

# Small Group Research

<http://sgr.sagepub.com/>

---

## **Competition between Individuals and Groups: Do Incentives Matter? : A Group Adaptiveness Perspective**

Hein F. M. Lodewijckx, Tim Wildschut, Jef E.E.M. Syroit, Lieuwe Visser and Jaap M. Rabbie

*Small Group Research* 1999 30: 387

DOI: 10.1177/104649649903000401

The online version of this article can be found at:

<http://sgr.sagepub.com/content/30/4/387>

---

Published by:



<http://www.sagepublications.com>

**Additional services and information for *Small Group Research* can be found at:**

**Email Alerts:** <http://sgr.sagepub.com/cgi/alerts>

**Subscriptions:** <http://sgr.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

**Citations:** <http://sgr.sagepub.com/content/30/4/387.refs.html>

# COMPETITION BETWEEN INDIVIDUALS AND GROUPS: DO INCENTIVES MATTER? A Group Adaptiveness Perspective

HEIN F. M. LODEWIJKX

Utrecht University

TIM WILDSCHUT

University of North Carolina at Chapel Hill

JEF E.E.M. SYROIT

LIEUWE VISSER

JAAP M. RABBIE

Utrecht University

*In their research on individual-group discontinuity using Prisoner's Dilemma Game (PDG), Schopler, Insko, and associates observed that groups were more competitive than individuals. Alternatively, we propose that this effect can be interpreted as a group-adaptiveness phenomenon. In a 2 (individuals vs. groups) × 2 (low vs. high incentives to cooperate) PDG study, individuals groups played against a cooperative opponent. Individual-group discontinuity was found when incentives to cooperate were low, but not when incentives were high. Results further suggest that the stronger intergroup competition observed in past discontinuity research may have been triggered and perpetuated by between-group violations of cooperative proposals. These findings are consistent with our group adaptiveness perspective, which proposes that groups are not invariably more competitive than individuals, but that they are more likely to adapt their behaviors to variations in the task and/or social environment in an attempt to attain important group goals.*

**Since the publication of *Psychologie des Foules (The Crowd)* Gustave LeBon's (1895/1896) seminal work on mass psychology, there has been a pervasive belief in the social sciences that intergroup relations are inherently more competitive and hostile than interindividual relations (e.g., Brown, 1988). In agreement with this view, Roger Brown (1954), in his discussion of mass phenomena,**



SMALL GROUP RESEARCH, Vol. 30 No. 4, August 1999 387-404  
© 1999 Sage Publications, Inc.

proposed that there is an “apparent discontinuity” (p. 843) between the violent and hostile nature of group behavior on one hand and the characters of the individuals involved on the other. This pessimistic perspective on the social group is also represented in more recent theories of intergroup relations such as social identity theory (Tajfel & Turner, 1986), which proposes that intergroup relations are “essentially competitive” (p. 17) and that “social groups seem to be more competitive and perceive their interests more competitively than individuals under the same functional conditions” (Turner, 1981, p. 7).

In their discontinuity hypothesis, the name was selected from Brown's (1954) discussion, Schopler and Insko (1992) also portray groups as competitive and hostile. From an interdependence perspective, they propose that in mixed-motive conflict situations in which there is some noncorrespondence between what is best for one side and what is best for another side, intergroup behavior is less cooperative and more competitive than interindividual behavior. Strong support for this discontinuity hypothesis was found in an impressive series of studies with the Prisoner's Dilemma Game (PDG), which were all conducted at the University of North Carolina at Chapel Hill (for reviews, see, Drigotas, Insko, & Schopler, 1998; Insko, Schopler, Kennedy, Dahl, & Drigotas, 1992; Schopler & Insko, 1992; Schopler, Insko, Graetz, Drigotas, & Smith, 1991).

The present research aims to show that the discontinuity effect can be interpreted in terms of a group adaptiveness perspective. In doing so, we will focus in particular on two noticeable features of the experimental procedure that were used in most of the North Carolina studies. The first feature is the interparty communication that typically takes place at each trial of these 10-trial PDG studies. The second feature is the difference in the nature of the rewards, or incentives to cooperate, that are at stake at the pregame practice trials (symbolic points) and the later stages of the experiment (money). These features and their hypothesized effects on the occurrence of

---

AUTHORS' NOTE: Address correspondence to F. M. Hein Lodewijkx, Department of Social and Organizational Psychology, Utrecht University, P.O. Box 3508 TC, Utrecht, The Netherlands; (phone) 31.30.2534937, (fax) 31.30.2537584; e-mail: H.Lodewijkx@fss.uu.nl.

individual-group discontinuity will be outlined below. First, however, the group adaptiveness perspective will be presented in greater detail.

Following earlier work by Rabbie and Lodewijkx (1994) and Rabbie (1998), our group adaptiveness perspective assumes that groups are not inherently more competitive than individuals, but that they will show greater goal rationality or *Zweckrationalität* (Weber, 1921) in trying to achieve optimal outcomes. We propose that in mixed-motive interdependent situations like the PDG, this greater goal rationality will lead groups to be more responsive to variations in the task and/or social environment than individuals. In an attempt to maximize their gains, to minimize their losses, or to achieve a competitive advantage, groups more readily adapt their behavior to variations in these environments than individuals, who are more constrained by norms of interpersonal fairness and equality (Insko, Schopler, Hoyle, Dardis, & Graetz, 1990; Schopler & Insko, 1992; Schopler et al., 1993). As Brown (1988) has noted, such functional, adaptive group behavior was already evident in the well-known summer-camp studies conducted by Sherif, Harvey, White, Hood, and Sherif (1988). In these studies, the nature of the interactions between groups of boys varied as a function of the competitive or cooperative goal relations between the groups—competitive goal relations giving rise to hostile interactions and cooperative goal relations leading to harmonious interactions.

In line with Wilson's (1971) early analysis of individual-group differences in competitiveness, we further propose that because of their greater adaptiveness, groups will more frequently than individuals adopt a reciprocation technique. That is, relative to individuals, groups will follow a more adaptive, cooperative tit-for-tat (TFT) strategy, provided that the other party responds or is expected to respond cooperatively. Following a TFT strategy, an actor reciprocates the choice the other party made on the previous move at a given trial of the PDG (i.e., a cooperative choice is matched with cooperation and a competitive one with competition). By this matching strategy, parties effectively maximize their own and joint outcomes in two-party PDGs (e.g., Axelrod, 1984;

Wilson, 1971) and likewise, in N-person public-good dilemmas (Komorita, Chan, & Parks, 1993).

A review of the literature on individual-group discontinuity does indeed suggest that, to a greater extent than individuals, groups adapt their behavior to the task and/or social environment, including the behavior of their opponents (e.g., Insko et al., 1998; Lindsfold, 1979; Lindsfold, Cahagan, & Tedeschi, 1969; Lindsfold, McElwain, & Wayner, 1972; Lodewijkx, Wildschut, Kalma, Rabbie, & Syroit, 1998; Pylyshyn, Agnew, & Illingworth, 1966; Rabbie, 1998; Rabbie, Visser, & Van Oostrum, 1982). For example, Pylyshyn et al. (1966) compared the choice behavior of individuals and dyads on a series of 150 PDG trials against a relatively cooperative programmed opponent. They found that throughout the course of the experiment, dyads gradually became more cooperative than individuals. Similar to this, Rabbie et al. (1982) compared the behavior of individuals, dyads, and triads who were pitted against a programmed opponent of identical (group) size. Groups, in particular dyads, responded more competitively than individuals but only after their opponent made two consecutive, noncooperative choices that seemed designed to exploit them. Most important, individuals were not affected by this competitive strategy manipulation. Thus, this study suggests that individuals were less adaptive in their responding than group members. Finally, in their most recent studies, Insko et al. (1998) showed that groups interacting with a programmed opponent who followed a TFT strategy were more cooperative compared to groups engaged in free play. Again, individuals were relatively unaffected by these strategy manipulations.

To summarize, on one hand, the studies outlined above show that groups are not invariably more competitive than individuals. On the other hand, the earlier North Carolina studies, as reviewed by Schopler and Insko (1992), demonstrated the robustness of the individual-group discontinuity effect. In our view, this pattern of findings suggests that in these earlier North Carolina studies, particular features of the experimental procedure might have induced a stronger competitiveness between groups than between individuals. As previously stated, we propose that two of these features are

the interparty communications and the types of incentives (symbolic points vs. real money) that are at stake during different stages of the experiment.

With respect to the interparty communications, in most of the North Carolina studies, individuals and groups (or their representatives) were instructed to communicate with each other face-to-face on each trial of the 10-trial PDG. During these communication sessions, the parties could suggest a strategy or a way to coordinate their choices to each other and make nonbinding proposals about their final cooperative or competitive courses of action. Not surprisingly, Insko et al. (1994) found that participants almost always proposed to cooperate and that there was no significant difference in the number of cooperative proposals made by individuals and groups. As put forward by Rabbie (1998), proposing not to cooperate would defy the purpose of these communication sessions. Thus, by employing this specific experimental procedure, the experimenters more or less forced the individuals and groups to propose a cooperative course of action to each other. If deviations from such cooperative proposals would occur during the early stages of the experiment, however, it could lead parties to opt for competition on subsequent trials. This argument can be derived from goal-expectation theory (Pruitt & Kimmel, 1977), which states that there is an important precondition for groups and individuals to initiate cooperation themselves or to reciprocate the cooperative proposals and choices of the other party in the PDG. The goal of mutual cooperation will only be developed and maintained if parties expect that their opponents will actually strive for this goal. This means that this goal will only be achieved if parties will stick to their cooperative proposals and act accordingly when they make their final choices. Once a party deviates from its cooperative proposal, it cannot be expected or trusted to cooperate anymore. As a consequence, the long-range goal of mutual cooperation is endangered, possibly resulting in a competitive stalemate between parties. This would be true in particular when the violations take place at a very early stage in the conflict. In our view, the types of incentives that are used at different stages of the experiment play a crucial part in this respect.

In the North Carolina discontinuity studies, individuals and groups often interacted with their counterparts on two practice trials in which payoffs were symbolic points; this occurred before they started the interactions for real money. The practice trials lasted about 5 minutes and were introduced to ensure that participants understood the contingencies of the PDG matrix. Interestingly, when such practice trials were part of the experimental procedure, the discontinuity effect was already obtained in this preliminary stage of the experiment. This implies that the discontinuity effect that was found during the subsequent interaction for money was not studied independently of the initial individual-group discontinuity observed in the practice trials.

According to our group adaptiveness hypothesis, types of incentives can be considered part of the task environment of the PDG. Because groups are expected to be more sensitive to variations in the task environment than individuals, we expect this variable to affect the choice behavior of groups to a greater extent than the choice behavior of individuals. If incentives to cooperate are low (symbolic points), we assume that the PDG acquires the properties of a competitive game designed to enhance prestige or status (Rabbie & Schot, 1989) or to develop and maintain a positive social identity (Tajfel & Turner, 1986). On the other hand, if incentives to cooperate are high (money), we assume that groups will pursue their goals by trying to maximize their economic outcomes through mutual cooperation with the other party. Research on reciprocity in N-person public goods dilemmas by Komorita et al. (1993) is consistent with these contentions. These researchers found that in a condition in which the incentives to cooperate were low, strategies to induce cooperation lost their effectiveness as compared to a condition in which incentives to cooperate were higher. In addition, in the context of Tajfel's minimal group paradigm (Tajfel, Billig, Bundy, & Flament, 1971), it has been shown that the allocation of symbolic points instead of monetary rewards elicited a stronger competitive or winning orientation among group members (Mlicki, 1993; Rabbie & Schot, 1989; Schot, 1992).

At a more general level, our group adaptiveness perspective suggests that individual-group differences in cooperation and com-

petition will be moderated by the types of incentives that are at stake in the PDG. We hypothesize that individual-group discontinuity will occur when incentives to cooperate are low, but that this effect will be reduced when incentives to cooperate are high. Similar to this, with respect to proposals, we hypothesize that if incentives to cooperate are low, groups will deviate more frequently from their cooperative proposals than individuals. This effect will be reduced when incentives to cooperate are high.

## METHOD

### DESIGN AND PARTICIPANTS

Hypotheses were tested in a 2 (individuals vs. groups)  $\times$  2 (low vs. high incentives to cooperate) factorial design. Participants—all third-year students at Utrecht University—took part in this study on a voluntary basis to fulfill a requirement of a social psychology course. A total of 89 students (34 males, 55 females) were randomly assigned to one of the four experimental conditions. Nine participants failed to report their gender. The five-person groups were heterogeneous with respect to gender, and the individuals were not informed of the gender of their opponent. For these reasons, gender was not included as an independent variable in the design.

### PROCEDURE

The experiment was conducted in three different experimental rooms, each room large enough to seat about 40 students. Each of the three rooms was divided into different sections by means of partitions. The groups were placed in booths at extreme ends of the room; they were separated from the other groups and individuals by partitions. The individuals were seated at separate tables in the center of the room. The individuals did not face each other to prevent any form of communication between them.

Upon their arrival, participants were assigned randomly to conditions. Next, participants received a booklet containing the



instructions of the PDG, the procedural details, and a questionnaire. The instructions read that participants, either as groups or as individuals, were randomly paired with one of the other groups or individuals in the room. To participants in the group condition, it was explained that they would be interacting with another group. Likewise, individuals were instructed that they would interact with another individual. About half of the participants read that the numbers in the PDG matrix represented both parties' payoffs in points (low incentives to cooperate); the other participants read that the numbers in the matrix represented money (high incentives to cooperate). Participants were instructed that they would be awarded individually the money or points earned throughout the course of the interaction. The outcome values were 75/75 Dutch cents (points) for the cooperative-cooperative (CC) combination, 45/85 cents (points) for the cooperative-competitive (CD) combination (or the reverse for the cooperative-competitive [DC] combination), and 50/50 cents for the competitive-competitive combination (DD).

After a check of their understanding of the pay-off matrix, participants were instructed that on each trial of the PDG they could send a written proposal to the other party concerning their decisions on that given trial. After the simultaneous exchange of proposals, participants were asked to decide on their final choices. Similar to the proposals, these final choices were made simultaneously. Participants were further informed that they would interact for 10 consecutive trials. In reality, however, the experiment was terminated after the second trial. Instructions suggested a free play between the parties, but actually, the experimenter who collected the proposals and choices always returned cooperative proposals and choices to the participants. Participants were thus under the impression that their opponents proposed to cooperate and acted cooperatively on every trial (i.e., that they were faced with an opponent who followed a noncontingent, cooperative strategy).

Consistent with the procedure in the North Carolina discontinuity studies, group members were instructed to discuss their proposals and choices within their groups and to reach a consensus on them. All participants kept a record of their proposals and choices and the amounts of points or money gained per trial. After

termination of the experiment, participants were debriefed. To prevent inequality among the participants in the low- and high-incentives conditions, they all received 2.50 Dutch guilders (about \$1.50 U.S.) in return for their participation.

#### ASSESSMENT OF MOTIVATIONAL ORIENTATIONS

Because the motivational significance of the dichotomous PDG choice is difficult to interpret, participants were asked to rate the items of a questionnaire that was designed to assess the most important motivational orientations that are distinguished in the literature (e.g., Kelley & Thibaut, 1978). The following items were assessed: maximizing own absolute gain (max. own) (to gain as much money [points] for myself [my group]), maximizing relative gain (max. rel.) (I [we] want to beat the other party), and maximizing joint gain (max. joint) (I [we] want to gain as much money [points] as possible together with the other party). In addition, the questionnaire contained the following three items designed to measure variables that are considered important in goal-expectation theory (Pruitt & Kimmel, 1977) and to our own approach: a concern for future cooperation (I am [we are] aware that I [we] have to cooperate with the other party in the future), a recognition of the importance of mutual cooperation (I [we] do not want to endanger the chances to cooperate with the other party), and the trustworthiness of the other party (I [we] do not trust the other party). The questionnaire was completed after participants decided on their final choices on the first trial but before the choices were exchanged between the parties. Questionnaire items were rated on a 7-point scale in which 1 = *not important at all* and 7 = *very important*.

#### UNITS OF ANALYSIS

Because the behavior of the five members of a single group is not independent, we treated the party (group or individual) as a unit of analysis. Thus, every two-party interaction yielded two observations. Because the proposals and decisions that were exchanged between the parties were fixed, these two observations were

**TABLE 1: Mean Proportions of Cooperative Choice Behavior (cooperation) and Deviation from Cooperative Proposals (deviation) Across Trials for Individuals and Groups as a Function of Incentives to Cooperate**

	<i>Individuals</i>		<i>Groups</i>	
	<i>Low Incentive</i>	<i>High Incentive</i>	<i>Low Incentive</i>	<i>High Incentive</i>
Cooperation	.94 <sub>b</sub>	.95 <sub>b</sub>	.33 <sub>a</sub>	.87 <sub>b</sub>
Deviation	.00 <sub>a</sub>	.00 <sub>a</sub>	.42 <sub>b</sub>	.06 <sub>a</sub>

NOTE: Means without common subscripts differ at  $p < .05$  (Tukey's HSD).

independent. Numbers of observations were 8 for individuals/low incentives, 10 for individuals/high incentives, 6 for groups/low incentives, and 8 for groups/high incentives, respectively.

## RESULTS

To test our hypotheses, the proportion of cooperative choices and the proportion of deviations from cooperative proposals, both assessed across trials, were included in 2 (individuals vs. groups)  $\times$  2 (low vs. high incentives) ANOVAs. Mean proportions are presented in Table 1. On proportion of cooperation, the analysis yielded significant main effects for low versus high incentives,  $F(1, 28) = 6.28, p < .02$ , and individuals versus groups,  $F(1, 28) = 9.43, p = .005$ . More important, both main effects were qualified by the predicted two-way interaction effect,  $F(1, 28) = 5.72, p < .03$ . In line with our first hypothesis, the interaction effect reveals that individual-group differences in competition are significant within the low-incentives condition ( $p < .05$ ) but not within the high-incentives condition. In other words, individual-group discontinuity is observed when incentives to cooperate are low but not when incentives to cooperate are high.

Similar effects were obtained for deviation from cooperative proposals. A 2  $\times$  2 ANOVA performed on this measure revealed main effects for low versus high incentives,  $F(1, 28) = 7.33, p < .02$  and individuals versus groups,  $F(1, 28) = 13.42, p = .001$ , which were qualified by the predicted two-way interaction effect,  $F(1, 28) = 7.32, p < .02$ . In agreement with our second hypothesis, groups

**TABLE 2: Importance Ratings of Motivational Orientations for Individuals and Groups as a Function of Incentives to Cooperate**

	<i>Individuals</i>		<i>Groups</i>	
	<i>Low Incentive</i>	<i>High Incentive</i>	<i>Low Incentive</i>	<i>High Incentive</i>
Maximizing joint gain (max. joint)	5.75 <sub>b</sub>	6.11 <sub>b</sub>	3.83 <sub>a</sub>	6.71 <sub>b</sub>
Maximizing relative gain (max. rel.)	3.00 <sub>a</sub>	2.33 <sub>a</sub>	5.83 <sub>b</sub>	4.29 <sub>ab</sub>
Maximizing own absolute gain (max. own)	5.38	5.56	5.83	7.00
Mutual cooperation	4.13 <sub>a</sub>	5.11 <sub>ab</sub>	3.83 <sub>a</sub>	6.43 <sub>b</sub>
Future cooperation	3.38 <sub>a</sub>	3.67 <sub>a</sub>	4.50 <sub>b</sub>	5.43 <sub>b</sub>
Distrust	2.38 <sub>a</sub>	2.11 <sub>a</sub>	3.67 <sub>b</sub>	3.57 <sub>b</sub>

NOTE: Means without common subscripts differ at  $p \leq .05$  (Tukey's HSD).

deviate from their cooperative proposals more strongly than individuals within the low-incentives condition ( $p < .05$ ) but not within the high-incentives condition. As can be seen in Table 1, deviation did not occur among the individuals, who all stuck to their nonbinding proposals to the other party.

*Motivational orientations.* The ratings of the questionnaire items were included as dependent variables in 2 (individuals vs. groups)  $\times$  2 (low vs. high incentives) ANOVAs. Relevant means are presented in Table 2. The analyses revealed reliable main effects for individuals versus groups on the item measuring a competitive, max. rel. orientation,  $F(1, 26) = 11.11, p < .01$ , on the item measuring trustworthiness of the other party,  $F(1, 26) = 4.02, p = .05$ , and a marginally significant main effect on the item measuring a concern for future cooperation,  $F(1, 26) = 2.94, p < .10$ .

An examination of Table 2 shows that groups have higher ratings on the competitive, max. rel. motive than individuals. Descriptively, this individual-group difference was stronger in the low-incentives condition ( $p < .05$ ) than in the high-incentives condition ( $p = .23$ ). However, the individuals versus groups by incentives interaction was not significant. Furthermore, across levels of the incentives variable, groups trust their opponents to a lesser degree

than individuals do, and groups score somewhat higher than individuals on concern for future cooperation.

As for the incentives variable, ANOVAs revealed an incentives main effect,  $F(1, 26) = 11.74, p < .01$ , and an individuals versus groups by incentives interaction effect,  $F(1, 26) = 7.09, p < .02$ , on the item measuring a cooperative, joint gain orientation and an incentives main effect,  $F(1, 26) = 7.80, p = .01$ , on the item assessing the importance of mutual cooperation. The main effects indicate that participants in the high-incentives condition, compared to the participants in the low-incentives condition, have a stronger joint gain orientation and are less willing to endanger their chances of mutual cooperation. The interaction effect observed on the cooperative, joint gain orientation reveals that individual-group differences are not significant within the high-incentives condition, but are significant within the low-incentives condition ( $p < .05$ ). In fact, the one condition that deviates significantly ( $ps < .05$ ) from all others is the groups/low-incentives condition in which participants have the lowest ratings ( $M = 3.83$ ).

Further analyses revealed that the experimental manipulations did not affect ratings on the individualistic, max. own orientation. An examination of participants' ratings of this motivational orientation indicates that they rank among the highest in Table 2. This is consistent with the view of Pruitt and Kimmel (1977), who contend that individualism is the main motive for participants in the impersonal, strategic environment of the PDG. The extremely high ratings of the groups in the high-incentives condition ( $M = 7.00$ ) illustrate the importance of this individualistic orientation for the group members in this condition. This is all the more notable when one considers the fact that the group members had to reach a consensus about these ratings and that this extreme rating reflects the consensus opinion of a substantial number of 40 participants.

To conclude, compared to the low-incentives condition, the high-incentives condition indeed seems to have triggered both a stronger cooperative orientation among the participants and a lowered willingness to endanger the chances of realizing the goal of mutual cooperation. These results show that we successfully varied the low- and high-incentives conditions. Consistent with expectations,

the low-incentives condition in particular elicits a stronger competitive, winning orientation (max. rel.) and a weaker cooperative orientation (max. joint) among groups. Individuals, in contrast, seem to be relatively unaffected by the incentives manipulation.

## DISCUSSION

In our introductory sections, we noted that there are two conspicuous features of the experimental procedure that was used in most of the North Carolina discontinuity studies. We further argued that these features, alone or in interaction with each other, could have induced the greater competitiveness of groups, which—we would like to emphasize—is often observed at the very onset of the experiments. The first feature was the interparty communication, and the second feature related to the different types of incentives that were at stake during the pregame practice trials and during the real game.

First of all, the results of the current study show that individual-group differences in competition are moderated by the nature of the incentives that are at stake, such that the discontinuity effect is observed only when payoffs are symbolic points (i.e., incentives to cooperate are low). In our view, this strongly suggests that in the North Carolina studies the interaction for symbolic points during the pregame practice trials set the competitive stage for the interaction for money during the real game. In other words, in those studies in which practice trials for points were part of the procedure, this feature may have contributed to the discontinuity effect. At a more general level, our results indicate that the history of the conflict should be taken into account to comprehend fully why the greater competitiveness at the intergroup level occurred in the North Carolina studies.

At this point, we should note that in more recent North Carolina studies, individuals and groups did not interact with their actual opponents on the practice trials, but instead exchanged choices with the experimenter. Although this procedural change prevented interaction among the parties during the preliminary stage of the

experiment, the practice trials still involved interaction for symbolic points. As the present findings suggest, this procedure may have set the stage for competitive interactions, especially among groups.

Addressing the importance of the face-to-face communication sessions in the North Carolina studies, Rabbie (1998) noted that at first sight, participants are unconstrained to propose a cooperative or competitive choice. In reality, however, participants may not have felt unconstrained at all. A proposal to compete would virtually be guaranteed to lead parties to actually opt for competition when making their final choices. In the end, such retributive, reciprocal courses of action would cause all parties to suffer losses. So, in the traditional North Carolina studies, individuals and groups are more or less forced to make cooperative proposals to one another.

In the current experiment, no face-to-face communication sessions were introduced. Instead, participants could only communicate their proposals in a rather formal way by means of a written note. First of all, in agreement with findings by Lodewijckx et al. (1998), our results revealed that face-to-face communication sessions are not necessary to elicit a discontinuity effect, because the effect was again obtained in the present study. More important, however, our results convincingly showed that even in the absence of such sessions, groups deviate from their cooperative proposals more frequently than individuals—particularly in the low-incentives condition. Applying these observations to the North Carolina studies, it might well be that from the very start of these experiments, violations of cooperative proposals damaged the trust between groups. According to goal-expectation theory, distrust and concomitant lowered expectations that the other party will cooperate, constitute important variables that frustrate the development of the goal of mutual cooperation in mixed-motive, interdependent conflict situations.

Our group adaptiveness perspective holds that groups, in an effort to maximize their gains, to minimize their losses, or to achieve a competitive advantage, show a greater adaptation to environmental variations than individuals, whose conflict behaviors can be described as much more static, fair, and accommodative.

The incentives manipulation can be regarded as a variation in the task environment of the PDG. Consistent with our hypothesis, in the current experiment, only groups showed variation in their responding as a function of the low- and high-incentives conditions, whereas individuals were not affected by the incentives manipulation at all. We regard this result as support for our group adaptiveness perspective.

Closer examination of the motivational orientation ratings results in some intriguing findings with regard to our adaptiveness perspective. The main effects for individuals versus groups observed on competition (max. rel.), concern for future cooperation, and trustworthiness of the other party revealed that groups are not only characterized by a stronger competitive orientation and a greater distrust toward the other party than individuals. Simultaneously, groups also have a somewhat longer time perspective. A greater awareness of a shadow of the future is often associated with stronger cooperativeness (Axelrod, 1984; Pruitt & Kimmel, 1977; Rabbie et al., 1982). In line with our group adaptiveness perspective, this particular pattern of results suggests that groups may have a greater cognitive insight than individuals into the intricacies of the conflict of interests that they encounter in the PDG, and they are more aware of the possible alternative courses of action available to them. Specific features of the task and/or social environment will then determine whether the groups will opt for a competitive strategy or for a more cooperative, accommodative strategy to pursue their interests. As we have seen, high incentives to cooperate will induce the latter strategy. Other task-related variables, such as sequential exchanges of choices that eliminate the chances of exploitation by the other group, also give rise to greater intergroup cooperation (Lodewijkx et al., 1998). On the other hand, low incentives to cooperate trigger intergroup competition. The same goes for simultaneous exchanges of choices, at least, in conditions that lower expectations about opponents' willingness to cooperate (i.e., conditions that strengthen the unpredictability and ambiguity of the other group's cooperative motives and intentions).

Of course, our group adaptiveness hypothesis must be substantiated. At this moment, it can only be considered a working



hypothesis. However, in view of the present findings and other recent research on individual-group discontinuity (Insko et al., 1998; Lodewijkx et al., 1998; Lodewijkx & Wildschut, 1995; Rabbie, 1998), our perspective offers a potentially fruitful new look at the way groups and individuals handle conflicts in situations of mixed-motive interdependence.

## REFERENCES

- Axelrod, R. (1984). *The evolution of cooperation*. New York: Basic Books.
- Brown, R. W. (1954). Mass phenomena. In G. Lindzey (Ed.), *Handbook of social psychology* (Vol. 2, pp. 833-876). Reading, MA: Addison-Wesley.
- Brown, R. W. (1988). *Group processes*. Oxford, England: Blackwell.
- Drigotas, S. M., Insko, C. A., & Schopler, J. (1998). Mere categorization and competition: A closer look at social identity theory and the discontinuity effect. In S. Worchel, J. F. Morales, D. Páez, & J.-C. Deschamps (Eds.), *Social identity: International perspectives* (pp. 181-198). London: Sage Ltd.
- Insko, C. A., Schopler, J., Graetz, K. A., Drigotas, S. M., Currey, D. P., Smith, S. L., Brazil, D., & Bornstein, G. (1994). Interindividual-intergroup discontinuity in the Prisoner's Dilemma Game. *Journal of Conflict Resolution*, *38*, 87-116.
- Insko, C. A., Schopler, J., Hoyle, R. H., Dardis, G. J., & Graetz, K. A. (1990). Individual-group discontinuity as a function of fear and greed. *Journal of Personality and Social Psychology*, *58*, 68-79.
- Insko, C. A., Schopler, J., Kennedy, J., Dahl, K. A., & Drigotas, S. M. (1992). Individual-group discontinuity from the differing perspectives of Campbell's realistic group conflict theory and Tajfel and Turner's social identity theory. *Social Psychology Quarterly*, *55*, 272-291.
- Insko, C. A., Schopler, J., Pemberton, M. B., Wieselquist, J., McIlraith, S. A., Currey, D. P., Gaertner, L., & Riggins, T. (1998). Future consequences and the reduction of interindividual-intergroup discontinuity. *Journal of Personality and Social Psychology*, *75*, 695-711.
- Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence*. New York: Wiley.
- Komorita, S. S., Chan, D.K.-S., & Parks, C. (1993). The effects of reward structure and reciprocity in social dilemmas. *Journal of Experimental Social Psychology*, *29*, 252-267.
- LeBon, G. (1896). *The crowd*. London: Unwin. (Original work published in 1895)
- Lindskold, S. (1979). Managing conflict through announced conciliatory initiatives backed with retaliatory capability. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 274-287). Monterey, CA: Brooks/Cole.
- Lindskold, S., Cahagan, J., & Tedeschi, J. T. (1969). The ethical shift in the Prisoner's Dilemma Game. *Psychonomic Science*, *15*, 303-304.
- Lindskold, S., McElwain, D. C., & Wayner, M. (1972). Cooperation and the use of coercion by groups and individuals. *Journal of Conflict Resolution*, *21*, 531-550.

- Lodewijckx, H.F.M., & Wildschut, T. (1995). De discontinuïteitshypothese getoets: Zijn relaties tussen groepen competitiever dan relaties tussen individuen? [An examination of the discontinuity hypothesis: Are intergroup relations more competitive than interindividual relations?]. In N. K. de Vries, C.K.W. de Dreu, N. Ellemers, & R. Vonk (Eds.), *Fundamentele Sociale Psychologie* (Vol. 9, pp. 77-93). Tilburg, The Netherlands: Tilburg University Press.
- Lodewijckx, H.F.M., Wildschut, T., Kalma, A. K., Rabbie, J. M., & Syroit, J.E.E.M. (1998). *Individual-group differences in competitiveness: A reciprocation and group adaptiveness approach*. Unpublished manuscript, Utrecht University.
- Mlicki, P.P. (1993). *Us and them: The effects of categorization and interdependence on identification within and differentiation between categories and groups* (Doctoral dissertation, Utrecht University). Amsterdam: Thesis Publishers.
- Pruitt, D. G., & Kimmel, M. J. (1977). Twenty years of experimental gaming: Critique, synthesis, and suggestions for the future. *Annual Review of Psychology*, 28, 363-392.
- Pylyshyn, Z., Agnew, N., & Illingworth, J. (1966). Comparison of individuals and pairs as participants in mixed-motive games. *Journal of Conflict Resolution*, 10, 211-220.
- Rabbie, J. M. (1998). Is there a discontinuity or a reciprocity effect in cooperation or competition between individuals and groups? *European Journal of Social Psychology*, 28, 483-507.
- Rabbie, J. M., & Lodewijckx, H.F.M. (1994). Conflict and aggression: An individual-group continuum. In B. Markovsky, J. O'Brien, & K. Heimer (Eds.), *Advances in group processes* (Vol. 11, pp. 139-174). Greenwich, CN: JAI Press.
- Rabbie, J. M., & Schot, J. C. (1989, July). *Instrumental and relational behavior in the minimal group paradigm*. Paper presented at the first European Congress of Psychology in Amsterdam, The Netherlands.
- Rabbie, J. M., Visser, L., & Van Oostrum, J. (1982). Conflict behavior of individuals, dyads, and triads in mixed-motive games. In H. Brandstätter, J. H. Davis, & G. Stocker-Kreichgauer (Eds.), *Group decision-making* (pp. 315-343). London: Academic Press.
- Schopler, J., & Insko, C. A. (1992). The discontinuity effect in interpersonal and intergroup relations: Generality and mediation. *European Review of Social Psychology*, 3, 121-151.
- Schopler, J., Insko, C. A., Graetz, K. A., Drigotas, S. M., & Smith, V. A. (1991). The generality of the individual-group discontinuity effect. Variations in positivity-negativity of outcomes, players' relative power and magnitude of outcomes. *Personality and Social Psychology Bulletin*, 17, 612-624.
- Schopler, J., Insko, C. A., Graetz, K. A., Drigotas, S. M., Smith, V. A., & Dahl, K. A. (1993). Individual-group discontinuity: Further evidence for mediation by fear and greed. *Personality and Social Psychology Bulletin*, 19, 419-431.
- Schot, J. C. (1992). *Minimale intergroepsrelaties* [Minimal intergroup relations]. Unpublished doctoral dissertation, Utrecht University.
- Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., & Sherif, C. W. (1988). *The Robbers Cave experiment*. Middletown, CN: Wesleyan University Press.
- Tajfel, H., Billig, M. G., Bundy, H. P., & Flament, C. I. (1971). Social categorization and intergroup behavior. *European Journal of Social Psychology*, 1, 149-178.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *The social psychology of intergroup relations* (pp. 7-24). Chicago: Nelson-Hall.
- Turner, J. C. (1981). The experimental social psychology of intergroup behavior. In J. C. Turner & H. Giles (Eds.), *Intergroup behaviour*. Oxford, England: Blackwell.

- Weber, M. (1921). *Wirtschaft und Gesellschaft*. Tübingen, Germany: J.C.B. Mohr.
- Wilson, W. (1971). Reciprocation and other techniques for inducing cooperation in the Prisoner's Dilemma Game. *Journal of Conflict Resolution*, 15, 167-195.

*Hein F. M. Lodewijckx, Ph.D., is an assistant professor at the Department of Social and Organizational Psychology at Utrecht University, The Netherlands. The main subjects of his research include intra- and intergroup relations, individual-group discontinuity, social identity theory, group aggression, group creativity, and group initiations.*

*Tim Wildschut received his master's degree in social psychology from Utrecht University, The Netherlands, and is now a graduate student at the University of North Carolina at Chapel Hill. His primary research interests are intergroup relations, close relationships, and the self-concept.*

*Jef E.E.M. Syroit, Ph.D., is an associate professor of social and organizational psychology at the Department of Social and Organizational Psychology at Utrecht University, The Netherlands. His research interests include social comparison, justice, and leadership.*

*Lieuwe Visser, Ph.D., is an assistant professor at the Department of Social and Organizational Psychology at Utrecht University, The Netherlands. The main subjects of his research include intra- and intergroup relations, individual-group discontinuity, social identity theory, group aggression, group creativity, and group initiations.*

*Jaap M. Rabbie is professor emeritus of social and organizational psychology at the Department of Social and Organizational Psychology at Utrecht University, The Netherlands. He has extensively conducted experimental and field research on—among others— intra- and intergroup relations, group aggression, and affiliation.*