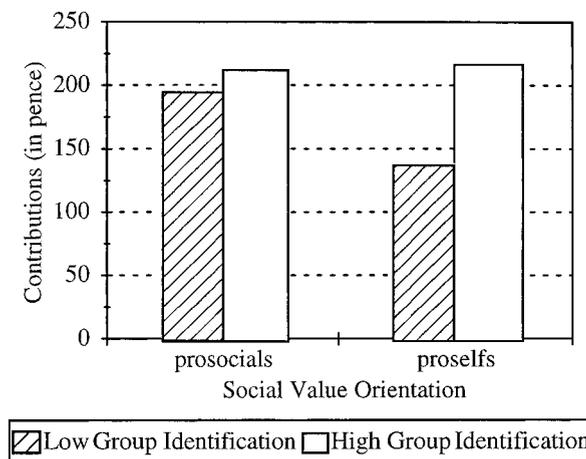


Figure 3. Sum of contributions as function of social value orientation and level of group identification in Study 2

factors showed the same pattern as in Study 1, providing support for the goal-transformation hypothesis, but not for the goal-amplification hypothesis. That is, when group identification was enhanced, proselves contributed significantly more than when identification was low, and their contributions raised to the same level as for prosocials.

INTRODUCTION TO STUDY 3

The results of Study 2 rule out the possibility of a ceiling effect as an alternative explanation for the greater impact of social identification on proselves rather than prosocials. However, because prosocials were, on average, contributing near the step-level point (i.e. 200 pence per member), they might have been reluctant to contribute much more despite an increased group identification. To exclude this interpretation we analyzed the results of a different study whereby we employed a public goods task without a step-level point. In this so-called continuous public goods dilemma the group bonus is variable and increases the more each group member contributes (Komorita & Parks, 1994). Although this study was originally designed for a different purpose (i.e. to examine the combined effects of social identification and leadership in social dilemmas), the experimental set-up of the study allowed us to retest the hypotheses regarding the effects of social value orientation and social identification within a public goods context in which ceiling effects were unlikely to occur.⁴

Method

Participants and Design

Participants were 94 undergraduate students, aged between 18 and 22, attending the experimental session in a group of six. They participated in this study to obtain course credits.

Procedure

The procedure and instructions were largely similar to those of Studies 1 and 2. Social value orientations were assessed at the start of the experiment using the Decomposed Games method. Out of a total number of 94 participants, 61 (65 per cent) were identified as prosocials, 19 (20 per cent) as individualists, and six (6 per cent) as competitors. Eight (9 per cent) individuals were removed from further analyses because they could not be classified.

⁴Besides group identification, two variables regarding leadership in social dilemmas were manipulated. The first variable concerned the degree of prototypicality of the group leader (i.e. how strong this leader identified with the group he or she had to monitor), and the second variable concerned the fairness of treatment by the group leader. These effects are not discussed here.

Thereafter the experimental task was introduced. As in Study 2, participants received an endowment of 300 pence at the start of the session, and were free to contribute any amount of it to establish the common good. It was explained that the total amount contributed by the group would be multiplied by two and then would be split equally among all members regardless of their contribution (see Van Dijk & Wilke, 1995, for details).

The manipulation of group identification was the same as in the previous studies. The distributions of prosocials and proselfs were fairly similar across the high (78 per cent versus 22 per cent, respectively) and low-identification condition (65 per cent versus 35 per cent, respectively). Furthermore to check whether our manipulation was successful we asked participants to what extent they identified with their group (7-point scale, ranging from not at all [1] to very much [7]). A 2 (Social value orientation) \times 2 (Group identification) ANOVA on the identification score revealed a significant main effect for group identification, $F(1,82) = 4.15, p < 0.05$. Participants in the high identification-condition ($M = 4.17, SD = 1.26$) identified more strongly with their fellow group members than participants in the low identification-condition ($M = 3.55, SD = 1.32$). No significant main effect for social value orientation, $F(1,82) < 1$, or interaction between group identification and social value orientation, $F(1,82) = 1.45, ns$, was found.

Consequently, participants were asked how much of their 300 pence endowment they were willing to contribute to the group. After participants made their decision they were informed that the experiment was finished. They were debriefed, thanked and dismissed.

Results

Contribution Decisions

To examine our hypotheses a 2 (Social value orientation: Prosocials versus proselfs) \times 2 (Group identification: Low versus high) ANOVA was performed on the contribution decisions. In line with Hypothesis 1, a significant main effect for group identification was found, $F(1,82) = 12.98, p = 0.001$, indicating that participants in the high identification-condition ($M = 197.71, SD = 63.30$) contributed more than participants in the low identification-condition ($M = 146.95, SD = 66.12$). Consistent with Hypothesis 2, a significant main effect for social value orientation was also found, $F(1,82) = 4.69, p < 0.05$, showing that prosocials ($M = 183.07, SD = 61.15$) contributed more than proselfs ($M = 144.12, SD = 70.83$).

Finally, the predicted interaction between social value orientation and group identification emerged, $F(1,82) = 6.54, p < 0.05$ (see Figure 4).⁵ Further testing revealed that for prosocials there were no significant differences in contribution size, although they tended to contribute somewhat more when group identification was high rather than low ($M = 195.85, SD = 60.53$ versus $M = 168.00, SD = 59.43$, respectively), revealing a difference of 27.85 pence, $F(1,59) = 3.25, ns$. In contrast,

⁵Analyses showed that the predicted two-way interaction between group identification and social value orientation was not qualified by the other factors in the design. As such, the manipulation of the other factors did not compromise the validity of the results of Study 3.

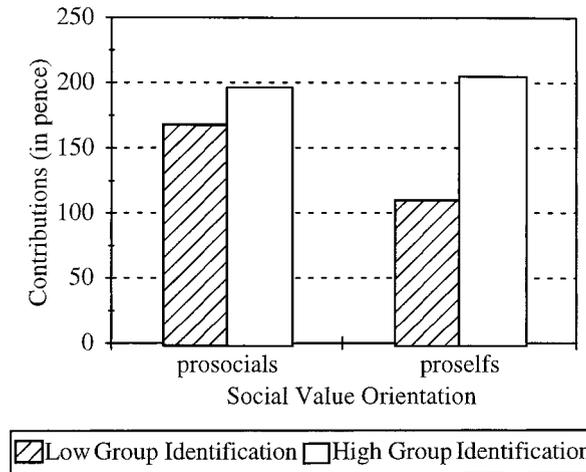


Figure 4. Sum of contributions as function of social value orientation and level of group identification in Study 3

proselfs were found to contribute significantly more when identification was high rather than low ($M = 204.56$, $SD = 56.65$ versus $M = 110.13$, $SD = 53.79$, respectively), nearly doubling their contributions when group identification was high rather than low, $F(1,23) = 17.10$, $p < 0.001$. Furthermore, prosocials did not contribute significantly more than proselves when identification was high, $F(1,40) < 1$. However, when identification was low prosocials did contribute significantly more than proselves, $F(1,42) = 10.32$, $p < 0.005$.

Summary

Study 3 provided further evidence for the influence of group identification and social value orientations on people's decisions to contribute. Moreover, using a continuous public goods dilemma the predicted interaction between group identification and social value orientation turned out to be significant. The pattern of results showed that proselves contributed significantly more when group identification was high, raising their contributions to the same level as prosocials did. Thus, as in Studies 1 and 2 this finding provides again supportive evidence for the goal transformation hypothesis over the goal-amplification hypothesis.

DISCUSSION

The major purpose of this research was to examine in what ways social identification processes might influence decisions in social dilemmas. The findings of the three presented studies revealed first that social identification positively affected group members' contributions to a common good. Moreover, both studies revealed evidence that social identification more strongly influenced the decisions of individuals with prosself orientations than prosocial orientations. These findings provide support for a

transformational interpretation of the effects of social identification. In the following paragraphs, we consider the major and minor findings of the present research, and discuss the implications for social dilemma research and practice.

The most important finding of this research was that people with distinct social value orientations responded differently to the social identification manipulations. When group identification was low, people with proself orientations cooperated much less than people with prosocial orientations. However, when group identification was enhanced, the contribution levels of proself people increased to the same level as those of prosocials. This finding is important because it suggests that the widely established positive effect of social identification in dilemma situations (for overviews, see Brewer & Schneider, 1990; Komorita & Parks, 1994) might be attributed to a transformation of motives. That is, increasing the group salience encourages people who are normally only focused upon their personal outcomes to make efforts in obtaining good outcomes for the group even when it runs against their direct self-interest (i.e. rationality prescribes not to contribute).

This finding can be explained by assuming that group identification gives rise to *transformation of motivation* (Kelley & Thibaut, 1978), whereby the distinction between personal and collective interests is blurred. That prosocials did not increase their contributions in the high group identification-conditions is consistent with this transformation hypothesis. Following a transformational interpretation, we would not expect social identification to affect the decisions of people who already perceive a close correspondence between their personal outcomes and those of the group.

These results can also be explained in terms of Self Categorization Theory ('SCT'; Turner *et al.*, 1987). Following SCT, level of identification depends on which social psychological context is most salient (Brewer & Gardner, 1996; Oakes, Turner & Haslam, 1991). When interpersonal distinctiveness is reinforced, people's sense of self is defined at the level of the individual, whereas they will define themselves at the group level when intergroup distinctiveness is reinforced (Turner, 1982). In accord with SCT, the manipulation of group identification might have influenced the self-perception of proselfs in such a way as to cause a shift from the personal level towards the higher, more inclusive group level ('me' becomes 'we'-identity). In case of prosocials, however, such a shift did not occur, because they already defined themselves at the group level ('we'-identity).

Contrary to the competing *goal-amplification* hypothesis, prosocials remained largely insensitive to the group identification manipulations. While expecting prosocials to be generally more cooperative than proselfs, we predicted that at least a portion of prosocials would not contribute for fear that their effort would not be reciprocated by others in their group. Strengthening their group identification might enhance their trust in the cooperative intentions of fellow group members, reducing the risk of being exploited by others (i.e. the so-called sucker's pay-off; Komorita & Parks, 1994). However, the present results gave no support for this *goal-amplification* hypothesis. Why may this be?

One explanation is that prosocials have greater initial trust in others than proselfs do, and they are therefore less sensitive to information which further enhances their trust in others' cooperation. However, this interpretation is not in line with the social dilemma literature, which provides no consistent support for a relationship between social value orientation and trust (Kuhlman *et al.*, 1986; Parks, 1994; Van Lange *et al.*, 1998). Rather than expecting reciprocity, it seems that prosocials engage in

cooperation because they believe it is the morally right thing to do (Beggan, Messick & Allison, 1988; Sattler & Kerr, 1991; Van Lange & Liebrand, 1991). In this sense, prosocials can be regarded as 'genuine' cooperators who cooperate for a particular collective cause, regardless of whether other individuals do the same (Joireman *et al.*, 1997; Van Lange *et al.*, 1998).

Another explanation could be that the initial level of cooperation among prosocials was already very high, and therefore an increase in group identification could not possibly promote cooperation any further. The possibility of a ceiling effect may indeed confound the results of Studies 1 and 2 in which we used a step-level public good. However, the same result was also obtained in Study 3 in which we used a linear public good. Thus, across several types of public goods dilemmas we have found support for the goal-transformation hypothesis but not for the goal-amplification hypothesis.

Some other findings of the current research are also worth discussing. First, these studies are, to our knowledge, the first to show clear-cut effects of social identification within the context of a public goods dilemma. To date, evidence for the importance of this factor has been derived mainly from dilemmas involving the distribution of scarce resources (e.g. Kramer & Brewer, 1984; Kramer *et al.*, 1986; Tyler & DeGoey, 1995). In contrast, research on public goods dilemmas has generally failed to establish a strong link between cooperation and people's level of identification (Brewer & Kramer, 1986; Schneider & Brewer, 1989, unpublished manuscript; as cited in Brewer & Schneider, 1990; Kerr, 1992).

In this regard, we should note that, unlike previous experiments, our studies were conducted in relatively small groups of six people each (e.g. Brewer & Kramer, 1986, used groups of 32 people in some of their conditions). Accordingly, individuals in our experiments may have felt that it was relatively easy to provide the collective good with the group, and that their personal contribution could indeed make a noticeable difference (i.e. personal and collective efficacy; De Cremer & Van Vugt, 1998; Kerr, 1989, 1996). Hence, given a realistic expectation of the group's success, an increased concern with the collective welfare—as induced by the manipulation of group identification—might be sufficient for people to contribute (a large part of) their endowment. It would be interesting to see if these findings could be replicated in public goods dilemmas involving large groups. It may well be that in larger public goods the positive effects of social identification (particularly for proselves) disappear as people may feel a sense of inefficacy, both personally and collectively (Olson, 1965; Stroebe & Frey, 1982). Thus, we are reluctant at this stage to recommend social identification as a panacea to solve large-scale public goods dilemmas (e.g. tax evasion, purchase of TV licenses). Social identification might be helpful in solving these dilemmas, but only if these problems can be redefined as smaller scale problems which might create an 'illusion of personal efficacy' (Kerr, 1989, 1996).

That social value orientations were found to be predictive of the contribution decisions in our studies is interesting for at least two reasons. First, these findings add to the predictive ability of this personality construct by showing its relevance in explaining decisions in the context of public good problems, a second major category of dilemma situations (i.e. previous research has mainly found evidence in the context of resource dilemmas; e.g. Parks, 1994). It is generally assumed that the key social motive underlying decisions in public goods dilemmas is trust rather than value orientation, because in these dilemmas someone's outcome depends directly on the

number of others making a contribution. Although this may hold in larger public goods dilemmas, the present findings suggest that social value orientations may also be predictive of contribution decisions for the provision of a small collective good (e.g. volunteering to pay for a taxi).

Second, the findings with respect to social value orientation have interesting implications for social dilemma theories and practice. It is a widely held belief that cooperation in social dilemmas will not occur if it runs against people's self-interest (Hardin, 1968). This may be true for proself individuals who primarily consider the personal benefits they receive in these situations, but this model is too narrow to account for decisions of prosocials who consider broader issues when making their decisions ('How will my decision affect the welfare of the others in the group?'). Furthermore, this model should also take into account that self-interest can be defined at many different levels, from narrow personal interest to the interest of the subgroup, or superordinate group (i.e. three levels of abstraction, see Turner *et al.*, 1987). If a collective identity is made salient, the self-interest at the personal level is transformed to self-interest at the collective level, and cooperation becomes the 'rational' choice (Turner *et al.*, 1987).

Before closing, we wish to delineate some limitations of the present research, and make some recommendations for future studies. A first limitation concerns our procedure for manipulating social identification. This was achieved by drawing comparisons between members of natural categories (i.e. student groups from local universities) which is a fairly common method for establishing group identification (Kerr, 1992; Kramer & Brewer, 1984). Nevertheless, this particular procedure might provide an explanation for why proself individuals reacted so strongly to our manipulations. Particularly people with competitive orientations may have been very much focused on 'doing better' with their group than similar outgroups, and therefore increased their group contributions when an intergroup comparison was made salient. However, these competitive tendencies are less likely to account for the reactions of people with individualistic orientations—they want to maximize personal outcomes regardless of others' outcomes—who formed the vast majority of the proself group in the three studies. That their cooperation increased vastly under the influence of group identification can only really be attributed to a transformation from narrow personal motives (i.e. keep the endowment to themselves) to broader group motives (i.e. invest in the group).

One wonders whether a different manipulation of group identification might have led to a different result. There is some suggestive evidence derived from a social dilemma experiment conducted by Kramer and Goldman (1995). Instead of highlighting intercategory comparisons, these researchers employed a common fate procedure to manipulate social identification. In contrast to our findings, their results showed that an increased group identification led to greater cooperation among prosocial individuals than among competitors (i.e. the effects for individualists were less clear-cut). This suggests that the procedure used for manipulating group identification might have an effect upon the pattern of results. When social identification is based upon a relevant *intergroup comparison*, cooperation might be enhanced, particularly among individuals with competitive orientations—they might want to maximise differences between their own and other groups—whereas cooperatively orientated individuals might cooperate more when social identification is based upon an increased interdependence or '*common fate*' with other group members. Yet,

regardless of the exact nature of the manipulation, it seems that group identification affects individuals by increasing their willingness to invest in the group at the cost of their immediate personal interest, which reflects a motivational transformation from narrow self-interest to broader group interests.

A second limitation is that in none of the studies was feedback provided about the group's success or failure in providing the good. There are numerous instances in real-life in which groups actually fail in solving their collective problem. What effect will this have on the contribution levels of group members, especially those who highly identify with their group? If social identification is indeed associated with a genuine concern for the welfare of the group, it can be predicted that people will remain cooperative even after a collective failure. A negative group outcome may even strengthen the group cohesion when people highly identify with their group, because they are more concerned with the group welfare and perhaps feel greater responsibility for achieving good group outcomes (Turner, Hogg, Turner & Smith, 1984). Accordingly, negative group feedback may be perceived as a signal that they should try harder at solving the group problem (i.e. goal-setting; Locke, Shaw, Saari & Latham, 1981). This prediction could be tested experimentally within the context of a step-level public goods task.

Conclusions

The primary conclusion of the present findings is that social identification effects in social dilemmas can be attributed to a transformation of motives, whereby people forgo their immediate self-interest to act in the broader interest of the group (Kelley & Thibaut, 1978). This conclusion is drawn from the results of three experimental studies showing that an increased group identification raised the contribution levels for people with a proself orientation until about the same level as for people with a prosocial orientation. The manipulation of social identification can thus be regarded as a powerful instrument for increasing cooperation because it encourages cooperation among people who are normally reluctant to cooperate. This may have an interesting implication for solving collective problems in organisations. For example, in university departments staff members have become increasingly focused on maximising personal outcomes (e.g. publishing research articles, obtaining research grants), at the cost of doing work for the department (e.g. volunteering for administrative jobs, organising parties). Highlighting comparisons between different departments in terms of organisation and atmosphere, for example via a 'Department of the Month-award', might be an efficient tool to promote intradepartmental cooperation, because it might encourage staff members to act collectively. Thus, creating a 'social' competition between departments might result in a positive outcome for the university as a whole.

REFERENCES

- Baron, R. M. & Kenny, D. A. (1986). The moderator–mediator distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, **51**, 1173–1182.

- Beggan, J. K., Messick, D. M. & Allison, S. T. (1988). Social values and egocentric bias: Two tests of the might over morality hypothesis. *Journal of Personality and Social Psychology*, **55**, 606–611.
- Bornstein, G. (1992). The free-rider problem in intergroup conflicts over step-level and continuous public goods. *Journal of Personality and Social Psychology*, **62**, 597–606.
- Bornstein, G. & Ben-Yossef, M. (1994). Cooperation in intergroup and single-group social dilemmas. *Journal of Experimental Social Psychology*, **30**, 52–67.
- Brann, P. & Foddy, M. (1987). Trust and the consumption of a deteriorating common resource. *Journal of Conflict Resolution*, **31**, 615–630.
- Brewer, M. B. (1979). In-group bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin*, **86**, 307–324.
- Brewer, M. B. (1981). Ethnocentrism and its role in interpersonal trust. In M. B. Brewer & B. E. Collins (Eds), *Scientific inquiry and the social sciences* (pp. 345–360). New York: Jossey-Bass.
- Brewer, M. B. (1985). Experimental research and social policy: Must it be rigor versus relevance? *Journal of Social Issues*, **41**, 159–176.
- Brewer, M. B. & Gardner, W. (1996). Who is this 'we'? Levels of collective identity and self representations. *Journal of Personality and Social Psychology*, **71**, 83–83.
- 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.
- Brewer, M. B. & Schneider, S. K. (1990). Social identity and social dilemmas: A double-edged sword. In D. Abrams & M. A. Hogg (Eds), *Social identity theory: Constructive and critical advances* (pp. 169–184). London: Harvester Wheatsheaf.
- Brown, R., Condor, S., Mathews, A., Wade, G. & Williams, J. (1986). Explaining intergroup differentiation in an industrial organization. *Journal of Occupational Psychology*, **59**, 273–286.
- Dawes, R. M., Orbell, J. M., Simmons, R. T. & Van de Kragt, A. J. C. (1986). Organizing groups for collective action. *American Political Science Review*, **80**, 1171–1185.
- De Cremer, D. & Van Vugt, M. (1998). Collective identity and cooperation in a public goods dilemma: A matter of trust or self-efficacy? *Current Research In Social Psychology*, **3**, 1–11. <http://www.uiowa.edu/~grpproc>.
- De Dreu, C. K. W. & Van Lange, P. A. M. (1995). Impact of social value orientations on negotiator cognition and behavior. *Personality and Social Psychology Bulletin*, **21**, 1178–1188.
- Edney, J. J. (1980). The commons problem: alternative perspectives. *American Psychologist*, **35**, 131–150.
- Eisenberger, R., Kuhlman, D. M. & Cotterell, N. (1992). Effects of social values, effort training, and goal structure on task persistence. *Journal of Research in Personality*, **26**, 258–272.
- Ellemers, N., van Knippenberg, A., De Vries, N. & Wilke, H. (1988). Social identification and permeability of group boundaries. *European Journal of Social Psychology*, **18**, 497–513.
- Hardin, G. (1968). The tragedy of the commons. *Science*, **162**, 1243–1248.
- Joireman, J. A., Van Lange, P. A. M., Kuhlman, D. M., Van Vugt, M. & Shelley, G. P. (1997). An interdependence analysis of commuting decisions. *European Journal of Social Psychology*, **27**, 441–463.
- Kelly, C. (1988). Intergroup differentiation in a political context. *British Journal of Social Psychology*, **27**, 319–332.
- Kelley, H. H. & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence*. New York: Wiley.
- Kerr, N. L. (1989). Illusions of efficacy: The effect of group size on perceived efficacy in social dilemmas. *Journal of Experimental Social Psychology*, **25**, 287–313.
- Kerr, N. L. (1992). Efficacy as a causal and moderating variable in social dilemmas. In W. B. G. Liebrand, D. M. Messick & H. A. M. Wilke (Eds), *Social dilemmas: Theoretical issues and research findings* (pp. 59–80). Oxford: Pergamon Press.

- Kerr, N. L. (1996). 'Does my contribution really matter?': Efficacy in social dilemmas. In W. Stroebe & M. Hewstone (Eds), *European review of social psychology* (Vol. 7, pp. 209–240). Chichester: Wiley.
- Knight, G. P., Dubroz, A. F. & Chao, C.-C. (1985). Information processing and the development of cooperative, competitive, and individualistic social values. *Developmental Psychology*, **21**, 37–45.
- Komorita, S. S. & Parks, C. D. (1994). *Social dilemmas*. Dubuque, IA: Brown & Benchmark.
- Kramer, R. M. (1991). Intergroup relations and organizational dilemmas: The role of categorization processes. *Research in Organizational Behavior*, **13**, 191–228.
- Kramer, R. M. & Brewer, M. B. (1984). Effects of group identity on resource use in a simulated commons dilemma. *Journal of Personality and Social Psychology*, **46**, 1044–1057.
- Kramer, R. M. & Brewer, M. B. (1986). Social group identity and the emergence of cooperation in resource conservation dilemmas. In H. A. M. Wilke, D. M. Messick & C. G. Rutte (Eds), *Experimental social dilemmas* (pp. 129–137). Frankfurt: Verlag Peter Lang.
- Kramer, R. M., Brewer, M. B. & Hanna, B. A. (1996). Collective trust and collective action: The decision to trust as a social decision. In R. M. Kramer & T. R. Tyler (Eds), *Trust in organizations: Frontiers of theory and research* (pp. 357–389). Thousand Oaks, CA: Sage.
- Kramer, R. M., McClintock, C. G. & Messick, D. M. (1986). Social values and cooperative response to a simulated resource conservation crisis. *Journal of Personality*, **54**, 101–117.
- Kramer, R. M., Pommerenke, P. & Newton, E. (1993). Effects of social identity and interpersonal accountability on negotiator decision making. *Journal of Conflict Resolution*, **37**, 633–654.
- Kramer, R. M. & Goldman, L. (1995). Helping the group or helping yourself? Social motives and group identity in resource dilemmas. In D. A. Schroeder (Ed.), *Social dilemmas: Perspectives on individuals and groups* (pp. 49–67). Westport, CT: Praeger.
- Kuhlman, D. M., Camac, C. & Cunha, D. A. (1986). Individual differences in social value orientation. In H. Wilke, D. Messick & C. Rutte (Eds), *Experimental social dilemmas* (pp. 151–176). New York: Verlag Peter Lang.
- Kuhlman, D. M. & Marshello, A. (1975). Individual differences in game motivation as moderators of preprogrammed strategy effects in prisoner's dilemma. *Journal of Personality and Social Psychology*, **32**, 922–931.
- Liebrand, W. B. G. & van Run, G. J. (1985). The effects of social motives on behavior in social dilemmas in two cultures. *Journal of Experimental Social Psychology*, **21**, 86–102.
- Locke, E. A., Shaw, K. N., Saari, L. M. & Latham, G. P. (1981). Goal setting and task performance. *Psychological Bulletin*, **90**, 125–152.
- McClintock, C. G. & Allison, S. T. (1989). Social value orientation and helping behavior. *Journal of Applied Social Psychology*, **19**, 353–362.
- McClintock, C. G. & Liebrand, W. B. G. (1988). The role of interdependence structure, individual value orientation and other's strategy in social decision making: A transformational analysis. *Journal of Personality and Social Psychology*, **55**, 396–409.
- Messick, D. M. & Brewer, M. B. (1983). Solving social dilemmas. In L. Wheeler & P. R. Shaver (Eds), *Review of personality and social psychology* (Vol. 4, pp. 11–44). Beverly Hills, CA: Sage publications.
- Messick, D. M. & McClintock, C. G. (1968). Motivational basis of choice in experimental games. *Journal of Experimental and Social Psychology*, **4**, 1–25.
- Oakes, P. J., Turner, J. C. & Haslam, A. S. (1991). Perceiving people as group members: The role of fit in the salience of social categorizations. *British Journal of Social Psychology*, **30**, 125–144.
- Olson, M. (1965). *The logic of collective action*. Cambridge, MA: Harvard University Press.
- Parks, C. D. (1994). The predictive ability of social values in resource dilemmas and public goods games. *Personality and Social Psychology Bulletin*, **20**, 431–438.
- Pruitt, D. G. & Kimmel, M. (1977). Twenty years of experimental gaming: Critique, synthesis, and suggestions for the future. *Annual Review of Psychology*, **28**, 363–392.
- Samuelson, C. D. (1993). A multiattribute approach to structural change in resource dilemmas. *Organizational Behavior and Human Decision Processes*, **55**, 298–324.

- Sattler, D. N. & Kerr, N. L. (1991). Might versus morality explored: Motivational and cognitive bases for social motives. *Journal of Personality and Social Psychology*, **60**, 756–765.
- Stroebe, W. & Frey, B. S. (1982). Self-interest and collective action: The economics and psychology of public goods. *British Journal of Social Psychology*, **21**, 121–137.
- Tajfel, H. & Turner, J. C. (1986). The social identity theory of intergroup behaviour. In S. Worchel & W. Austin (Eds), *Psychology of intergroup relations* (pp. 7–24). Chicago: Nelson-Hall.
- Turner, J. C. (1982). Towards a cognitive redefinition of the social group. In H. Tajfel (Ed.), *Social identity and intergroup relations* (pp. 15–40). Cambridge: Cambridge University Press.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D. & Wetherell, M. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford: Blackwell.
- Turner, J. C., Hogg, M. A., Turner, P. J. & Smith, P. M. (1984). Failure and defeat as determinants of group cohesiveness. *British Journal of Social Psychology*, **23**, 97–111.
- Tyler, T. R. & Degoey, P. (1995). Collective restraint in social dilemmas: Procedural justice and social identification effects on supports of authorities. *Journal of Personality and Social Psychology*, **69**, 482–497.
- Van de Kragt, A., Orbell, J. & Dawes, R. M. (1983). The minimal contributing set as a solution to public goods problems. *American Political Science Review*, **77**, 112–122.
- Van Dijk, E. & Wilke, H. (1995). Coordination rules in asymmetric social dilemmas: A comparison between public good dilemmas and resource dilemmas. *Journal of Experimental Social Psychology*, **31**, 1–27.
- Van Lange, P. A. M., Agnew, C. R., Harinck, F. & Steemers, G. (1997). From game theory to real-life: How social value orientation affects willingness to sacrifice in ongoing close relationships. *Journal of Personality and Social Psychology*, **73**, 1330–1344.
- Van Lange, P. A. M. & Kuhlman, D. M. (1994). Social Value Orientations and impressions of partner's honesty and intelligence: A test of the might versus morality effect. *Journal of Personality and Social Psychology*, **67**, 126–141.
- Van Lange, P. A. M. & Liebrand, W. B. G. (1991). Social value orientation and intelligence: A test of the goal-prescribes-rationality principle. *European Journal of Social Psychology*, **21**, 273–292.
- Van Lange, P. A. M. & Messick, D. M. (1996). Psychological processes underlying cooperation in social dilemmas. In W. Gasparski, M. Mlicki & B. Banathy (Eds), *Social agency: Dilemmas and educational psychology* (Vol. 4, pp. 93–112). New Brunswick: Transaction.
- Van Lange, P. A. M., Otten, W., De Bruin, E. N. M. & Joireman, J. A. (1997). Development of prosocial, individualistic, and competitive orientations: Theory and preliminary evidence. *Journal of Personality and Social Psychology*, **73**, 733–746.
- Van Lange, P. A. M., Van Vugt, M., Meertens, R. M. & Ruiter, R. A. C. (1998). A social dilemma analysis of commuting preferences: The roles of social value orientation and trust. *Journal of Applied Social Psychology*, **28**, 796–820.
- Van Vugt, M. & De Cremer, D. (in press). Leadership in social dilemmas: The effects of group identification on collective actions to provide public goods. *Journal of Personality and Social Psychology*.
- Van Vugt, M., Van Lange, P. A. M. & Meertens, R. M. (1995). Car versus public transportation? The role of social value orientations in a real-life social dilemma. *Journal of Applied Social Psychology*, **25**, 258–278.
- Wit, A. P. & Wilke, H. A. M. (1992). The effect of social categorization on cooperation in three types of social dilemmas. *Journal of Economic Psychology*, **13**, 135–151.
- Yamagishi, T. (1986). The structural goal/expectation theory of cooperation in social dilemmas. In E. Lawler (Ed.), *Advances in Group Processes*, **3**, 51–87.