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Explanations of interindividual - intergroup discontinuity: A review of the evidence

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Explanations of interindividual–intergroup discontinuity: A review of the evidence

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The authors review and evaluate various explanations for the tendency of intergroup relations to be more competitive, or less cooperative, than interindividual relations (the discontinuity effect). They distinguish between two general perspectives, each comprising a set of explanations for the discontinuity effect. The fear and greed perspective assumes that intergroup relations are characterised by greater fear and greed than are interindividual relations. The group decision-making perspective assumes a crucial role for group discussion in facilitating rational comprehension of mixed-motive situations. In general, explanations from the fear and greed perspective were found to be more consistent with the empirical record than explanations from the group decision-making perspective. The authors propose that a complete understanding of the discontinuity effect is yet to be achieved.

**Keywords:** Discontinuity effect; Intergroup conflict; Intergroup relations; Interindividual-intergroup discontinuity; Prisoner’s dilemma game

*Thou shalt not follow a multitude to do evil*

(Exodus, 23:2)

Interind individual–intergroup discontinuity refers to the tendency for relations between groups to be more competitive or less cooperative than relations between individuals (Insko et al., 1998a, 2001). Most research comparing interind individual and intergroup interactions has done so in the context of
experiments with mixed-motive matrix games, like the prisoner’s dilemma game (PDG; see Figure 1). The PDG involves the interaction between two players, each of whom can choose between a cooperative (X) and a competitive or noncooperative (Y) choice. Each player’s outcomes are determined by the combination of both players’ choices, and can be thought of as rewards or as an index of player satisfaction. By definition, each player can maximise their outcomes by selecting the competitive choice, regardless of the choice selected by the other player. Yet, paradoxically, when both players select the competitive choice, they achieve lower outcomes than could have been achieved by mutual selection of the cooperative choice. As Ridley (1996) put it, “broadly speaking any situation in which you are tempted to do something, but know it would be a great mistake if everybody did the same thing, is likely to be a prisoner’s dilemma” (pp. 55–56).

Many, but not all, experiments contrasting interindividual and intergroup interactions in the PDG context have found that intergroup interactions are relatively more competitive. John Thibaut identified this basic finding with the term “discontinuity effect”, intrigued as he was by Brown’s (1954) statement that “the quality of mob behavior has always required explanation because of its apparent discontinuity with the private characters of the individuals involved” (p. 843). Although the discontinuity effect has been studied predominantly in the context of mixed-motive matrix games involving North-American participants, it has also been documented in non-laboratory contexts (Pemberton, Insko, & Scholper, 1996), in a context where the PDG matrix was substituted by a functionally equivalent set of rules governing the exchange of folded origami products (Scholper et al., 2001, Experiment 1), and among both Dutch (Wildschut, Lodewijkx, & Insko, 2001) and Japanese (Takemura & Yuki, 2007) participants.
OVERVIEW

We distinguished between two general perspectives on interindividual–intergroup discontinuity. The fear and greed perspective relates to a question regarding what possible differences between interindivdual and intergroup relations might account for the finding that, in the context of mixed-motive situations, intergroup interactions are characterised by both greater distrust and greater selfishness than are interindivdual interactions. This perspective comprises five explanations for the discontinuity effect (schema-based distrust, identifiability, social support, ingroup-favouring norm, altruistic rationalisation). The group decision-making perspective consists of a collection of four explanations that assume a crucial role for group discussion in facilitating rational comprehension of mixed-motive situations (backward induction, group polarisation, reciprocity, and cautious reciprocation). This perspective is primarily concerned with the question regarding what possible deliberative processes may result in groups developing superior insight into mixed-motive games relative to individuals. Our objective was to review the various explanations comprising these two perspectives and to evaluate each in light of the empirical record.

FEAR AND GREED PERSPECTIVE

Why might either player select the competitive, or noncooperative, choice \( Y \) in the PDG? The fear and greed perspective assumes that one reason for selecting the competitive choice is the fear of receiving the lowest possible outcome, either in an absolute sense (90 in Figure 1) or relative to the outcomes achieved by the other player (90 compared to 360). Another possible reason is the greed associated with receiving the highest possible outcome, again either in absolute (360) or relative (360 compared to 90) terms. The fear and greed perspective, then, incorporates both the concern with the tangible economic outcomes emphasised by realistic conflict theory (Campbell, 1965) and the concern with relativistic social comparisons emphasised by social identity theory (Tajfel & Turner, 1986). Referring to these two concerns, Insko et al. (1992, p. 273) wrote:

In the language of interdependence theory (Kelley & Thibaut, 1978), one of these concerns is labeled \( \text{max own} \) and the other \( \text{max rel} \). Note that fear can relate either to losing money per se (max own) or to losing the competition with the other group (max rel). Likewise, greed can relate either to winning money per se (max own) or to winning more money than the other group (max rel).

Thus, the distinction between fear and greed intersects with the distinction between max own and max rel. Fear is based on the expectation that the other player will select the competitive choice and therefore poses a
threat. Greed, on the other hand, is based on the expectation that the other player will select the cooperative choice and is therefore vulnerable to exploitation.

The fear and greed perspective comprises five complementary explanations for the greater competitiveness of intergroup relative to interindividual relations. The first explanation centres on the greater fear in intergroup relative to interindividual interactions. This is the schema-based distrust or fear explanation. The remaining four explanations centre on the greater greed in intergroup relative to interindividual interactions. These are the social support for shared self-interest, identifiability, ingroup-favouring norm, and altruistic rationalisation explanations. We will describe these five explanations in some detail and weigh the empirical evidence for each. In so doing, we go beyond an earlier meta-analytic investigation of the fear and greed perspective (Wildschut, Pinter, Vevea, Insko, & Scholer, 2003). This meta-analysis provided general support for the fear and greed perspective by confirming a number of theoretically meaningful associations between moderator variables and the magnitude of the discontinuity effect. What it did not provide were tests of the specific explanations for the discontinuity effect. That is, although the meta-analysis revealed general evidence consistent with greater fear and greed in intergroup relative to interindividual interactions, it did not identify the specific mechanisms responsible for this greater fear and greed.

Schema-based distrust or fear explanation

According to the schema-based distrust or fear explanation, intergroup interactions are more competitive than interindividual interactions because the anticipation of interacting with another group (as compared to with another individual) produces cognitive and affective responses (e.g., feelings, beliefs, memories, expectations) denoting that other groups are competitive, untrustworthy, hostile, and abrasive. Evidence for such differential distrust of groups and individuals comes from both laboratory and non-laboratory studies (for reviews, see Insko & Scholer, 1998; Wildschut, Insko, & Pinter, 2004).

Differential distrust of groups and individuals may be due to a confluence of mechanisms. One possible mechanism is personal experience. In a diary study, Pemberton et al. (1996) found that people experience interactions with other groups as more abrasive than interactions with other individuals. They also found that these experienced differences were accentuated in memory, such that when they were later recalled, the relative abrasiveness of interactions with other groups was magnified. Another possible mechanism for differential distrust of groups and individuals is sociocultural evolution. That is, differential distrust of groups and individuals could be culturally
maintained and transmitted. For example, one might speculate that, just as the knowledge required to produce specialised and durable tools could have contributed to the relative prosperity of certain societies or cultures as compared to others, so too could the belief that one should be wary of other groups. A third possible mechanism for differential distrust of groups and individuals is natural selection (Insko, Scholper, & Sedikides, 1998b). Insko et al. speculated that the reproductive advantage in cooperating with and trusting other individuals (Caporael & Brewer, 1991; Fox, 1980; Leakey, 1978; Sedikides & Skowronski, 1997; Stevens & Fiske, 1996) may not have generalised to relations with other groups. If our ancestral environment was inhabited by relatively autonomous groups vying for scarce resources, reproductive advantage may have resided in securing social inclusion but being wary of other groups.¹

The laboratory evidence that is most directly relevant to the fear explanation relies on a three-choice variation of the PDG, referred to as the PDG-Alt matrix (Figure 2). The corner cells of this matrix constitute a PDG, but the matrix includes a third choice that guarantees intermediate outcomes regardless of the other player’s choice. This third choice is referred to as “withdrawal”. One can tell from Figure 2 that whereas competition (Z) yields the highest outcomes when it is expected that the other player will cooperate (i.e., select X), withdrawal yields the highest outcomes when it is expected that the other player will compete (i.e., select Z). Consistent with the fear explanation, research with the PDG-Alt matrix (Insko, Kirchner, Pinter, Efaw, & Wildschut, 2005; Insko, Scholper, Hoyle, Dardis, & Graetz, 1990; Insko et al., 1993; Scholper et al., 1995; Scholper et al., 1993) has found consistently that groups selected the withdrawal choice more frequently than did individuals. Still, consistent with the postulated role of greed in producing the discontinuity effect, this research has also found that groups selected the competitive choice more frequently than did individuals.

The dual influences of fear and greed were observed clearly in a recent study by Insko et al. (2005; Experiment 2). They investigated whether same-category membership (compared to different-category membership) reduces withdrawal for groups relative to individuals, while at the same time increasing competition. In their experiment, same-category membership meant that the interacting groups (or individuals) were informed that they

¹Insko et al. (1998b) also discussed the more controversial possibility that differential distrust of groups and individuals is a product of natural selection at the group level (Wilson & Sober, 1994). Insko et al. pointed out that “Two extremes of between-group orientation are militaristic hostility on the one hand and pacifist hostility on the other” (p. 116). For reasons that are left to the interested reader, Insko et al. proposed that neither of these orientations would survive in the long run. Groups that are more likely to survive, they speculated, adopt the middle ground between militarism and pacifism “that involves wariness toward and distrust of other groups” (p. 117).
preferred the same artist. Different-category membership meant that groups (or individuals) were told that they preferred different artists. The experiment attempted to gain insight into why prior investigations of categorisation in the context of the discontinuity effect had been unsuccessful. For instance, an unpublished study by Gaertner and Rust (2000) found no significant effects involving a manipulation of same- versus different-category membership, although it did replicate the discontinuity effect. In another study, Insko et al. (2001) included Gaertner, Mann, Murrell, and Dovidio’s (1989) assessment of whether the participants present in the session were perceived as separate individuals, one group, or two groups. Although this assessment was not associated with the number of competitive PDG choices, it did provide some initial insight into the relationship between categorisation and the discontinuity effect. Insko et al. discovered that those participants who perceived two groups (as opposed to separate individuals) reported greater distrust of the other player (individual or group). This raises the possibility that perceived categorisation is one determinant of trust.

Why is this important? The fear and greed perspective makes the paradoxical prediction that trust increases both cooperation and competition between groups. Trust should increase cooperation because it reduces the perceived risk of being exploited by the other player (fear), and trust should increase competition because it indicates an opportunity to exploit

![Figure 2. A PDG-Alt matrix.](image-url)
the other player (greed). Given that (1) the competitive choice in the two-choice PDG confounds fear and greed, and (2) shared categorisation and concomitant trust may exert directionally opposite effects on fear and greed, it is perhaps not surprising that previous investigations of the relationship between categorisation and the discontinuity effect produced inconclusive findings. With this in mind, Insko et al. (2005) turned to the PDG-Alt matrix to isolate the directionally opposite effects of shared categorisation. They predicted that same-category membership (compared to different-category membership) would reduce the tendency for groups to withdraw more than individuals, but increase the tendency for groups to compete more than individuals. The experimental design included two manipulated variables. Individuals versus groups was manipulated by comparing interactions between two three-person groups to interactions between two individuals. Categorisation was manipulated by letting participants rate pairs of paintings and then falsely informing them either that they all preferred the same artist (both Klee, or both Kandinsky), or that the interacting individuals or groups preferred different artists (Klee versus Kandinsky).

Mean proportions of cooperative, withdrawal, and competitive choices are presented in Table 1. First, it is of interest to examine the results for cooperation, as they offer a window on what might have happened in the context of a two-choice PDG. This is because cooperation is the complement of withdrawal and competition summed, and the latter two choices are confounded in the two-choice PDG. Results revealed more cooperation with same- than with different-category membership, and less cooperation for groups than for individuals. Yet, as in Gaertner and Rust’s (2000) experiment, the Individuals versus Groups × Categorisation interaction on cooperation was not significant.

Findings for withdrawal and competitive choice, however, showed that Insko et al.’s (2005) decision to use the three-choice PDG-Alt matrix paid dividends. Relevant to the fear explanation, the tendency for groups to select withdrawal more than individuals was significantly reduced with

<table>
<thead>
<tr>
<th>Category</th>
<th>Cooperation</th>
<th>Withdrawal</th>
<th>Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individuals</td>
<td>Groups</td>
<td>Individuals</td>
</tr>
<tr>
<td>Different</td>
<td>.79</td>
<td>.13</td>
<td>.09</td>
</tr>
<tr>
<td>Same</td>
<td>.91</td>
<td>.41</td>
<td>.06</td>
</tr>
</tbody>
</table>

*Insko et al., 2005, Experiment 2.*
same-category membership (compared to different-category membership). This finding is compatible with the idea that same-category membership can reduce distrust between groups (Gaertner et al., 1989). As expected, however, same-category membership increased the tendency for groups to compete more than individuals. This finding is consistent with the possibility that same-category membership increases the expectation that the other player will cooperate, and that groups are more prepared than are individuals to exploit this chink in the other player’s armour. But why might such greed play a more important role in intergroup than interindividual relations? We review four possible explanations.

**Identifiability explanation**

According to the identifiability explanation, intergroup interactions are more competitive than interindivudual interactions because the other player’s ability to assign responsibility for competitive, self-interested behaviour is typically more limited in an intergroup than in an interindividual context. Metaphorically speaking, group membership provides a shield of anonymity. Direct evidence for the identifiability explanation comes from a study by Schopler et al. (1995). These researchers compared interactions between identified groups, nonidentified groups, named individuals, and not-named individuals in the context of a PDG-Alt matrix. In all conditions, participants anticipated announcing their choice when the experimenter called them by name over an intercom system. In the identified-group condition, participants were told that their choice could be heard by the experimenter, members of their ingroup, and members of the outgroup. In the nonidentified-groups condition, participants anticipated that their choice could be heard by the experimenter and members of their ingroup, but not by members of the outgroup. Likewise, in the named-individuals condition, participants were told that their choice could be heard by the experimenter and by the other player. In the not-named-individuals condition, participants were told that their choice could be heard by the experimenter only.

Mean proportions of cooperative, withdrawal, and competitive choices are presented in Table 2. Results for the cooperative choice revealed that individuals were more cooperative than were groups. Furthermore, consistent with the identifiability explanation, identified groups were more cooperative than were nonidentified groups. Named and not-named individuals did not differ significantly. Results for the withdrawal choice indicated a significant difference between individuals and groups—withdrawal was more frequent in intergroup interactions. Neither the contrast between identified and nonidentified groups, nor the contrast between named and not-named individuals was significant. Finally, results for the
TABLE 2
Mean proportions of cooperation, withdrawal, and competition as a function of identifiability, individuals versus groups, and gender

<table>
<thead>
<tr>
<th>Choice</th>
<th>Groups</th>
<th></th>
<th>Individuals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identified</td>
<td>Nonidentified</td>
<td>Named</td>
<td>Not named</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Cooperation</td>
<td>.25</td>
<td>.64</td>
<td>.18</td>
<td>.30</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>.35</td>
<td>.18</td>
<td>.32</td>
<td>.30</td>
</tr>
<tr>
<td>Competition</td>
<td>.40</td>
<td>.18</td>
<td>.50</td>
<td>.40</td>
</tr>
</tbody>
</table>

Schopler et al., 1995.

competitive choice revealed that groups competed more than did individuals. Consistent with the identifiability explanation, identified groups competed less than did nonidentified groups. There was no significant difference between named and not-named individuals. For our present purposes, the key finding from this study is that, relative to identified groups, non-identified groups were less cooperative and more competitive. Non-identified groups were not significantly more likely than identified groups to select the withdrawal choice. This reinforces the idea that reduced identifiability in intergroup interactions is more directly related to greed than to fear.

Social support for shared self-interest explanation

The social support explanation proposes that intergroup interactions are more competitive than interindividual interactions because group members can provide mutual social support for the competitive pursuit of shared self-interest, whereas such social support is unavailable to isolated individuals (Insko et al., 1990; Schopler et al., 1993; Wildschut, Insko, & Gaertner, 2002). To respond competitively when the other player is expected to cooperate is inconsistent with norms of fairness and equality. Yet social support from ingroup members for pursuing such a self-interested strategy can reduce these normative constraints. This line of reasoning is consistent with the well-known finding that social support, even from a single person, can weaken normative and other conformity pressures (Allen & Levine, 1969, 1971; Asch, 1955).

Initial evidence for the social support explanation was found in two experiments by Schopler et al. (1993; see also, Van Avermaet, Buelens, Vanbeselaere, & Van Vaerenbergh, 1999). We will review briefly the findings from their first experiment. To manipulate social support for shared self-interest, Schopler et al. used a confederate who was playing the role of group
member. During the within-group discussion period that preceded the group’s final decision, this confederate either suggested that the group select the cooperative choice or that the group select the competitive choice. A second manipulation varied whether participants received feedback indicating that the other group was consistently cooperative, made mixed choices, or was consistently competitive. Results revealed that participants who heard the confederate make a competitive suggestion were more competitive than those who heard the confederate make a cooperative suggestion, especially when they had received feedback indicating that the other group was consistently cooperative. These results are consistent with the idea that social support is particularly important when the other player is expected to cooperate and is therefore vulnerable. When the other player is expected to compete, selection of the competitive choice is consistent with shared self-interest, but also with fairness and reciprocity norms. As Schopler et al. noted, “Because the salient considerations all triangulate on selecting the competitive choice, the existence of social support is less important” (1993, p. 424).

Although the Schopler et al. (1993) research provided evidence consistent with the social support explanation, it left room for an alternative explanation. Note that the confederate’s suggestion created at least temporarily an imbalance in favour of either the cooperative or competitive choice. Perhaps, then, the confederate’s suggestion served as a guideline to which the naïve participants conformed. Two experiments by Wildschut et al. (2002, Experiments 1 and 2) aimed to address this issue by manipulating social support without creating an imbalance in favour of either the cooperative or the competitive choice that could produce conformity. These two experiments used similar procedures but different payoff matrices. In both experiments, participants were isolated in separate rooms and told they were part of a five-person group that would interact with another five-person group located in an adjoining laboratory. In reality, no other group was present and all feedback from the alleged other group was controlled by the experimenter. Participants learned that their group would arrive at a decision following a majority rule. Within each group, decisions were to be made in a fixed order but this order was rigged to give each participant the impression that she would be the third member in her five-person group to make a decision.

In the social-support condition, participants were told that they should record their decision on a form that would be passed around by the experimenter. In reality, participants each received a separate form on which two decisions were prerecorded by the experimenter. According to the information on the form, one group member had already selected the cooperative (X) choice, whereas another had already selected the competitive (Y) choice. In this way, Wildschut et al. (2002) provided participants with social support
for the competitive choice without creating an imbalance favouring this choice. One could characterise this as a conservative manipulation of social support. In the no-social-support condition, participants were told that the experimenter would pass out a separate decision form to each group member, albeit in the predetermined order. The decision forms that were passed to participants contained no information regarding the decisions of the two group members who, ostensibly, had already made a choice. Just prior to making their decisions, participants received feedback indicating that the other group had cooperative intentions.

Because Wildschut et al. (2002) used five-person groups, participants were never given the impression that they could cast the deciding vote within their group. Note further that because there was no imbalance favouring the competitive choice in the social-support condition, any effect of the social support manipulation could not be explained readily in terms of conformity processes. Manipulation checks confirmed that, relative to participants in the no-social support condition, participants in the social-support condition perceived greater social support for selecting the competitive choice (e.g., “How certain or uncertain were you that at least one other member of your group would support you for selecting Y”), but did not perceive a greater likelihood that a majority of ingroup members would select that choice.

In the first experiment, interaction occurred in the context of a Mutual Fate Control (MFC) matrix (Figure 3). In the MFC matrix, competition with a cooperative other increases relative outcomes but does not increase absolute outcomes. Using the recent terminology proposed by Kelley et al. (2002), the MFC matrix affords no Actor Control (i.e., control over own outcomes) but only Partner Control (i.e., control over other’s outcomes). Wildschut et al. (2002) used the MFC in their initial experiment because they

![Figure 3. An MFC matrix.](image-url)
assumed, correctly or not, that competition could be more socially acceptable, and therefore less reliant on social support, when it maximises absolute outcomes in addition to relative outcomes. When competition maximises only relative outcomes, as in the MFC, it cannot be construed as serving purely economic gain.

Results revealed that participants were more competitive when social support was present than when it was absent. A post-experimental questionnaire included assessments of choice reasons. Results for these reasons assessments showed that participants were more concerned with maximising relative outcomes when social support was present than when it was absent. Mediation analyses were consistent with the possibility that this greater concern for maximising relative outcomes mediated the greater competitiveness of participants in the social-support condition. There was no significant effect of social support on the concern with maximising absolute outcomes. The reasons assessments thus provide preliminary evidence for the idea that maximising relative outcomes requires social support to a greater extent than does maximising absolute outcomes.

The key objective of Wildschut et al.’s (2002) second experiment was to delineate more precisely the domain of the social support explanation. In this experiment, interaction occurred in the context of one of two versions of the PDG (see Figure 4). These matrices differed in what Kelley and Thibaut (1978) referred to as the index of correspondence. For symmetric matrices, like those in Figure 4, the index of correspondence is the simple correlation between the players’ outcomes across the four cells of the array. The index of correspondence provides a measure of conflict of interest. For both matrices in Figure 4, the index of correspondence is negative. The index equals −.05 in the top matrix and −.60 in the bottom matrix. Thus, whereas the players’ outcomes are noncorrespondent in both matrices, noncorrespondence is lower in an absolute sense in the top matrix. In the low-noncorrespondence matrix, competition with a cooperative other produces a relatively small increase in absolute outcomes (500 versus 490) in addition to the increase in relative outcomes (400 versus 0). In this sense, this matrix resembles the MFC, in which competition produced no increase in absolute outcomes. In the high-noncorrespondence matrix, however, competition with a cooperative other produces a relatively large increase in absolute outcomes (500 versus 400) in addition to the increase in relative outcomes (400 versus 0). Based on the assumption that competition may be less dependent on social support to the extent that it maximises absolute outcomes in addition to relative outcomes, Wildschut et al. predicted that the social support effect would be stronger with low than with high noncorrespondence.

Results revealed that the social support effect was replicated with low but not with high noncorrespondence. The pattern of means is presented
in Table 3. These findings provide further evidence for the assumption that intergroup competition is more dependent on social support when its sole or primary purpose is the maximisation of relative outcomes than when it also produces a substantial increase in absolute outcomes. But why might this be the case? The ingroup-favouring norm explanation provides a possible answer.

![Figure 4](image)

**Figure 4.** A PDG matrix with index of correspondence = −.05 (top panel) and a PDG matrix with index of correspondence = −.60 (bottom panel).

<table>
<thead>
<tr>
<th></th>
<th>Social support absent</th>
<th>Social support present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index = −.05</td>
<td>.20</td>
<td>.43</td>
</tr>
<tr>
<td>Index = −.60</td>
<td>.60</td>
<td>.54</td>
</tr>
</tbody>
</table>

*Wildschut et al., 2002, Experiment 2.*
Ingroup-favouring norm explanation

According to the ingroup-favouring norm explanation, group membership implies normative pressure to act so as to benefit the ingroup. Although there may be normative pressure to benefit the ingroup when competition serves mostly or exclusively to maximise relative outcomes, such pressure should be even greater when competition also increases absolute outcomes. If this assumption is correct, then social support is important mainly when only relative outcomes are at stake, but can be rendered redundant by the ingroup-favouring norm when both relative and absolute outcomes are at stake. Thus, consistent with Wildschut et al.’s findings (2002, Experiment 2) for the high-noncorrespondence matrix, activation of the ingroup-favouring norm can “swamp” the effect of social support. The ingroup-favouring norm stands in contrast to norms of fairness and equality that play an important role in interindividual interactions (Lind, 1997; Thibaut & Walker, 1975), and thus provides an additional explanation for the discontinuity effect.

Initial research on the ingroup-favouring norm has been guided by the assumption that the norm should be more salient when group members are accountable rather than unaccountable to the ingroup. It is only when group members are accountable that their actions can influence how they are evaluated by the ingroup (Deutsch & Gerard, 1955; Insko, Drenan, Solomon, Smith, & Wade, 1983; Insko, Smith, Alicke, Wade, & Taylor, 1985). Empirical support for this line of reasoning comes in part from an experiment by Wildschut et al. (2002, Experiment 3). Participants in this experiment were placed in separate rooms within a larger suite of rooms and told that they were part of a five-person group that would interact with another five-person group located in an adjoining laboratory. In reality, no other group was present. Participants were told their group’s PDG choice would be determined following a majority rule. Participants then made individual PDG decisions under one of two conditions. In the public condition participants were told that, upon completion of the experiment, there would be a within-group meeting to discuss their individual decisions with the other members of their group. In the private condition participants were told that, upon completion of the experiment, they would be dismissed separately from the laboratory. Results revealed that public-condition participants accountable to the ingroup made more competitive choices than did private-condition participants not accountable to the ingroup.

However, three subsequent studies revealed that some people are more responsive to the ingroup-favouring norm than are others (Cohen, Montoya, & Insko, 2006; Pinter et al., 2007; Wildschut & Insko, 2006). These studies all point to the importance of individual differences in proneness to guilt. Guilt involves the negative evaluation of specific
transgressions—often ones involving harm to others (Tangney, 1992)—and a concern for their rectification (Tangney & Dearing, 2002). Furthermore, guilt motivates moral behaviour and can be regarded as the quintessential moral emotion (Tangney, 2003). Indeed, evidence shows that guilt proneness motivates conformity to moral norms that dictate concern for close others or “communal norms of mutual concern” (Baumeister, Stillwell, & Heatherton, 1994, p. 246). But how will such moral concern for close others manifest itself in the context of intergroup conflict? When there is some degree of incompatibility between the interests of two groups, a tension or opposition is created between, on the one hand, norms of fairness and equality, and, on the other hand, the ingroup-favouring norm. Whereas the norms of fairness and equality dictate intergroup cooperation, the ingroup-favouring norm dictates intergroup competition. In this setting, the strong moral concern for close others that characterises high-guilt-prone persons can manifest itself in the form of either intergroup cooperation or competition, depending on the relative contextual salience of the opposing sets of norms. In other words, contextual factors that heighten the relative salience of the ingroup-favouring norm should increase intergroup competition, and do so in particular for high-guilt-prone persons.

Preliminary empirical support for this perspective on the role of guilt proneness was presented by Wildschut and Insko (2006). They re-analysed data collected by Wildschut et al. (2002; Experiment 3), factoring in a measure of guilt proneness administered approximately 1 week in advance of the experiment. This measure of guilt proneness was drawn from the Test of Self-Conscious Affect (TOSCA; Tangney, Dearing, Wagner, & Gramzow, 2000). Recall that, in the original Wildschut et al. experiment, accountable group members (i.e., group members who anticipated a public meeting with the other ingroup members) were more competitive than were unaccountable group members (i.e., group members who anticipated being individually dismissed and not meeting with the other ingroup members). However, the re-analysis revealed that this accountability effect was significant when guilt proneness was high, but not when it was low. This interaction pattern is presented in the top panel of Figure 5. These findings suggest that concern for the ingroup was particularly strong when accountability and high guilt proneness were juxtaposed.

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2The TOSCA requires participants to consider 15 situations they might encounter in day-to-day life and to imagine themselves in those situations (e.g., “You make a mistake at work and find out that a co-worker is blamed for the error”). For each situation, participants rate the likelihood of having a variety of reactions (1 = not likely, 5 = very likely), including reactions that are considered to be indicative of guilt proneness (e.g., “You would feel unhappy and eager to correct the situation”).
Figure 5. Interactions between guilt proneness and experimental manipulations influencing salience of the ingroup-favouring norm: Wildschut and Insko (2006; top panel), Pinter et al. (2007: middle panel), and Cohen et al. (2006: bottom panel).
In a subsequent experiment, Pinter et al. (2007, Experiment 2) explored the role of accountability and proneness to guilt in the context of PDG interactions between group leaders. This experiment contrasted interactions between individuals, unaccountable leaders, and accountable leaders. In addition, proneness to guilt was assessed by administering the Dimensions of Conscience Questionnaire (DCQ; Gore & Harvey, 1995; Johnson et al., 1987; Johnson, Kim, & Danko, 1989) at the beginning of each experimental session. In the individuals condition, participants were seated in separate rooms on opposite sides of a central corridor. They were first given 1 minute to consider their PDG choice. Next, they met in the central corridor for a 1-minute discussion with the other player. Following this discussion period, participants were given 1 minute to record a final decision. In the unaccountable and accountable leaders conditions, participants were told that they alone had been selected to represent a three-person group. Participants were further told that they would interact with a leader representing another three-person group, that this interaction would involve monetary outcomes, and that the outcomes earned by the leaders would be divided equally among the members of their respective groups. Additionally, accountable leaders were told that the members of their group knew that their payoffs were determined by the decisions of the leader. Unaccountable leaders, on the other hand, were instructed that members of their group would not be aware of the leader’s influence on their outcomes.

Pinter et al.’s (2007, Experiment 2) primary expectation was that guilt proneness would interact with a planned contrast of individuals and unaccountable leaders pooled versus accountable leaders, such that with high (relative to low) guilt proneness there would be a more pronounced tendency for accountable leaders to be more competitive than individuals and unaccountable leaders pooled. This expectation was based on two assumptions. First, that high guilt proneness motivates conformity to moral norms dictating concern for close others. Second, that for accountable leaders the more salient norms relate to ingroup favouritism, whereas for unaccountable leaders and individuals the more salient norms relate to

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3The DCQ presents participants with 30 different scenarios. For each scenario, participants rate how bad they would feel if they were to enact it (1 = feel kinda good, 5 = feel very bad). Representative guilt scenarios depict harm to others (e.g., “Allowing someone else to be blamed for something that you have done”) and trust violations (e.g., “Inadvertently revealing something about a person that he/she told you confidentially”). Higher scores (i.e., more anticipated negative affect) in response to the guilt scenarios are considered to be indicative of greater guilt proneness. Despite the different measurement approaches adopted by the DCQ and TOSCA, unpublished data from 236 participants revealed that guilt scores derived from these scales were highly correlated, $r = .63$. 
fairness and equality.\textsuperscript{4} Consistent with these assumptions, results revealed that accountable leaders were more competitive than individuals and unaccountable leaders pooled, but that this contrast was significant only when guilt proneness was high. The interaction pattern is depicted in the middle panel of Figure 5. These findings in the context of interactions between group leaders offer a strong conceptual replication of Wildschut and Insko’s (2006) earlier demonstration of the synergetic effect involving accountability and proneness to guilt.

A further conceptual replication was provided in an experiment by Cohen et al. (2006; Study 2). These researchers used a variation of a procedure developed by Batson et al. (2003) to manipulate empathetic feeling. In the ingroup empathy condition, participants completed a thought exercise in which they were instructed to imagine how the members of the ingroup were likely to feel when considering their choices on the PDG and then to write down those thoughts. In a control condition, the thought exercise and writing involved taking an objective and detached perspective. Following the logic of convergent operations, Cohen et al. proposed that their manipulation of ingroup empathy was conceptually analogous to the accountability manipulations of previous studies in that all these manipulations aimed to produce variation in the salience of the ingroup-favouring norm. Guilt proneness was measured with the TOSCA at the beginning of each experimental session. Results revealed a significant interaction between the ingroup empathy manipulation and guilt proneness. As predicted, ingroup empathy increased intergroup competition when guilt proneness was high, but not when it was low. The interaction pattern is depicted in the bottom panel of Figure 5. Note that Cohen et al. used a four-choice variation of the PDG, where “1” corresponded to maximum cooperation and “4” corresponded to maximum competition.

To summarise, three studies (Cohen et al., 2006; Study 2; Pinter et al., 2007; Experiment 2; Wildschut & Insko, 2006) demonstrated how individual differences in guilt proneness interact with contextually induced variation in the salience of the ingroup-favouring norm to shape intergroup interactions. The findings generalised across different measures of guilt proneness and different methods for producing variation in the salience of the ingroup-favouring norm. These studies point to the conclusion that, when the ingroup favouring norm is made salient, the concern for close others that so characterises high-guilt persons can manifest itself in the form of intergroup

\textsuperscript{4}The distinction between, on the one hand, norms of fairness and equality and, on the other hand, the ingroup-favouring norm, maps directly onto the distinction between individual and group morality as drawn by Niebuhr (1941). “The group” wrote Niebuhr, “is more arrogant, hypocritical, self-centered, and more ruthless in the pursuit of its ends than the individual. An inevitable moral tension between individual and group morality is therefore created” (p. 222).
competition. Hobbes (1660/1983) captured the essence of this phenomenon when he wrote that “Force, and Fraud, are in warre the two Cardinall vertues.” (p. 66).

**Altruistic rationalisation explanation**

We now turn to an explanation that occupies a somewhat unique position within the fear and greed perspective. This altruistic rationalisation explanation was the first explanation for the discontinuity effect to be tested formally (Insko et al., 1987), and yet it has thus far received the least empirical support. According to this explanation, interactions between groups are more competitive than interactions between individuals because group members can rationalise self-interest as being pursued for the sake of the ingroup. The fundamental nature of this idea is portrayed in the following passage from James Boswell’s *Life of Johnson* (1791/1998, p. 615):

> Patriotism having become one of our topicks, Johnson suddenly uttered, in a strong determined tone, an apophthegm, at which many will start: “Patriotism is the last refuge of a scoundrel.” But let it be considered, that he did not mean real and generous love of our country, but that pretended patriotism which so many, in all ages and countries, have made a cloak for self-interest.

In the context of a larger experiment, Insko et al. (1987) tested the altruistic rationalisation explanation by contrasting an individuals condition with an outcome interdependence condition. In both conditions, two individuals interacted in the context of a PDG, but only participants in the outcome interdependence condition were told that they were yoked to two other persons, seated in separate rooms, with whom they would share their outcomes equally at the end of the experiment. Because participants in the outcome interdependence condition, but not those in the individuals condition, could rationalise their own competitiveness as being enacted for the sake of the persons to whom they were yoked, Insko et al. predicted that more competition would occur in the outcome interdependence than in the individuals condition. However, results revealed no significant difference between the two conditions.

For many years, the Insko et al. (1987) null finding discouraged further tests of the altruistic rationalisation explanation. We might not even have included this explanation in our review were it not for recent findings by Pinter et al. (2007, Experiment 2). Recall that Pinter et al. contrasted interactions between individuals, unaccountable leaders, and accountable leaders. Their primary expectation was that with high (relative to low) guilt proneness there would be a more pronounced tendency for accountable leaders to be more competitive than individuals and unaccountable leaders pooled. As discussed previously, this expectation was confirmed.
However, Pinter et al. were also interested in whether guilt proneness would interact with a second, orthogonal, contrast between individuals and unaccountable leaders.

On the one hand, Pinter et al. (2007; Experiment 2) listed a number of reasons why interactions between individuals should not differ from interactions between unaccountable leaders, either when guilt is high or when it is low. Specifically, they assumed that for both individuals and unaccountable leaders the salient norms relate not to ingroup favouritism but to fairness and equality. Furthermore, they noted that both individuals and unaccountable leaders are identifiable to their opponent and lack explicit social support for competitiveness. Finally they pointed out that, as both conditions involved one-on-one interactions, neither individuals nor unaccountable leaders would be strongly influenced by negative beliefs about other groups. On the other hand, Pinter et al. highlighted one point on which individuals and unaccountable leaders might differ. Unlike individuals, unaccountable leaders could rationalise self-interest as being pursued for the sake of the ingroup. Pinter et al. further proposed that such opportunity for altruistic rationalisation should be more important to low-guilt than to high-guilt unaccountable leaders because research indicates that the former are relatively more self-interested. Consistent with these ideas, results showed that unaccountable leaders were more competitive than individuals, but only when guilt proneness was low.

As stated previously, the altruistic rationalisation explanation was proposed, and subsequently rejected, by Insko et al. (1987). The explanation was rejected because participants who were told they would share outcomes with two other participants, and therefore could rationalise their own competitiveness as being enacted for the sake of these other persons, were not more competitive than participants who did not share their outcomes with others. It is possible, however, that when the responsibility for group outcomes rests on a single person, as it did on leaders in Pinter et al.’s (2007) experiment, this person will more readily recognise the possibility for altruistic rationalisation than when responsibility for group outcomes is divided among several persons, as it was among members of three-person sets in Insko et al.’s (1987) experiment. Furthermore, the fact that Insko et al. did not assess guilt proneness leaves open the possibility that, even when responsibility for group outcomes is shared, low-guilt group members may engage in altruistic rationalisation. This presents an interesting avenue for future research.

GROUP DECISION-MAKING PERSPECTIVE

The group decision-making perspective comprises a family of explanations that share the general assumption that group discussion facilitates rational
comprehension of mixed-motive situations, and that such rational comprehension plays a role in producing the discontinuity effect. Notwithstanding their family resemblance, these explanations differ regarding the precise mechanisms that are postulated to produce rational comprehension of mixed-motive games and, more importantly, regarding what constitutes rationality in the mixed-motive context.

Backward induction explanation

Bornstein, Kugler, and Ziegelmeyer (2004; see also Bornstein & Yaniv, 1998) proposed that the discontinuity effect may be due in part to the fact that groups are less prone to making mistakes than are individuals because in simple decision tasks, such as the PDG, “several heads are better than one” (p. 602). That is, group members, because they can pool cognitive resources, are less likely than individuals to misunderstand the basic principles governing the game. Why should this contribute to the discontinuity effect? According to Bornstein et al., groups, enabled by their superior comprehension of the game, should be more likely than individuals to follow the logic of backward induction. Consider, for instance, the iterated (i.e., multiple-trial) PDG. Because, on any given trial, the competitive choice results in higher outcomes than the cooperative choice, regardless of the other player’s choice, purely self-interested players should compete on the final trial. Knowing this, the self-interested players should also compete on the next-to-last trial, and the trial before that, and so forth. The logic of backward induction, in other words, dictates competition on each trial, including the first. Assuming that groups are more likely than individuals to comprehend this principle, groups should compete more than individuals.

A number of studies are consistent with the idea that groups have better comprehension of experimental games than do individuals (Bornstein et al., 2004, Experiment 1; Bornstein & Yaniv, 1998; Cox, 2002). A common problem with these studies, however, is that the competitive, or non-cooperative, decision is also the most rational from a game-theoretic point of view. Simply put, these studies confounded self-interested competition and comprehension. Consider, for instance, the single-trial Ultimatum game used by Bornstein and Yaniv (1998). Complete game-theoretic comprehension of this game dictates giving a minimal amount of money to the other player and keeping a maximal amount to oneself. Bornstein and Yaniv found that groups kept more money to themselves, and thus followed the game-theoretic prediction more closely than did individuals. Although such a result may indicate that groups have superior comprehension of the game, an alternative explanation is that groups are more selfish than are individuals.

To address this issue, Bornstein et al. (2004, Experiment 2) turned to a constant-sum Centipede game (Figure 6). In the classical Centipede game,
Figure 6. A constant-sum Centipede game: Player 1 decides at odd-numbered nodes, Player 2 decides at even-numbered nodes (Bornstein et al., 2004, Experiment 2).
two players take turns making a decision whether to take the larger portion of an increasing resource pool (Take) or to pass and move on to the next decision node in the game (Pass). When a player selects Take, the game ends with that player receiving the larger portion of the resource pool and the other player receiving the smaller portion. When a player selects Pass, that player’s outcomes are reduced if the other player selects Take at the next node. However, in the constant-sum variation used by Bornstein et al. the resource pool does not increase at each node, but rather the sum of outcomes for both players remains constant. Furthermore, the distribution of outcomes at the first node is equal, but differs thereafter (see Figure 6). This produces a game in which “rational” players should select Take at the first node, regardless of whether they want to maximise own outcomes or achieve equality, and in which selecting Pass does not increase (or decrease) joint outcomes.

Results indicated that groups were more likely than individuals to select Take at the first node. Given the constant-sum structure of the game, this finding cannot be explained by groups having a greater concern for own outcomes or a reduced concern for equality and joint outcomes. Yet what this finding does indicate is not entirely clear. Bornstein et al.’s (2004) favoured interpretation is that groups, because of their superior comprehen-

sion of the game, make fewer mistakes. This is certainly possible but, because selecting Pass allows the other player to increase their outcomes, the findings may also point to groups being less generous than are individuals. Stated differently, perhaps groups are more concerned with not losing.

**Group polarisation explanation**

Group polarisation refers to the strengthening of individuals’ dominant behavioural inclination or attitude following group discussion (Lamm & Myers, 1978). Brown (2000) suggested that in verbal discussion tasks that are novel, and in which persons are relatively unfamiliar with the other group members, the most plausible explanation for group polarisation is the exchange of persuasive arguments (Burnstein & Vinokur, 1977). According to this perspective, on any issue under consideration by a group there will be a preponderance of arguments in one direction (e.g., selecting the competitive PDG choice). During group discussion, group members are exposed to a larger sample of these arguments than they initially had access to. Burnstein and Vinokur proposed that group members then process this additional information in a rational way and so arrive at an opinion that is shifted further in the direction supported by the preponderance of persuasive arguments.

Most empirical evidence for the discontinuity effect is not amenable to a group polarisation explanation for the simple reason that interactions
between individuals are typically highly cooperative. Individuals’ initial behavioural inclination, then, appears to be cooperative rather than competitive. Meier and Hinsz (2004), however, proposed that group polarisation may account for their finding that intergroup interactions were more aggressive than were individual interactions. In their study, participants were under the impression that they would allocate hot sauce for others to consume and that these others would allocate hot sauce for the participants to consume. Participants decided how much hot sauce to allocate either individually or as part of a group. Furthermore, the recipient of participants’ allocations was either an individual or a group. Before deciding on how much hot sauce to allocate, participants were shown the amount of hot sauce ostensibly allocated to them. In fact, this amount was controlled by the experimenter and equalled 48 grams per participant. This was intended as a provocation. Participants then had the opportunity to retaliate by allocating hot sauce to the supposed other individual or group.

Results indicated that participants in intergroup interactions allocated significantly more hot sauce than did those in interindividual interactions. This was due to the addition of marginal tendencies for participants to allocate more hot sauce when they acted as a group than when they acted individually and to allocate more hot sauce to groups than to individuals. Although the latter finding cannot be explained by group polarisation, the former can. In support of a group polarisation explanation of the tendency for groups to allocate more hot sauce than individuals, Meier and Hinsz (2004) pointed to the finding that, on average, individuals allocated 17 grams more hot sauce than they received. Thus, individuals may have had an initial inclination to retaliate harshly, and this initial inclination may have been strengthened following group discussion.

What makes a group polarisation explanation more plausible in this context than in other studies of the discontinuity effect is the prior provocation participants received. Being on the receiving end of an apparently aggressive act may have rendered accessible to individuals aggressive thoughts and arguments, which were exchanged and amplified during group discussion. Whether such a prior provocation would have a similar effect within a PDG context is an interesting question for future research. However, we should emphasise that most discontinuity research has not investigated prior provocation, and thus the existing evidence is not obviously amenable to a group-polarisation account.

Prior research (Pinter et al. 2007; Wildschut, Insko, & Pinter, 2007) has found that within-group discussion is not necessary to produce a discontinuity effect. However, such evidence does not mean that within-group discussion might not enhance group competitiveness. The fact that separated group members make more competitive choices when they anticipate within-group discussion (Wildschut et al., 2002, Experiment 3)
certainly suggests that actual discussion might have the same effect. Although such a possibility has not been investigated, it is reasonable to suppose that within-group discussion should increase the salience of the ingroup-favouring norm, increase the salience of distrust of the outgroup, and allow for the operation of social support. This is another interesting direction for future research.

Reciprocity hypothesis

The reciprocity hypothesis (Rabbie, 1998) has two key postulates. First, by engaging in within-group discussions, groups will gain more rational insight into the structure of the PDG. Second, because of this superior comprehension of the game, groups will be more likely to reciprocate the cooperative or competitive behaviour of the other player in an attempt to maximise long-term outcomes. There is more than a passing resemblance between the reciprocity hypothesis and Bornstein et al.’s (2004) notion that groups are more rational players than are individuals. Both Rabbie and Bornstein et al. proposed that within-group discussion enables group members to develop superior comprehension of experimental games. However, there is also a key distinction between the two approaches. Whereas Bornstein et al. proposed that such superior comprehension results in groups being more likely to follow the logic of backward induction, Rabbie proposed that it results in groups being more likely to adjust their behaviour based on “their expectations whether the other party is likely to cooperate or compete with them.” (1998, p. 487). If, according to Rabbie, groups expect that the other player will cooperate, so will they. If, on the other hand, groups expect that the other player will compete, they will match this competition. Following this reciprocity hypothesis, interactions with a cooperative opponent provide a suitable context for a critical comparison with the fear and greed perspective (Rabbie, 1998, p. 488):

Thus, in their view, groups—driven by short-term self-interest or greed—are less likely than individuals to reciprocate the expected cooperative behavior of the outgroup. This hypothesis goes against our reciprocity hypothesis which assumes that groups are more likely than individuals to match the competitive or cooperative behavior of the other party.

The preponderance of the available evidence is inconsistent with the reciprocity hypothesis. In addition to the aforementioned finding that within-group discussion is not necessary to produce a discontinuity effect (Pinter et al., 2007; Wildschut et al., 2007), the most relevant evidence comes from studies with the PDG-Alt matrix. Recall that, on the PDG-Alt matrix, the competitive choice maximises outcomes only when the other player is expected to cooperate. Studies with this matrix have found consistently that
groups selected the competitive choice more frequently than individuals, even when the game involved multiple trials (Insko et al., 1990). These findings indicate that groups will exploit a cooperative opponent more readily than will individuals.

None of this is meant to dispute the findings of those studies (Lodewijks & Rabbie, 1992; Rabbie & Lodewijkx, 1991), cited by Rabbie (1998) in support of the reciprocity hypothesis, which found no significant discontinuity effect when individuals and groups were pitted against a cooperative programmed opponent. As revealed by the Wildschut et al. (2003) meta-analysis, however, these null findings are attributable, not to the cooperative opponent, but to a combination of other circumstances, including the absence in these studies of communication between players, the use of a PDG matrix with a relatively low negative index of correspondence, and the fact that group members made individual rather than group decisions (for a full discussion, see Wildschut et al., 2003, p. 716).

Cautious reciprocation model

The cautious reciprocation model (CRM; Lodewijkx, Rabbie, & Visser, 2006) is a successor to the reciprocity hypothesis. Following Rabbie (1998), Lodewijkx et al. proposed that “through intragroup discussions, the group members may reach a greater insight into the intricacies of the PDG reward structure” (2006, pp. 196–197). This superior comprehension will, in turn, lead groups (as compared to individuals) to compete only when the other player responds or is expected to respond competitively, but to “follow a more responsive, but cautious, cooperative strategy, provided that the other party responds, or is trusted to respond, cooperatively” (p. 197). Groups are thought to be cautious so as to avoid the potential regret associated with eliciting competition from the other player and thereby spoiling the opportunity for mutual cooperation. Although the CRM resembles Rabbie’s (1998) reciprocity hypothesis in key areas, there is also an important difference. Whereas Rabbie presented his reciprocity hypothesis as an alternative to the fear and greed perspective, Lodewijkx et al. (2006) took a more conciliatory approach. Their CRM is a broad theoretical framework that aspires to encompass the fear and greed perspective. That is, rather than challenging the fear and greed perspective, Lodewijkx et al. sought to delimit its domain of applicability.

Recall that a meta-analysis (Wildschut et al., 2003) provided general support for the fear and greed perspective by confirming a number of theoretically meaningful associations between moderator variables and the magnitude of the discontinuity effect. In an effort to garner support for their CRM, Lodewijkx et al. attempted to qualify the conclusions of this meta-analysis based on the findings of six studies conducted under their auspices.
They concluded that “...the moderating variables, summarized by Wildschut et al. (2003), do indeed foster interindividual–intergroup discontinuity, but only under the provisions of unpredictability of future cooperation and of non-contingency in the mutual decisions the parties can make in the PDG” (2006, p. 224). In other words, the fear and greed perspective offers a valid account of the discontinuity effect, but only under conditions specified by the CRM. This conclusion would seem to require that the studies covered by Lodewijks et al.’s review (or at least one of these) manipulated the presence versus absence of “unpredictability of future cooperation” or of “non-contingency in the mutual decisions parties can make in the PDG”. Unfortunately, none of them did. In the absence of such vital empirical support, the CRM remains unconvincing.

Consider, for instance, the role of communication between players. According to the fear and greed perspective, the discontinuity effect will be larger when communication between players is present rather than absent—a prediction that was confirmed by the Wildschut et al. (2003) meta-analysis. Yet, referring to one of the studies covered by their review, Lodewijks et al. (2006, p. 215) wrote: “This experiment (Lodewijks, 2001) qualifies the role of the presence of free interparty communication sessions for inducing the discontinuity effect, as proposed by Wildschut et al. (2003).” The experiment in question, which was included in the meta-analysis, was a replication of an earlier study by Insko et al. (1993) and crossed a manipulation of interindividual versus intergroup interaction with a manipulation of the presence versus absence of communication between players. As in the Insko et al. study, results revealed less competition when communication was present rather than absent. However, unlike the Insko et al. study, groups did not compete more than did individuals. Furthermore, the difference between individuals and groups was not qualified by the communication manipulation. It was this latter null finding that Lodewijks et al. (2006) interpreted as “qualifying” the moderating role of communication. The obvious problem with this interpretation is that a failure to replicate an effect does not constitute a qualification of said effect. We do not mean to deny that failed replications can sometimes be informative but, if social psychology is to be cumulative, null findings should be interpreted with some caution. When disagreements arise, the

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5There are two reasons why the fear and greed perspective makes this prediction. First, because there is greater distrust in intergroup than in interindividual interactions, the communication of cooperative intent will be less credible for groups than for individuals. Second, even when communication of cooperative intent is perceived as credible, groups are more likely than individuals to exploit a cooperative opponent, and this too should contribute to the greater competitiveness, or lesser cooperativeness, in intergroup than interindividual interactions. This is not meant to say that groups do not benefit from “talking about things”, just that they benefit less than individuals.
constructive solution is to examine the balance of all available evidence. This is why meta-analytic techniques can be so valuable.

There is still another problem for the CRM to contend with. By making a null hypothesis the cornerstone of their model, Lodewijkx et al. (2006) rendered it vulnerable to simple falsification. To be specific, a major tenet of the CRM is that interindividual and intergroup interactions will not differ when “the other party responds, or is trusted to respond, cooperatively” (Lodewijkx et al., 2006, p. 197). However, as discussed previously, research with the PDG-Alt matrix has found consistently that groups selected the competitive choice more frequently than individuals. Because competition on the PDG-Alt matrix maximises outcomes when the other player is expected to cooperate, this body of evidence is, to say the least, problematic for the CRM (Insko et al., 1990, 1993, 2005; Schopler et al., 1993, 1995).

SUMMARY

Although a concern with the tension between self-interest and the common good can be traced through centuries of intellectual history in western and nonwestern cultures (Poundstone, 1992), the problem was first made amenable to experimental research in the 1950s when Merrill Flood and Melvin Dresher of the RAND Corporation cast it in the shape of a 2 × 2 PDG matrix. Flood and Dresher had the specific goal of testing John Nash’s concept of an equilibrium point (see Colman, 1995, pp. 58–61; Nasar, 1998, pp. 115–122). A set of strategies is a Nash equilibrium if none of the players can increase their outcomes by unilaterally changing their strategy. For the PDG, the Nash equilibrium is the lower right-hand cell of the matrix. Assuming that each player follows their self-interest and expects the other player to follow theirs, both players should select the Y choice. Furthermore, such choices should be stable, or in equilibrium, because should either player deviate unilaterally from this choice, their outcomes will be reduced. To test Nash’s ideas, Flood and Dresher asked two colleagues to complete 100 trials of the PDG. Results showed that the Nash equilibrium, as defined by mutual Y choices, only occurred on 14 trials. Generally speaking, then, the players did not behave consistently with Nash’s theory. With the benefit of hindsight, we now know that things may have turned out differently had Flood and Dresher asked two groups of colleagues to play the game. To us, at least, this presents an intriguing “what if” of history.

But why are interactions between groups more competitive than interactions between individuals? As this review has revealed, there is no shortage of explanations for the discontinuity effect. Whereas some explanations have garnered strong empirical support, others rest on a weaker empirical foundation. We distinguished between two general perspectives, each comprising a number of explanations of the discontinuity
effect. The first perspective assumes that intergroup relations are characterised by greater fear and greed than are interindividual relations. This perspective comprises five explanations for the discontinuity effect (schema-based distrust, identifiability, social support, ingroup-favouring norm, altruistic rationalisation). Although the available evidence for the altruistic rationalisation explanation was less compelling than the evidence for the other four explanations, the fear and greed perspective was found to be more consistent with the empirical record than a group decision-making perspective. The four explanations comprising this second perspective (backward induction, group polarisation, reciprocity, CRM) share the assumption that group discussion facilitates rational comprehension of mixed-motive situations, and that such rational comprehension plays a role in producing the discontinuity effect. These resemblances notwithstanding, our review highlighted clear differences among these explanations regarding the precise mechanisms that are postulated to produce rational comprehension of mixed-motive games and how such comprehension will be manifested in choice behaviour.\(^6\)

We were guided in our evaluation of the group decision-making perspective by the belief that social psychology benefits from theoretical diversity. We therefore assumed that explanations comprising this perspective are viable unless there is positive evidence to the contrary. Having said this, we found the backward induction (Bornstein et al., 2004) and group polarisation (Meier & Hinsz, 2004) explanations to be more consistent with the empirical record than the reciprocity hypothesis (Rabbie, 1998) and CRM (Lodewijkx et al., 2006). Whereas the evidence submitted in support of the backward induction explanation is not immune to alternative interpretations (as few research findings are), there is no compelling reason

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\(^6\)Krueger (2007) recently proposed an explanation for the discontinuity effect in terms of differential projection (i.e., a pattern of strong social projection to members of the own group and relatively weak projection to members of other groups). This explanation also emphasises rational comprehension but does not assume a role for group discussion and is explicitly nonmotivational. Regrettably, Krueger confounded the question of whether intergroup relations are more competitive than interindividual relations (i.e., the discontinuity effect) with the question whether intergroup conflict promotes intragroup cooperation (Baron, 2001; Bornstein & Ben-Yossef, 1994). One approach to investigating the latter question has been to contrast the Intergroup Prisoner’s Dilemma (IPD) team game (Rapoport & Bornstein, 1987) with a structurally identical \(n\)-person PDG. Bornstein and Ben-Yossef recognised that by contrasting the IPD, which incorporates intergroup conflict, with a structurally equivalent \(n\)-person PDG, which does not incorporate intergroup conflict, one could examine whether the presence versus absence of an intergroup conflict influences intragroup cooperation. They found that intragroup cooperation was markedly higher in the IPD than in the \(n\)-person PDG. This basic finding and Krueger’s postulated explanation in terms of differential projection are interesting and important. Neither directly concerns us here, however, and we therefore leave the details to the interested reader.
to dismiss the possibility that backward induction can be a contributing factor to the discontinuity effect. We take a similar position with regard to the group polarisation explanation. Whereas most empirical evidence for the discontinuity effect is not amenable to a group polarisation explanation for the simple reason that interactions between individuals are typically highly cooperative, such evidence does not rule out the possibility that group polarisation might contribute to the discontinuity effect when, for instance, individuals and groups are exposed to a prior provocation, as they were in Meier and Hinsz’s (2004) experiment. Furthermore, whereas prior research (Pinter et al., 2007; Wildschut et al., 2007) has found that within-group discussion is not necessary to produce a discontinuity effect, such evidence does not mean that within-group discussion might not enhance group competitiveness. There is the interesting possibility that in an iterated game a unilateral competitive response of the other group, especially following repeated mutual cooperation, might service as a provocation that could then be magnified through within-group discussion.

Our relatively greater scepticism regarding the reciprocity hypothesis and the CRM can be traced to the fact that, unlike any of the other explanations, they make specific predictions as to when the discontinuity effect will not be observed. To be specific, Rabbie’s (1998) reciprocity hypothesis proposed that “groups are more likely than individuals to match the competitive or cooperative behavior of the other party” (Rabbie, 1998, p. 488). This implies that when the other player acts (or is expected to act) cooperatively, groups should be less, not more, competitive than individuals. We are not aware of any findings that are consistent with this prediction, but we are familiar with studies using the PDG-Alt matrix which indicated that the opposite of this prediction is true (Insko et al., 1990, 1993, 2005; Schopler et al., 1993, 1995). In a subtle departure from the reciprocity hypothesis, the CRM entails that, rather than being reversed, the discontinuity effect will be eliminated when the other player acts (or is expected to act) cooperatively. Yet this prediction too was found to be incompatible with the PDG-Alt evidence. Unlike for any of the other explanations, then, there is positive evidence against central tenets of the reciprocity hypothesis and CRM.

**Reduction of interindividual–intergroup discontinuity**

Research on interindividual–intergroup discontinuity has generally been guided by three interrelated questions. First, what are the mechanisms responsible for the discontinuity effect? Second, how robust or general is the discontinuity effect when examined under a variety of different circumstances? Third, how can the discontinuity effect be reduced by decreasing intergroup competitiveness? This review was concerned primarily with the first, mechanism question. Before closing, however, we would like to address
briefly an important issue to which we have thus far made only passing reference. This is the question of how the discontinuity effect can be reduced by decreasing intergroup competitiveness (Insko et al., 1998a, 2001, 2005; Pinter et al., 2007; Schopler et al., 2001; Wolf, Insko, Kirchner, & Wildschut, in press).

Two recent experiments by Wolf et al. (in press) highlighted both the pervasiveness of the discontinuity effect and the possibility of reducing it. The first experiment examined the discontinuity effect in the context of Rapoport’s (1967) “four archetypes of the 2 × 2 game” (p. 81): PDG, Chicken, Leader, and Battle of the Sexes (BOS). Whereas the PDG is characterised by noncorrespondence of players’ outcomes, the other matrices are all characterised by correspondence of players’ outcomes. Examples of Chicken, Leader, and BOS are presented in Figure 7. Results revealed that the discontinuity effect was significant only for the PDG and

![Figure 7](image-url)
Chicken matrices. With the BOS and Leader matrices, both individuals and groups showed high levels of cooperative turn taking (i.e., coordinated alternation between selecting the X and Y choice). Given that with Leader and BOS both groups and individuals could increase their outcomes to a greater extent by coordinated turn taking than by being competitive (Figure 7), these results are not unexpected, at least not when viewed from an interdependence-theory perspective (Kelley & Thibaut, 1978). The results acquire greater meaning, however, when viewed as contrary to a perspective of relativistic social comparison as advocated, for example, by Tajfel (1978) and Tajfel and Turner (1986). Of course, these researchers did not imply that absolute gains were unimportant, just that they were often less important than relative gains. However, Wolf et al.’s findings indicated that when outcomes can be maximised through coordinated turn taking, as in Leader and BOS, relative gains are not more important than absolute gains. Thus, it would seem that the relativistic perspective is not universally applicable and that there are situations in which groups interact harmoniously.

Findings from Gaertner et al.’s (1989) assessment of perceived categorisation provided important insights into the reduction of intergroup competitiveness in Leader and BOS (compared to PDG and Chicken). This assessment indicated that group members in the BOS and Leader conditions (compared to PDG and Chicken) were more likely to perceive the six participants in the session as one group. However, group members in the BOS and Leader conditions (compared to PDG and Chicken) were not significantly less likely to perceive the six participants in the session as two groups. These findings are consistent with Park and Judd’s (2005) observation that “there may be conditions under which it is possible to both see groups as distinct from one another, and yet not show heightened levels of intergroup bias” (pp. 123–124), and also with Gaertner and Dovidio’s (2000) common ingroup identity model, which approaches the reduction of intergroup bias not by reducing the perception of two groups, but by promoting the perception of one common group.

What about the possibility of following the common ingroup identity approach to reducing intergroup conflict in situations with noncorrespondent outcomes, like the PDG? Wolf et al.’s (in press) findings did not provide support for such an approach, and indeed prior evidence suggests that shared-category membership may create the perception that the other player is vulnerable to exploitation (Insko et al., 2005). However, Wolf et al. do raise the interesting possibility that the common ingroup identity approach might, in the context of noncorrespondent outcomes, be more successful if the categorisation were not just “mere” categorisation but categorisation that was personally important to the group members. Such common categorisation based on a meaningful category, they proposed, could facilitate the recognition of the long-term benefits of mutual cooperation.
Encouraging as the high levels of intergroup cooperation observed in the Leader and BOS conditions might be, other results from Wolf et al.’s (in press) first experiment are cause for concern. The experiment revealed a significant discontinuity effect in the context of Chicken, despite the fact that this matrix has a positive index of correspondence. The Chicken matrix resembles the PDG but, unlike the PDG, selection of the competitive choice by both players results in the lowest possible outcomes, and therefore both players should have a shared interest in coordinating their actions so as to avoid this disastrous scenario (Figure 7). However, results from Wolf et al.’s first experiment suggested that some groups were willing to risk the low outcomes associated with mutual competition in the Chicken matrix in order to enhance relative ingroup standing. Wolf et al. speculated that this might not have been the case if the outcomes associated with mutual competition had been even lower. Their second experiment therefore examined the discontinuity effect in two versions of the Chicken matrix in which the outcomes associated with mutual competition varied. Consistent with the doctrine of mutual assured destruction (MAD), the discontinuity effect was eliminated for the matrix in which mutual competition was associated with very low outcomes.

Gaertner et al.’s (1989) assessment of perceived categorisation again provided important supplementary evidence. Contrary to Wolf et al.’s (in press) initial experiment, which identified a possible mediating role for the tendency to perceive one group did not mediate the reduction in the discontinuity effect when mutual competition resulted in very low outcomes. This suggests that the possible mechanism for reducing intergroup competition is different in Chicken compared to in BOS and Leader. In the context of the Chicken matrix, mutual assured destruction may be necessary to deter intergroup competition. However, in the context of situations, like BOS and Leader, which allow outcomes to be maximised by coordinated turn taking, intergroup competition may be reduced via a common ingroup identity approach.

What about conflict reduction in situations with noncorrespondent outcomes, like the PDG? The strategy that has received the most attention has emphasised consideration of the long-term consequences of intergroup conflict (Insko et al., 1998a, 2001). The concept of long-term consequences bears an obvious similarity to MAD. Both approaches appeal to the enlightened self-interest of groups, but whereas the consideration of long-term consequences points to a way to increase ingroup outcomes, MAD points to a way to avoid a dramatic reduction of ingroup outcomes. However, the emphasis on long-term consequences has the important advantage of not flirting with disaster.
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Achieving a complete understanding of the discontinuity effect is an ongoing enterprise. When the second author and John Thibaut initially encountered the discontinuity effect, they recognised that the effect was quintessential social psychology and of obvious relevance to important social problems. They also felt that the explanation of such a simple effect was itself probably simple. As it has turned out, however, the explanation is anything but simple. We are sure that if John Thibaut were alive today he would be intrigued—and pleased.

REFERENCES


