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“INGROUP LOVE" AND “OUTGROUP HATE" AS MOTIVES FOR INDIVIDUAL PARTICIPATION IN INTERGROUP CONFLICT: A NEW GAME PARADIGM

by

NIR HALEVY, GARY BORNSTEIN
and LILACH SAGIV

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CENTER FOR THE STUDY OF RATIONALITY

Feldman Building, Givat-Ram, 91904 Jerusalem, Israel
PHONE: [972]-2-6584135 FAX: [972]-2-6513681
E-MAIL: ratio@math.huji.ac.il
URL: http://www.ratio.huji.ac.il/

"Ingroup Love" and "Outgroup Hate" as Motives for Individual Participation

in Intergroup Conflict: A New Game Paradigm

Nir Halevy[1], Gary Bornstein[2] & Lilach Sagiv[1]

[1] School of Business Administration, The Hebrew University of Jerusalem

[2] Department of Psychology and the Center for Rationality, The Hebrew University of Jerusalem

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Running Head: Ingroup Love and Outgroup Hate: A New Game Paradigm

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Abstract

What motivates individual self-sacrificial behavior in intergroup conflicts? Is it the altruistic desire to help the ingroup or the aggressive drive to hurt the outgroup? This paper introduces a new game paradigm, the Intergroup Prisoner's Dilemma – Maximizing Difference (IPD-MD) game, designed specifically to distinguish between these two motives. The game involves two groups. Each group member is given a monetary endowment and can decide how much of it to contribute. Contribution can be made to either of two pools, one which benefits the ingroup at a personal cost, and another which, in addition, harms the outgroup. An experiment demonstrated that contributions in the IPD-MD game are made almost exclusively to the cooperative within-group pool. Moreover, pre-play intragroup communication increases intragroup cooperation but not intergroup competition. These results are compared with those observed in the Intergroup Prisoner's Dilemma (IPD) game, where group members' contributions are restricted to the competitive between-group pool.

Keywords: Intergroup conflict, ingroup love; outgroup hate; absolute and relative gains; experimental games.

How can one explain the pervasive human willingness "to fight and die for the ingroup … which makes lethal war possible" (Campbell 1965, p. 293)? Narrow, self-interested, rationality is clearly not a good explanation. While it is often rational for groups (e.g., nations, ethnic groups) to fight, it is hardly ever rational for individual group members to participate in large-scale intergroup conflict. The effect one individual can possibly have on the conflict's outcome is negligible, while his or her cost (e.g., in forgone opportunities, physical exertion, and risk of injury or death) is rather high. Moreover, the benefits associated with winning the conflict (e.g., territory, political and economic power, group pride) are by and large public goods that are equally available to all the members of the winning group, regardless of whether they paid the cost of participation (Rapoport & Bornstein, 1987; Bornstein, 1992; 2003). This payoff structure creates a clear disincentive for individual group members to participate in intergroup conflict.

The explanation for individual participation in intergroup conflict must be rooted at the group level (Bowles, Choi & Hopfensitz, 2003; Fehr & Fischbacher, 2003). Groups which fail to mobilize sufficient participation will not survive the aggression of other groups (or be able to exploit their weaknesses), and their members, participants and non-participants alike, will have to forgo the benefits of victory, or, worse yet, to bear the costs of defeat. This is indeed why groups employ powerful "solidarity mechanisms" in time of conflict. Collective group goals and common group identity are highlighted, norms of group-based altruism are strengthened, punishment and rejection of defectors are increased, and perceptions of the ingroup and outgroup are manipulated (Brewer & Campbell, 1976; Campbell, 1965; Levine & Campbell, 1972; Sherif, 1966). Throughout human history groups with more effective means of instilling self-sacrifice in their members prevailed over groups with less effective solidarity mechanisms, thereby propagating their altruistic (i.e., ethnocentric) norms and institutions (Bernhard, Fischbacher, & Fehr, 2006; Boyd et. al., 2003).

Modeling Intergroup Conflict

Intergroup conflicts cannot be understood without taking into consideration the internal tension between group welfare and individual welfare. Since the *relative* success of the two groups in overcoming this intragroup conflict determines the outcome of the intergroup competition, the intragroup and intergroup levels of conflict must be considered simultaneously. A basic model of this two-level structure is the *Intergroup Prisoner's Dilemma (IPD) game* (Bornstein, 1992; 2003; Bornstein & Ben-Yossef, 1994).

The IPD game is illustrated here using a specific set of parameters (see Bornstein, 2003 for a general definition). The game is played by two groups, with 3 members in each group. Each player receives an endowment of 10 tokens, and can contribute any number of these tokens to the group's pool. For each token contributed by a member of the ingroup, each of its members, including the contributor, gains 1 Money Unit (MU) and each member of the outgroup loses 1 MU. For each token kept, the player is paid 2 MUs. This simple game captures the key strategic properties of a large-scale intergroup conflict, as described above. Since the individual's return from contributing a token is 1 MU while the cost is 2, the *dominant individual strategy* -- the one that yields the highest personal payoffs regardless of what all the other ingroup and outgroup members do -- is to contribute nothing (i.e., defect). However, since contributing a token generates a total of 3 MUs for the group while costing only 2, the *dominant group strategy* -- the one that yields the highest payoffs for each group regardless of what the other group does -- is for all group members to contribute all their tokens.

These two properties define the *intragroup* payoff structure in the IPD game as an n-person (3-person in our example) Prisoner's Dilemma game (Dawes, 1980). This internal dilemma, however, is embedded in a Prisoner's Dilemma game between the two groups. If both groups execute their dominant strategies in this intergroup game, both end up with relatively poor outcomes. From the collective point of view of both groups and all players, each token contributed is a net waste of 2 MUs, since whatever the ingroup gains from this contribution the outgroup loses. The *collectively optimal outcome* in the IPD game -- the one maximizing the payoff of all players in both groups -- is for all of them to withhold contribution (i.e., defect).

The relations between individual, group, and collective interests in intergroup conflicts as modeled by the IPD game are clearly illustrated by Robyn Dawes's (1980) battle example. Dawes observed that "Soldiers who fight in a large battle can reasonably conclude that no matter what their comrades do they personally are better off taking no chances; yet if no one takes chances, the result will be a rout and slaughter worse for all the soldiers than is taking chances." (p.170). From the perspective of one side, the battle situation is a social dilemma with defection being rational for the individual but harmful to the group. However, from a broader perspective, which includes all the soldiers on both sides, defection is both individually rational and collectively efficient. All soldiers in the battle will be better off if they all act selfishly and take no chances, as then no one will be hurt.

This additional level of superordinate or collective interest necessarily affects the motivational and normative ramifications of individual behavior. Whereas in a single-group dilemma contributing is unmistakably altruistic and defection is plainly selfish, in intergroup conflicts, as modeled by the IPD game, the motivation underlying individual behavior is inherently indistinct. Contributing can be motivated by an altruistic desire to help the ingroup, but it can also result from an aggressive motivation to hurt the outgroup (or the competitive motivation to increase the ingroup's advantage over the outgroup). The motivation underlying defection is also ambiguous. Refusing to take part in war can reflect a true altruistic concern for the collective welfare (of all players in both groups), but, since it is also consistent with the individual's self-interest, a pacifist is always suspected of being a free-rider.

To disentangle these motivational ambiguities, this paper introduces a new paradigm, called the *Intergroup Prisoner's Dilemma - Maximizing Difference (IPD-MD)* game. Like the IPD game, the IPD-MD game involves a competition between two groups of 3 members each. Each group member receives an endowment of 10 tokens, each worth 2 MUs, and can decide how many of these tokens to contribute. Unlike the IPD game, however, contributions in the IPD-MD game can be made to two different pools. Contributing a token to the within-group pool (pool W) increases the payoff for each ingroup member, including the contributor, by 1 MU, without affecting the outgroup. Contributing a token to the between-group pool (pool B) increases the payoff for each ingroup member, including the contributor, by 1 MU, and at the same time decreases the payoff for each outgroup member by 1 MU.

The choice between pools W and B is what reveals the specific motivation underlying each individual's behavior. Contributing to pool W clearly indicates a cooperative motivation to benefit the ingroup without hurting the outgroup. Contributing to pool B, on the other hand, indicates an aggressive motivation to hurt the outgroup, or a competitive motivation to increase the ingroup's advantage over the outgroup.[1] As in the IPD game, a narrowly rational player should contribute nothing in the IPD-MD game. However, withholding contribution (i.e., defection) in this new game is plainly selfish and can no longer be confused with an altruistic concern for the collective welfare.

Table 1 illustrates the individual payoffs in the IPD-MD game. For simplicity, it specifies only the payoffs for the corner cells, where all the members of a group either contribute their entire endowment to pool W, contribute it all to pool B, or keep the 10 tokens. When the option of contributing to pool W is eliminated, the IPD-MD game is transformed into the IPD game (depicted by the four corner cells in gray). When the option of contributing to pool B is removed, the game becomes two independent 3-person PD games played side by side (depicted by the four cells inside the thick contour line; Bornstein & Ben-Yossef, 1994). The IPD-MD game, in which both these options are available, essentially allows group members to decide whether they wish to play the IPD or the PD game (or more accurately how they want to divide their efforts between the two games). If the players are compelled to contribute their entire endowment and they can only decide how to divide their 10 tokens between pools W and B, the internal "free-riding" problem is eliminated, and the IPD-MD game is reduced to a maximizing difference (MD) or “spite” game (Kelley & Thibaut, 1978) between the two groups (depicted by the four cells in the threefold contour line).

We maintain that in addition to being useful for discerning between “ingroup love” and “outgroup hate” as reasons for individual participation (and between selfishness and universalism as reasons for defection), the IPD-MD game is valuable in its own right, as a simplified, abstract model of common real-world intergroup situations. Whereas the IPD game models two groups that are already fighting over absolute and relative outcomes, the IPD-MD game describes a more benign situation where the members of each group can choose whether to cooperate in solving their internal dilemmas or compete with the other group for relative payoffs (Jervis, 1978; Snidal, 1986). Enabling group members to choose between military service and equivalent civic or community service is a good example of such a situation.

The Experiment: Group and Individual Behavior in the IPD and IPD-MD Games

We conducted a laboratory experiment which compared the IPD and IPD-MD games. In half the experimental sessions the participants made their decisions without communicating with the other ingroup members. In the other half, group members met for a short discussion before making their decisions. Allowing group members to communicate (even when, as in the present experiment, communication is non-binding and has no payoff consequences) has been shown to increase cooperation in one-shot social dilemmas (see Weber, Kopelman & Messick, 2004 for a review), including in the IPD game (Bornstein, 1992). Communication increases cooperation by enhancing group identity and commitment (e.g., Kerr & Kaufman-Gilliland, 1994), eliciting relevant social norms (Bicchieri, 2002), and manipulating perceptions of the ingroup and the outgroup (Bornstein, 1992). Studying the IPD and IPD-MD games played without and with communication will enable us to tell the extent to which individual decisions are motivated by “ingroup love” or “outgroup hate”, and whether the intragroup processes which take place during discussion affect the relative significance of these two motives.

Method

Participants. Two-hundred-and-forty male students participated (mean age=24; std=3)[2]. Participants were recruited using ads promising a monetary reward for participation in a group decision-making experiment.

Design & Procedure. Participants arrived at the laboratory in cohorts of six and were randomly assigned to one of the four conditions (IPD / IPD-MD x with / without intragroup communication). The participants in each cohort were randomly divided into two 3-person groups. Each participant was escorted into a private room, where he was given instructions concerning the rules and payoffs of the relevant game. The instructions were phrased in neutral language (e.g. the pools were labeled “A” and “B” with no reference to “cooperation” or “competition”), and presented the payoff to each player as a function of his own decision and the decisions of the other players. Participants subsequently answered to a short quiz that tested their understanding of the game's rules.

Each participant received an endowment of 10 tokens, and had to indicate on a "decision form" how many tokens he was keeping, how many he was contributing to pool W (the within-group pool in the IPD-MD), and how many to pool B (the between-group pool in the IPD-MD game and the only pool in the IPD game). Each token that was contributed to either pool W or B paid 1 NIS (New Israeli Shekel) to each ingroup member, including the contributor. Each token that was contributed to pool B also subtracted 1 NIS from each outgroup member. For each token that was kept, the player was paid 2 NIS. In addition, each player was paid a flat bonus of 30 NIS to ensure positive payoffs. Thus, participants could earn between 10 NIS and 70 NIS (approximately $2.50 to $17.50), depending on the outcome of the game.

Participants in the no-communication condition made their decisions without communicating with the other ingroup members. Participants in the communication condition met with the other members of their team for five minutes of free discussion. Following the discussion, the participants returned to their room to make their decision in privacy. Participants were explicitly assured that their decision would remain confidential.

Results

Following discussion, the decisions of group members were no longer independent. Therefore, all the analyses reported below (including, for the sake of comparison, those pertaining to the no-communication conditions) were done at the group-level (20 3-person groups in each of the four experimental conditions).

The type of game had a significant effect on the overall contribution rate -- the proportion of endowment tokens that were contributed to either pool W or B. Across the two communication conditions, the participants contributed 63% of their endowment in the IPD-MD game, as compared with 51% in the IPD game ($F(1,76)=3.96$; $p=.050$). The main effect of communication was also significant ($F(1,76)=21.47$; $p=.000$). Across the two games, within-group communication increased overall contribution rates from 44% to 70%. There was no interaction effect of game type and communication on overall contribution rates ($F(1,76)=1.41$; $p=.239$). Figure 1 presents the mean contribution rates in the four conditions.

The most important finding of our experiment is the way contributions were divided between pools W and B in the IPD-MD game. As can be seen in Figure 1, contributions were made almost exclusively to the cooperative within-group pool. In the no-communication condition, participants contributed an average of 47% of their endowment to pool W and less than 6% to pool B.[3] Following within-group communication, contributions to pool W increased to 68% ($t(29)=-2.756$; $p=.010$), whereas contributions to pool B remained at a low 4%.

Looking more closely at the behavior of the individual participants reveals the following pattern. In the IPD game, about 7% of the participants contributed all 10 endowment tokens to pool B, and 33% contributed nothing. Following group discussion the distribution changed dramatically; 57% of the individuals contributed everything, and 18% contributed nothing. In the IPD-MD game about 77% contributed nothing to pool B, and this rate increased to 83% following discussion. About 30% contributed everything to pool W, and this rate increased to 58% following group discussion.

The different patterns of behavior observed in the two games resulted in different levels of collective efficiency - the joint earnings of all the players in both groups as a percentage of maximum possible earnings. In general, efficiency was higher in the IPD-MD than in the IPD game [$F(1,36)=51.410$, $p=.000$]. In both games, group communication enhanced individual contribution [$F(1,36)=6.523$, $p=.015$]. However, in the IPD-MD game communication increased contribution to the cooperative within-group pool, thus enhancing efficiency, whereas in the IPD game it raised contribution to the competitive between-group pool, thereby diminishing collective efficiency. This interaction between game type and communication was statistically significant $F(1,36)=18.791$, $p=.000$]. Specifically, in the IPD-MD game the six players could potentially earn a total of 180 NIS if they had all contributed their entire endowment to pool W. They actually earned about 78% of this optimum in the no-communication condition and almost 87% in the communication condition. In the IPD game the six players could have earned a total of 120 NIS if they had all kept their entire endowment. The average efficiency rate was 65% in the no-communication condition, and only 32% in the communication condition.

<Figure 1 here>

Discussion

A central issue in the psychological literature on intergroup relations is whether individual behavior in intergroup conflict is motivated by altruism towards the ingroup, aggression towards the outgroup, or a combination of both (De Figuerdo & Elkins, 2003). As pointed out by Brewer (1999, p. 430) many researchers (e.g., Sherif, 1966; Tajfel & Turner, 1986) seem to accept that "ingroup love and outgroup hate are reciprocally related". Others, including Allport (1954) and Brewer (1999) herself, argue that ingroup altruism does not necessarily imply outgroup hostility.

This issue is equally pertinent to the literature on international relations, where the group, rather than the individual group member, is the focus of investigation. The question here is whether groups (e.g., states, ethnic groups) strive to maximize absolute or relative gains (Jervis, 1978; Powell, 1991; Snidal, 1991; Rousseau, 2002). Whereas 'liberal institutionalists' assume that groups focus on their absolute gains and have little interest in the gains of other groups, 'structural realists' claim that groups are concerned mainly with their gains in comparison with other groups.

To distinguish between “ingroup love” and “outgroup hate”, or between the maximization of absolute and relative gains, as motives for individual and group behavior in intergroup conflict, this paper introduced and studied the IPD-MD game. In this game, players could make a costly contribution to either of two pools, one which benefits the ingroup, and another which, in addition, harms the outgroup. We found that contributions were made almost exclusively to the cooperative within-group pool. Moreover, communication within the groups increased intragroup cooperation but not intergroup competition. Clearly, participants in the IPD-MD game preferred to maximize their group's absolute payoffs rather than compete for relative payoffs, even though they could disadvantage the outgroup at no additional cost.

This finding supports Campbell's (1965) impression that “the altruistic willingness for self-sacrificial death in group causes may be more significant than the covetous tendency for hostility toward outgroup members” (p. 293). It is also in line with "minimal group" research which found that bias in favor of the ingroup is more pronounced in the positive domain (attributing positive traits, allocating rewards) than in the negative domain (attributing negative traits, allocating punishment; e.g., Amiot & Bouhris, 2003; Brewer, 1999; Buhl, 1999; Hewstone, Rubin & Willis, 2002; Mummendey & Otten, 1998).[4]

The peaceful group co-existence observed in the IPD-MD game was utterly shattered in the IPD game, where maximizing the ingroup's gain was necessarily at the expense of the outgroup (and the broader society). Under these circumstances, group members did not hesitate to compete. One obvious explanation for this behavior is that the ingroup members placed more weight on the gains their contribution produced for the ingroup than on the losses it inflicted on the outgroup. Another possibility is that ingroup members made their contributions because they expected the outgroup members to contribute and wanted to defend themselves against the possibility of falling behind. Research on intergroup interaction (e.g. Diehl, 1989) suggests that the fear of falling behind is more of a motivation than the aspiration to get ahead. This explanation is consistent with the results of our post-experimental questionnaire, which indicated that participants in the IPD game expected the outgroup members to behave more competitively than did participants in the IPD-MD game ($F(1,76)=171.384$, $p=.000$).

Implications for Conflict Resolution

Groups are generally considered competitive and aggressive – more so than individuals (Meier & Hinsz, 2004; Rabbie, 1998). This view of groups has been corroborated by a series of experiments which compared strategic interaction between two groups with interaction between two individuals (e.g., Schopler & Insko, 1992; Wildschut, Pinter, Vevea, Insko & Schopler, 2003). The typical finding in these experiments is that groups interact more competitively than individuals – an effect that has been labeled the individual–group discontinuity effect.

The present study has found that groups are not competitive or aggressive per se. In fact, when possible, group members prefer to cooperate so as to maximize their absolute group gains rather than compete against the outgroup for relative gains (and they assume that outgroup members have similar preferences). However, when maximizing ingroup gain necessitates hurting the outgroup, ingroup members do not hesitate to compete (and they assume that the outgroup members would be similarly competitive). Although these results may appear at odds with the discontinuity hypothesis, this is not necessarily the case. The discontinuity research investigated intergroup and inter-individual interactions in the 2-person PD game. In this game, as in the IPD game used here, competition can be motivated by either absolute or relative gain considerations. Groups may very well appear more competitive than individuals simply because they are more rational players with better insight into the strategic structure of the game than individuals (Bornstein, 2003; Lodewijkx, Rabbie & Visser, 2006; Rabbie, 1998).

Our results have important implications for conflict resolution. Above all, the high level of intragroup cooperation and the low level of intergroup competition observed in the IPD-MD game suggest that intergroup conflicts can be resolved by channeling group members' altruism toward internal group causes. Whereas in the IPD game "peace" is achieved only if all members of both groups defect, in the IPD-MD game groups can avoid war while maintaining their ability to mobilize collective action. In view of the difficulties which individual rationality poses for mobilization of collective action in the first place, losing this ability is highly problematic from a group's point of view (Campbell, 1972). Clearly, "…more cooperative groups are less subject to extinction because they are more effective in warfare, more successful in co-insuring, [and] more adept at managing commons resources" (Boyd et. al., 2003; p. 3531)

The solution to intergroup conflict put forward by the IPD-MD game may be more feasible than that suggested by Sherif (1966). Sherif believed that the existence of "super-ordinate goals" is necessary to increase cooperation and reduce conflict between groups. As pointed out by Brewer (1999), however, a common challenge or threat is unlikely to increase cooperation between highly differentiated social groups. People cooperate if they expect others to cooperate as well (Fehr, & Fischbacher, 2003), and while they expect reciprocation from ingroup members, they do not expect it from members of outgroups (e.g. Yamagishi & Kiyonari, 2000). Cooperative social norms are group-level phenomena that emerge through interactions within groups and apply to ingroup members (Bernhard, Fischbacher & Fehr, 2006). The collectively optimal solution, the one maximizing the joint welfare in the IPD-MD game, calls for cooperation among the members of the same group and, at least in this respect, is "essentially non-problematic" (Brewer, 1999, p. 436). Nevertheless, the present study examined the IPD-MD game played only once between small, randomly composed laboratory groups. To render our results more pertinent to real world group conflicts, this preliminary investigation should eventually be expanded to include repeated interactions between larger groups with more meaningful group identities and boundaries.

References

Allport, G.W. (1954). *The Nature of Prejudice.* New York: Addison-Wesley.

Amiot, C.E., & Bourhis, R.Y. (2003). Discrimination and the positive-negative asymmetry effect: Ideological and normative processes. *Personality and Social Psychology Bulletin, 29,*597-608.

Bernhard, H., Fischbacher, U., & Fehr, E. (2006). Parochial altruism in humans. *Nature, 442*, 912-915.

Bicchieri, C. (2002). Covenants without swords. *Rationality and Society, 14,* 192-228.

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. (2003). Intergroup conflict: Individual, group and collective interests. *Personality and Social Psychology Review, 7,* 129-145.

Bornstein, G. & Ben-Yossef, M. (1994). Cooperation in intergroup and single-group social dilemmas. *Journal of Experimental Social Psychology, 30,* 52-67.

Bowles, S., Choi, J.K., & Hopfensitz, A. (2003). The co-evolution of individual behaviors and social institutions. *Journal of Theoretical Biology, 223,* 135-147.

Boyd, R., Gintis, H., Bowles, S., & Richerson, P.J. (2003). The evolution of altruistic punishment. *Proceedings of the National Academy of Sciences, 100,* 3531-3535.

Brewer, M.B. (1999). The psychology of prejudice: Ingroup love or outgroup hate? *Journal of Social Issues, 55,* 429-435.

Brewer, M.B., & Campbell, D.T. (1976). *Ethnocentrism and intergroup attitudes: East African evidence*. Beverly Hills, CA: Sage.

Buhl, T. (1999). Positive-negative asymmetry in social discrimination: Meta-analytical evidence. *Group Processes and Intergroup Relations, 2,* 51-58.

Campbell, D.T. (1965). Ethnocentric and other altruistic motives. In D. Levine (Ed.), *Nebraska*

Symposium on Motivation (pp.283-3010. Lincoln: University of Nebraska Press.

Campbell, D.T. (1972) On the genetics of altruism and the counter-hedonic components in human culture. *Journal of Social Issues, 3,* 21-37.

Dawes, R.M., (1980). Social dilemmas. *Annual Review of Psychology, 31*, 169-193.

De Figuerdo, R.J.P. Jr., & Elkins, Z. (2003). Are patriots bigots? An inquiry into the vices of ingroup pride. *American Journal of Political Science, 47,* 171-188.

Diehl, M. (1989). Justice and discrimination between minimal groups: The limits of equity. *British Journal of Social Psychology, 28,* 227-238.

Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature, 425,* 785-791.

Hewstone, M., Rubin, M., & Willis, H. (2002). Intergroup bias. *Annual Review of Psychology, 53,* 575-604.

Jervis, R. (1978). Cooperation under the security dilemma. *World Politics*, *30*, 167-186.

Kelley, H.H., & Thibaut, J.W. (1978). *Interpersonal relations: A theory of interdependence.* New York: Wiley.

Kerr, N.L., & Kaufman-Gilliland, C.M. (1994). Communication, commitment, and cooperation in social dilemmas. *Journal of Personality and Social Psychology, 66,* 513-529.

Levine, R.A., & Campbell, D.T. (1972). *Ethnocentrism: Theories of conflict, ethnic attitudes and group behavior*. New York: Wiley.

Lodewijkx, H.F.M., Rabbie, J.M., & Visser, L.(2006). "Better to be safe than sorry": Extinguishing the individual-group discontinuity effect in competition by cautious reciprocation. In W. Stroebe & M. Hewstone (Eds.) *European Review of Social Psychology* (Vol. 17, pp. 185-232). Chichester, England: Wiley.

Meier, B.P., & Hinsz, V.B. (2004). A comparison of human aggression committed by groups and individuals: An interindividual-intergroup discontinuity. *Journal of Experimental Social Psychology, 40,* 551-559.

Mummendey, A., & Otten, S. (1998). Positive-negative asymmetry in social discrimination. In M. Hewstone & W. Strobe (Eds.), *European Review of Social Psychology* (Vol. 9, pp. 107-143). London: Wiley.

Powell, R. (1991). Absolute and relative gains in international relations theory. *American Political Science Review, 85,* 1303-1320.

Rabbie, J.M. (1998). Is there a discontinuity or a reciprocity effect in cooperation and competition between groups? *European Journal of Social Psychology, 28,* 483-507.

Rapooprt, A., & Bornstein, G. (1987). Intergroup competition for the provision of binary public-goods. *Psychological Review, 94,* 291-299.

Rousseau, D.L. (2002). Motivations for choice: The salience of relative gains in international politics. *Journal of Conflict Resolution, 46,* 394-426.

Schopler, J., & Insko, C.A. (1992). The discontinuity effect in interpersonal and intergroup relations: Generality and Mediation. In W. Stroebe & Miles Hewstone (Eds.) *European Review of Social Psychology* (Vol. 3, pp. 121-151). Chichester, England: Wiley.

Sherif, M. (1966). *In common predicament: Social psychology of intergroup conflict and cooperation*. Boston: Houghton-Mifflin.

Snidal, D. (1986). The game theory of international politics. In K. Oye (Ed.), *Cooperation under anarchy*. Princeton: Princeton University Press.

Snidal, D. (1991). International cooperation among relative gains maximizers. *International Studies Quarterly, 35,* 387-402.

Tajfel, H. & Turner, J. (1986). The social identity theory of intergroup behavior. In S. Worchel & W.G. Austin (Eds.), *Psychology of intergroup relations* (pp. 7-24). Chicago: Nelson-Hall.

Weber, J.M., Kopelman, S., & Messick, D.M. (2004). A conceptual review of decision making in social dilemmas: Applying a logic of appropriateness. *Personality and Social Psychology Review, 8,* 281-304.

Wildschut, T., Pinter, B., Vevea, J.L., Insko, C.A., & Schopler, J. (2003). Beyond the group mind: A quantitative review of the interindividual-intergroup discontinuity effect. *Psychological Bulletin, 129,* 698-722.

Yamagishi, T., & Kiyonari, T. (2000). The group as a container of generalized reciprocity. *Social Psychology Quarterly, 63,* 112-132.

End Notes

1. If players are concerned only with their ingroup's welfare, while completely disregarding that of the outgroup, they should divide their contribution randomly between pools W and B. If, however, players intentionally restrict their contribution to pool W, they must be attaching some positive value to the outgroup's welfare, rather than being merely indifferent to it.

2. We also examined the behavior of all-female groups in the IPD-MD game (played with intragroup communication) and found no differences between all-female and all-male groups: Women kept similar proportions of the initial endowment (26%) and contributed similar proportions of their endowment to the within-group pool (72.3%) and the between-group pool (1.3%).

3. The contribution rate to pool B in the IPD-MD game was significantly lower than the contribution to the B (and only) pool in the IPD game ($F(1,76)=109.74$; $p=.000$).

4. There is, however, an important methodological difference between the minimal group research and the IPD-MD game paradigm. In the minimal group paradigm, ingroup favoritism and outgroup derogation are investigated separately by manipulating the valence (positive / negative) of the evaluated traits and the behavioral mode (allocation / removal) of the allocated resources (Amiot & Bouhris, 2003; Mummendey & Otten, 1998). In the IPD-MD game the relative strength of the two motives is assessed within subjects by having them make a single decision that affects their own welfare, the welfare of their ingroup, and, if they so choose, that of the outgroup.

Tables and Figures

Table 1 : The IPD-MD game (containing the IPD, PD and MD games)

outgroup

ingroup		Keep Endowment	Contribute to Pool W	Contribute to Pool B
	Keep endowment	20 , 20	20 , 30	-10 , 30
	Contribute to pool W	30 , 20	30 , 30	0 , 30
	Contribute to Pool B	30 , -10	30 , 0	0 , 0

Entries represent the net payoff to each player in money units. In each cell, the left figure represents the payoff to the ingroup player, and the right figure represents the payoff to the outgroup player. In experimental settings, a fixed sum is added to ensure that payoffs remain in the positive domain.

Figure 1: Contribution rates in the IPD-MD and IPD games with and without intragroup communication