Perceptions of conflict: parochial cooperation and outgroup spite revisited

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Abstract

Experimental team games provide valuable data to help understand behavior in intergroup conflict. Past research employing team games suggests that individual participation in conflict is driven mostly by parochial cooperation, rather than outgroup spite. We argue that motives in conflict depend on whether conflict is framed and perceived at the group or individual level. In a controlled laboratory experiment, we manipulate perception of the conflict level by varying the framing of the conflict, keeping the objective strategic aspects of conflict fixed. While parochial cooperation is the main motivation under an individual frame (replicating prior results), outgroup spite emerges as an important motivation when conflict is perceived at the group level. Furthermore, under an individual frame intragroup communication and chronic prosociality are related only to parochial cooperation, but are similarly related to both parochial cooperation and outgroup spite under a group frame. We conclude that perceptions of conflict are crucial for understanding the motivations that guide individual behavior in intergroup conflict. While experimental team games naturally focus on the strategic aspects of conflict, it is possible to extend the experimental paradigm to incorporate the perception of conflict. We discuss how these insights shed new light on past results, and how they may inform future work.

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1 Introduction

> *"Loyalty to the group, sacrifice for it, hatred and contempt for outsiders, brotherhood within, warlikeness without,—all grow together, common products of the same situation."*
>
> —Sumner (1906, p.12)

Intergroup conflict is a defining characteristic of human society (Blattman & Miguel, 2010; Cohen & Insko, 2008; De Dreu & Gross, 2019; Fiske, 2002; Halevy & Cohen, 2019; Halevy et al., 2015). It can reduce productivity in organizations, lead to prejudice and discrimination towards ethnic or religious groups, and at its most destructive forms result in extreme violence and loss of lives (Fisher, 2006; Levitt & Venkatesh, 2000; McDonald et al., 2012). Intergroup conflict can also have functional aspects, encouraging social reform, accelerating innovation, and enabling redistribution of resources. Indeed, in relatively benign settings policy makers and managers sometimes institutionally instill intergroup competition, for example to fuel innovation in R&D (Birkinshaw, 2001; Luo et al., 2006; Song et al., 2016; Strese et al., 2016). A better understanding of intergroup conflict can assist in both avoiding its negative consequence and maximizing potential positive effects. Here we experimentally investigate the motivation of individual group members who choose to invest private resources in intergroup conflict, even when it is in their best interest, from an individually selfish perspective, to refrain from doing so.

Intergroup conflict is made possible by *parochial altruists*, individual members of conflicting groups who are willing to invest resources—time, money, health—in order to improve their group's standing vis-à-vis other groups. Such parochial altruism can manifest in behaviors that benefit the ingroup ("*parochial cooperation*"), in behaviors that punish the outgroup ("*outgroup spite*"), or in a combination of both (Allport, 1954; Brewer, 1999; De Dreu et al., 2014).[1] Sparked by the work of Halevy et al. (2008), a number of laboratory studies found that parochial cooperation, and not outgroup spite, seems to be the major factor for cooperation in the context of intergroup conflict (Aaldering et al., 2018; Boulu-Reshef & Schulhofer-Wohl, 2019; Buttelmann & Böhm, 2014; Dang et al., 2020; De Dreu, 2010; De Dreu et al., 2010; Halevy et al., 2012; Israel et al., 2012; Thielmann & Böhm, 2016; Thomae et al., 2016; Yamagishi & Mifune, 2016).

Understanding the behavioral patterns that drive individual participation in intergroup conflict is crucial for attempting to influence the tendency to participate in conflict. Such an understanding can guide actions aimed at curtailing participation

[1] Alternative terms used in the literature include "ingroup love" or "ingroup favoritism" for parochial cooperation, and "outgroup hate", "outgroup hostility" or "parochial competition" for outgroup spite.

in conflict and containing its negative consequences, for example in the context of ethnic clashes or destructive competition between organizational units. Likewise, understanding the antecedents of participation in intergroup conflict can guide policies aimed at mobilizing people to take action to support political causes, or to actively engage in healthy forms of intergroup conflict such as R&D competitions or sport contests.

A better understanding of participation in intergroup conflict is of particular interest given that intergroup conflict often constitutes a multi-level social dilemma, in which the individually rational choice is to avoid contribution, regardless of the choices of others (Bornstein, 2003; Choi & Bowles, 2007; Olson, 1971). Dawes (1980) gives the following example: "Soldiers who fight in large battle can reasonably conclude that no matter what their comrades do they 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). Since contribution is costly, and the benefits to the group are often public goods that benefit all group members (contributors and non-contributors alike), not contributing is the dominant strategy; regardless of the actions of others, be them ingroup or outgroup members, each individual is always better off by not contributing. For the group as a whole, however, it is best if all group members contribute as much as possible, irrespective of the contributions in the outgroup. At the superordinate level, that of all groups together, it is again best if no one contributes and peace is maintained.

1.1 The conflict-cohesion hypothesis

According to the reasoning above, individuals have little reason to contribute to their group in intergroup conflict. However, one of the most recurrent hypotheses in the intergroup conflict literature is the "conflict-cohesion hypothesis", which states that intergroup conflict increases intragroup cohesion and cooperation (Campbell, 1965; Coser, 1956; Hugh-Jones & Zultan, 2013; Romano et al., 2017; Simmel, 1955; Tajfel, 1982; Theelen & Böhm, 2020). The hypothesis goes back at least to the work of William Graham Sumner, who wrote, more than a century ago, that "The exigencies of war with outsiders are what make peace inside" (Sumner, 1906, p. 12), and has generated a multitude of studies across the social sciences in general support of it (see Benard and Doan, 2011; Stein, 1976; Van Bunderen et al., 2018, appendix A; Wildschut et al., 2003, for reviews).

Among the most robust experimental tests of the conflict-cohesion hypothesis are those based on experimental team games, in particular the Intergroup Prisoner's Dilemma (IPD; see Bornstein, 2003, for a taxonomy and review of team games). The formulation of intergroup conflict as an IPD game brings to the fore the intragroup collective

action problem that is embedded in intergroup conflict, and makes it possible to compare behavior in intergroup and single group settings whilst keeping the intragroup structure constant. The IPD game extends the standard N-person *Prisoner's Dilemma* (PD) game, in which group members can incur a personal cost in order to help their fellow group peers. While the individual incentive is to withhold contributions, all group members can benefit if all contribute. The IPD game embeds the PD in intergroup conflict by pitting two groups against each other, such that all benefits accrued from contributions in one group are transferred from the other group, and vice versa (see Figure 1 and Section 3). Since the intragroup collective action problem is identical in the PD and in the IPD, a comparison of contribution rates in the two games is a clean test of the conflict-cohesion hypothesis. Bornstein and Ben-Yossef (1994) found substantially more contribution in the IPD (54.7%) than in the corresponding PD (27.2%), providing strong support for the conflict-cohesion hypothesis.

As mentioned above, the strength of the IPD as an experimental paradigm is that the intragroup conflict embedded in it is identical to that in a single group PD, allowing a degree of control which is impossible to achieve using field studies or observations of real world conflicts. While the elevated contributions in the IPD relative to a single group PD are in clear support of the conflict-cohesion hypothesis, these results leave open the important question of individuals' motivation to contribute to intergroup conflict. Since any contribution that helps the ingroup in the IPD necessarily harms the outgroup, parochial cooperation and outgroup spite are inherently intertwined. Non-contribution is also motivationally ambiguous, as it can be a result of either selfishness, or a reluctance to harm others.

1.2 Parochial cooperation vs. outgroup spite

Halevy et al. (2008) sought to disentangle the ambiguity between parochial cooperation and outgroup spite in the IPD by providing participants an additional option. In the *Intergroup Prisoner's Dilemma Maximizing Difference* (IPD-MD) game, group members face a choice between non-contribution, contribution to a 'between-group' pool which helps the ingroup and simultaneously harms the outgroup (as do contributions in the IPD), or to a 'within-group' pool, which helps the ingroup without affecting the outgroup (see Figure 1 and Section 3). Since contributions to both pools have an identical positive effect on the ingroup, but only contributions to the between-group pool harm the outgroup, the latter are attributed to outgroup spite, while contributions to the within-group pool are attributed to parochial cooperation. Non-contribution cannot be attributed to a reluctance to harm others, and—unlike in the IPD—is a clear signal of a selfish motivation.

Comparing behavior in the IPD and the IPD-MD, Halevy et al. (2008) found a clear

preference for parochial cooperation. While in the IPD contribution to the (motivationally ambiguous) between-group pool amounted to about 30% of all endowments, in the IPD-MD, where the between-group pool clearly indicates outgroup spite, the figure dropped to only 6%, and contributions to the benevolent within-group pool amounted to 47%.

In addition to observing behavior in the IPD and the IPD-MD, Halevy et al. (2008) tested the effect of non-binding pre-play communication between group members. In both single and inter-group setting, such communication between group members has often been found to increase intragroup cooperation (see Balliet, 2010; van Dijk & De Dreu, 2021, for reviews). In the IPD-MD, communication further emphasized the preference for parochial cooperation, with a 40% increase in contributions to the within-group pool, and a slight drop in contributions to the between-group pool. The effect of communication in the IPD-MD stands in stark contrast to the IPD, where communication escalated conflict, leading the majority of participants to invest their full endowment in the between-group pool. Halevy et al. (2008) interpret the general preference for parochial cooperation in the IPD-MD, and especially the positive effect of communication on this preference, to suggest that "intergroup conflicts can be resolved by channeling group members' altruism toward internal group causes" (p. 410).

The primacy of parochial cooperation over outgroup spite was supported by a number of studies employing the IPD-MD and related paradigms (Balliet et al., 2014). The preference for parochial cooperation in the IPD-MD endured even after an artificially induced "history of conflict", during which groups engaged in a repeated IPD and substantially harmed each other (Halevy et al., 2012); parochial cooperation was found to develop before outgroup spite in human ontogeny (Buttelmann & Böhm, 2014); and, in contrast to outgroup spite, parochial cooperation is correlated with chronic pro-sociality (Aaldering et al., 2018; De Dreu, 2010; Thielmann & Böhm, 2016) and increases when pro-sociality is manipulated using oxytocin administration (De Dreu et al., 2010; Israel et al., 2012).

1.3 The framing and perception of conflict

In the previous paragraphs, we presented evidence that (1) supports the conflict-cohesion hypothesis, and (2) positions parochial cooperation as the main factor driving participation in conflict. Weisel and Zultan (2016) re-examined the conflict-cohesion hypothesis by framing the PD, IPD, and an asymmetric version of the IPD (where one group can harm the other, but not vice-versa), at either the individual or the group level.

In the individual frame, payoffs were explained as a direct function of individual

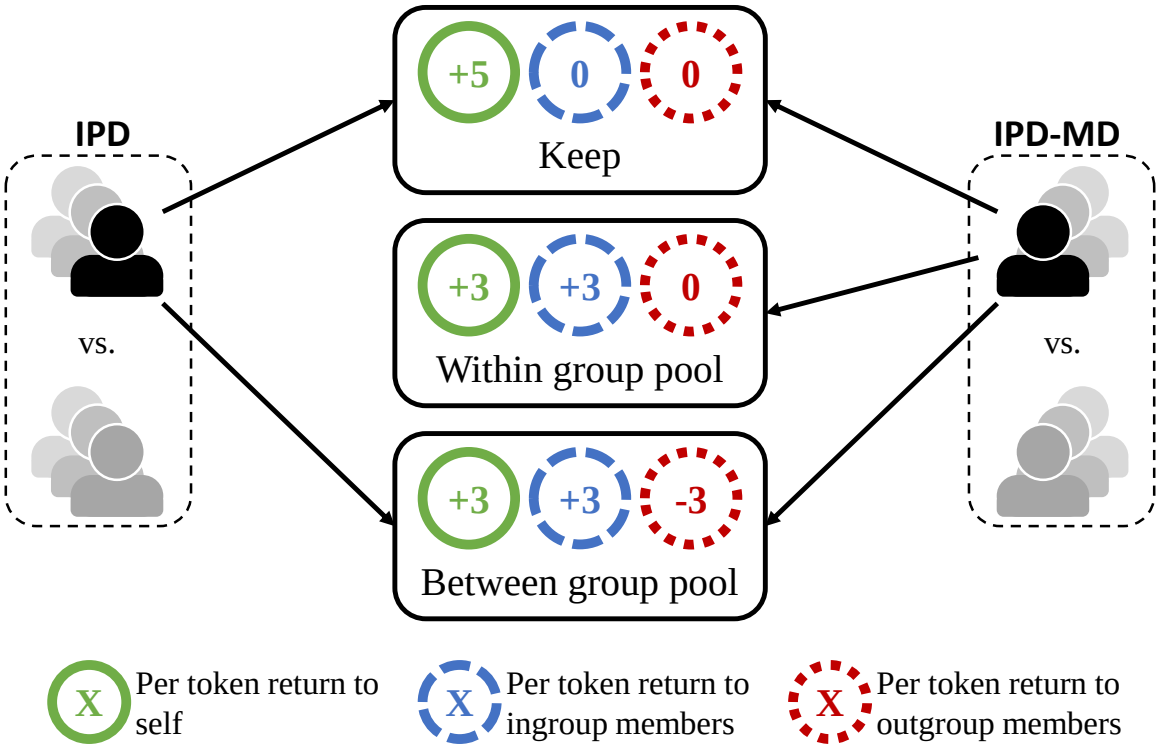

Figure 1: Illustration of the IPD and the IPD-MD (using the current paramaterization). In both games two 3-person groups are pitted against each other. Each of the six players has an endowment of 10 tokens. The black arrows illustrate the actions available to each of the six players. In the IPD each token can be either kept or invested in a between-group pool. In the IPD-MD it is additionally possible to invest in a within-group pool. The circled numbers correspond to the effect each choice has on the payoff of the decision maker, each of her two group members, and each of the three members of the other group. Note that in the single group PD, which we do not test in the current work, group members can either keep their tokens or invest them in the within-group pool.

choices (IF in Section 3). In the group frame payoffs were presented as a function of aggregate choices by group members and comparisons between the groups (GF in Section 3). Importantly, the objective underlying strategic situation was identical in the two frames.

When conflict was framed at the individual level, intergroup conflict led to *less* intragroup cooperation, relative to a comparable single group setting (i.e., less contribution in IPD than in PD), the exact opposite of what is predicted by a general formulation of the conflict-cohesion hypothesis (and of what has been found by, e.g., Bornstein and Ben-Yossef, 1994). Thus, the way conflict is framed has the potential to dramatically alter behavior.

The IPD is symmetric; both groups can inflict harm on, and also be harmed by, the other group. The asymmetric version of the IPD in Weisel and Zultan (2016)

disentangles these two aspects. One group, the 'attacker', can harm the other group, but is not threatened to be harmed by it. The other group, the 'victim', is under threat to be harmed by the 'attacker' group, but cannot impose harm on it. Comparing the individual and group frames, the behavioral pattern of the victim groups was very close to that of groups in the IPD, while the pattern in the attacker groups was not, suggesting that it is the (objective) threat of being attacked by the other group, rather than the opportunity to attack it, that drives the difference between the individual and the group frames in the IPD.

The results observed by Weisel and Zultan (2016) suggest that high levels of within-group cooperation in intergroup conflict require that (1) the group is under threat (i.e., is subject to harm) from another group, and that (2) this threat is construed at the group, rather than at the individual, level. Weisel and Zultan (2016) conclude that participation in conflict appears to be governed by the *Perceived Target of Threat Principle*, which states that a threat from an outgroup motivates individuals to do what is good for the perceived target: If the conflict is perceived to endanger the group as a whole, individuals are mobilized to contribute to the group effort; However, if the same (objective) threat is construed to threaten the individuals in the group, individuals prefer to conserve resources by withholding their contributions to the conflict.

Interestingly, the distinction between threat at the individual or group levels is already present in some of the earliest formulations of the conflict-cohesion hypothesis, but is often overlooked (Coser, 1956; Stein, 1976; Williams, 1947). As early as 1947, Williams claimed that the conflict-cohesion hypothesis "holds true only under very specific conditions … there must be recognition of an outside threat which is thought to menace the group as a whole, not just some part of it" (Williams, 1947, p.58).

With the exception of Weisel and Zultan (2016), the perceived target of threat, or framing in general, was not intentionally manipulated by previous work using the IPD. Still, since the strategic situation has to be explained to participants one way or another, researchers may unintentionally lead participants to a particular perception of the target of threat. In Bornstein and Ben-Yossef (1994; also in, e.g, Baron, 2001; Probst et al., 1999) payoffs in the IPD were described to participants as a function of the difference between the number of ingroup and outgroup contributors, bringing group considerations to the fore. The higher contributions in the IPD they found are thus in line with the perceived target of threat principle.

This new understanding reopens the issue of parochial cooperation and outgroup spite. In previous experimental investigations that used the IPD-MD to examine parochial cooperation and outgroup spite conflict was presented such as to make the individual threat salient (i.e., by describing payoffs as a function of individual choices; e.g., Halevy et al., 2008; Halevy et al., 2012; Weisel, 2015; Weisel & Böhm, 2015). The general conclusion from this work is that parochial cooperation is the primary factor,

and that prosocial tendencies, whether chronic (Aaldering et al., 2018; De Dreu, 2010; Thielmann & Böhm, 2016) or acute (De Dreu et al., 2010; Halevy et al., 2008; Israel et al., 2012), are related to increased parochial cooperation, but not to outgroup spite. Whether outgroup spite comes into play in intergroup conflict that is perceived at the group level remains an open question. We address this question by framing conflict at either the individual or group level, and test how these perceptions, as well as intragroup communication and social value orientation, affect the balance of parochial cooperation and outgroup spite in the IPD-MD. The *Individual Frame* (IF) conditions replicate the designs of Halevy et al. (2008), which examined the IPD and IPD-MD games with and without intragroup communication, and De Dreu (2010), which examined the effect of social value orientation in the IPD-MD game. The *Group Frame* (GF) conditions extend these designs by presenting the conflict at the group, rather than the individual, level.

2 Hypotheses

Hypotheses 1–4 aim to verify that we replicate previous results. Hypotheses 5–7 are the heart of the current investigation. Among these, the main hypothesis is Hypothesis 5, which refers directly to the pervasiveness of outgroup spite when conflict is framed at the group, rather than at the individual, level.

2.1 Replication of previous results

Our first set of hypotheses aims to replicate prior results. These include findings of noticeable differences between parochial cooperation and outgroup spite in the IPD-MD game when conflict is framed at the individual level, and the role of framing conflict at the individual or group level in the IPD. Thus, our first four hypotheses aim to confirm that we replicate the results of Halevy et al. (2008), De Dreu (2010), and Weisel and Zultan (2016).

Hypothesis 1 (IPD-MD, individual frame)**.** When conflict is framed at the individual level, parochial cooperation is more common than outgroup spite (replication of Halevy et al., 2008).

Hypothesis 2 (Intragroup communication, individual frame)**.** When conflict is framed at the individual level, intragroup communication increases parochial cooperation, but not outgroup spite. Consequently, efficiency (mean payoff as a percentage of the highest possible payoff) in the IPD-MD is higher with communication than without communication (replication of Halevy et al., 2008).

Hypothesis 3 (Social value orientation, individual frame)**.** When conflict is framed at the individual level, chronic pro-social orientations are related to parochial cooperation, but not to outgroup spite (replication of De Dreu, 2010).

Hypothesis 4 (IPD, framing)**.** Participation in conflict is higher when conflict is framed at the group, rather than the individual, level (replication of Weisel and Zultan, 2016).

2.2 New hypotheses

The next group of hypotheses refer to the application of the framing manipulation from Weisel and Zultan (2016) to Hypotheses 1–3. Generally, we predict that the differences between parochial cooperation and outgroup spite which were found by previous research (and hopefully replicated by the current work) when conflict was framed and perceived at the individual level, will be reduced or eliminated when framed at the group level.

Recall that parochial cooperation has been repeatedly found—in IPD-MD experiments framed at the individual level—to be the main factor driving individual participation in conflict. In the IPD, Weisel and Zultan (2016) observed that framing conflict at the group, rather than the individual, level, leads to considerably more contribution to conflict (about twice as much). Plausibly, at least part of this observed difference between group and individual frames is due to an increased desire to harm the outgroup (i.e., to outgroup spite). Thus, our main hypothesis is that outgroup spite, which previous work found to be secondary to parochial cooperation when conflict was framed at the individual level (as per Hypothesis 1), will emerge as a more prominent factor when conflict is framed at the group level.

Hypothesis 5 (IPD-MD, framing)**.** outgroup spite is higher when conflict is framed at the group, rather than the individual, level.

The final pair of hypotheses refer to the effects of intragroup communication and social value orientation on parochial cooperation and outgroup spite in intergroup conflict that is framed at the group level. Both of these factors are known to predict cooperation in single group social dilemmas. Halevy et al. (2008) found that encouraging cooperation via intragroup communication increased parochial cooperation, but not outgroup spite (see Hypothesis 2). In a similar vein, De Dreu (2010) found that social value orientation is positively correlated with parochial cooperation, but not with outgroup spite (see Hypothesis 3).

These results, obtained when conflict was framed at the individual level, show that increased cooperative tendencies, either due to communication or to pro-social tendencies, result in more parochial cooperation, but not more outgroup spite, when

parochial cooperation is the dominant factor to begin with (as it has been repeatedly shown to be when conflict is framed at the individual level). If hypothesis 5 bares out, and outgroup spite indeed emerges as a prominent factor under a group frame—i.e., parochial cooperation is no longer the dominant factor—then generally increased cooperation may increase both parochial cooperation and outgroup spite. Thus, the differences in the effects of communication and SVO on parochial cooperation and outgroup spite are predicted to decline, or disappear, when conflict is framed at the group level.

Hypothesis 6 (Intragroup communication, group frame)**.** When conflict is framed at the group level, the differential effect of communication on parochial cooperation and outgroup spite (as per Hypothesis 2) will be attenuated. Consequently, efficiency in the IPD-MD may not be higher (and may be lower) with communication than without communication.

Hypothesis 7 (Social value orientation, group frame)**.** When conflict is framed at the group level, the differential relation of chronic pro social orientations to parochial cooperation and outgroup spite (as per Hypothesis 3) will be attenuated.

3 The experiment: framing intergroup conflict

We designed a laboratory experiment to test these hypotheses. The experimental design crosses the designs of Halevy et al. (2008) and De Dreu (2010), with the framing manipulation introduced by Weisel and Zultan (2016).

Different groups played either the IPD or IPD-MD game, which were presented using either a Group Frame (*GF*; as in Bornstein and Ben-Yossef, 1994) or an Individual Frame (*IF*; as in Halevy et al., 2008). The framing manipulation changed the way the strategic situation was presented and explained to participants. In each game and presentation condition, half of the groups could discuss the game via anonymous electronic chat before making decisions. The full design was thus a $2 \times 2 \times 2$ between-subjects design, with the game (IPD vs. IPD-MD), the frame (GF vs. IF), and communication (without vs. with), as independent variables.

All treatments involved an interaction between two three-player groups. Each of the six group members received 10 tokens, and could freely decide how many tokens to keep, and how many to invest in either one (in the IPD) or two (in the IPD-MD) available pools. The pools were referred to as *Pool X* and *Pool Y* (within- and between-group, respectively). The instruction text that explains the effect of investing in each pool is reproduced in Table 1 (see Appendix B for the full instructions).

The instructions in IF and GF differed in the way they explained how choices affect payoffs. The IPD IF instructions explained that each token kept paid 5 ECU (Experi-

mental Currency Unit) to the player, and that each token invested in a between-groups pool paid 3 ECU to each ingroup member and deducted 3 ECU from the payoff of each outgroup member's payoff. The IPD-MD instructions additionally explained that each token invested in a within-group pool ('pool X') paid 3 ECU to each ingroup member (without mentioning outgroup members).

The IPD GF instructions explained the consequences of investment pools X and Y differently. For the between-group pool, the GF instructions stated that (1) the total number of tokens invested by the group will be compared to the total number of tokens invested in the between-group pool by the other group; (2) each member of the group that invested more tokens will receive 3 ECU for each token invested more than the other group; (3) and each member of the group that invested fewer tokens will lose 3 ECU for each token invested less than the other group. The IPD-MD instructions additionally explained that the number of tokens invested in the within-group pool will be counted, and that each member of the group will receive 3 ECU for each token in this pool (without mentioning outgroup members).

Table 1: Individual frame and group frame instructions.

	Individual frame	**Group frame**
Keep	For each token you keep for yourself, you will receive 5 ECU.	For each token you keep for yourself, you will receive 5 ECU.
Within group	For each token you invest in Pool X, each person in your group, including yourself, will receive 3 ECU.	The payoffs from Pool X are determined by the total number of tokens invested by your group as follows: The number of tokens invested by all members of your group in Pool X will be counted. You and each member of your group will receive 3 ECU for each token in this pool.
Between group	For each token you invest in Pool Y, each person in your group, including yourself, will receive 3 ECU. In addition, each person in the other group will lose 3 ECU.	The payoffs from Pool Y are determined by the comparison of investments made by your group and by the other group as follows: The number of tokens invested by all members of your group in Pool Y will be compared to the number of tokens invested by all members of the other group in Pool Y. Each member of the group that invested more tokens in Pool Y will receive 3 ECU for each token they invested more than the other group in this pool. Each member of the group that invested fewer tokens in Pool Y will lose 3 ECU for each token they invested less than the other group in this pool.

Note that the two sets of instructions are equivalent in terms of the underlying strategic situation. The difference is just that the allocation of tokens is framed to

affect individuals in the IF instructions, and groups in the GF instructions. To avoid negative payoffs, each participant was allocated 90 ECU, which were added to the payoff from the IPD/IPD-MD. The instructions were followed by detailed examples, which used identical numbers in the different conditions. The full instructions are reproduced in Appendix B.

3.1 Method

Participants. We conducted a total of 16 sessions, two for each experimental condition. Participants were recruited using ORSEE (Greiner, 2015). Fifteen sessions included 30 participants each, and one session (IPD in group frame with communication) included 24 participants. In one of the 30-person sessions (IPD-MD in individual frame with communication), we had to exclude the data from one 3-person group.[2] Thus, four hundred and seventy one participants completed the experiment: 54 in IPD, group frame with communication; 57 in IPD-MD, individual frame with communication; and 60 in each of the remaining conditions.

Design and procedure. Participants were seated at isolated computer terminals, and were randomly allocated to 3-person groups. Participants read the instructions corresponding to the experimental condition they were in. The experimenters read out the instructions aloud and answered questions privately. All participants had to answer control questions to verify their understanding of the game before proceeding to making their decisions on screen. In the communication conditions, the three members of the group could communicate for five minutes, prior to making their decision, using anonymous chat. The communication was monitored by the experimenters to ensure that no identifying information is revealed (this was known to participants).

After completing the game phase, participants completed the SVO-slider task to measure social value orientation (Murphy et al., 2011). In this task, each participant was randomly paired with another participant in the session (irrespective of the group affiliation in the game phase), and made fifteen allocation decisions. Each decision involves choosing among nine different allocations of money to the two participants in the pair. For each pair, the computer randomly chooses one participant and one of that participant's decisions to determine the payoffs. The decisions generate a continuous measure of social value orientation as well as categorization to types (for more details, see Crosetto et al., 2019; Murphy et al., 2011).

[2]One participant in the group felt unwell and left just before the communication phase. To minimize the disturbance to the session, one of the experimenters filled in for the missing participant. This was made known to the other two members of her group, and their decisions were excluded from the analysis. This had no effect on the three participants that were matched with the ill participant's group, so their decisions were not excluded.

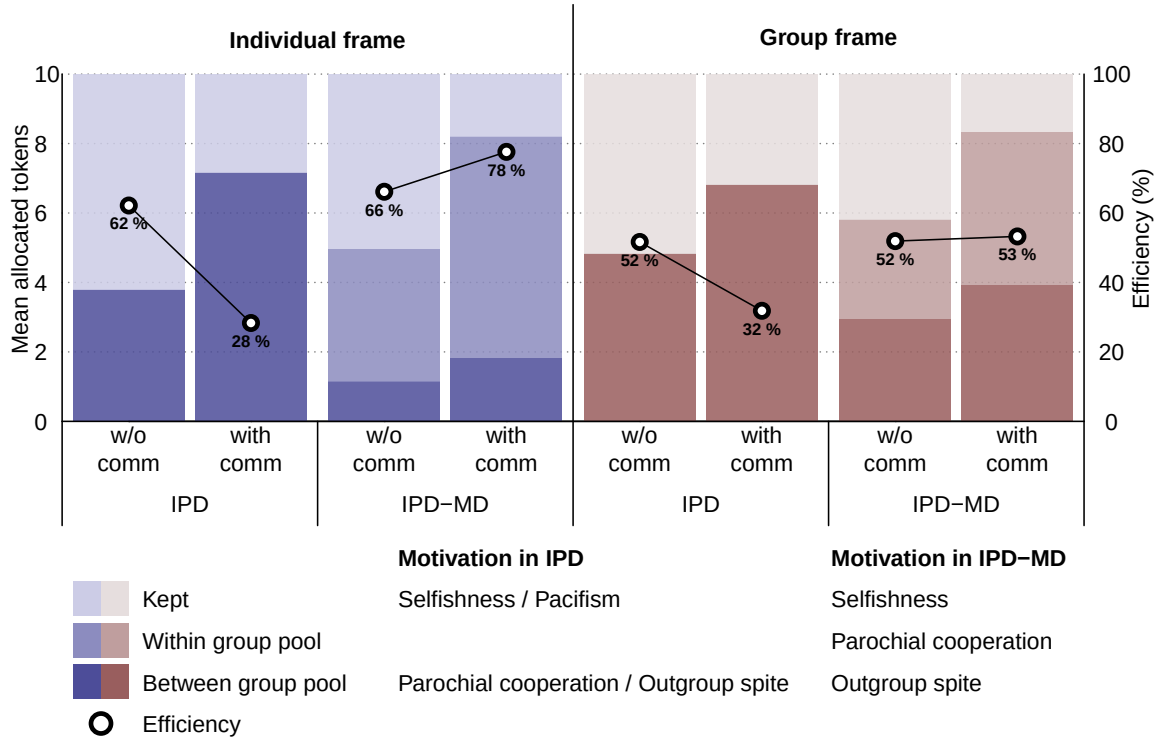

Figure 2: Contributions and efficiency. Contributions (colored bars, left vertical axis): tokens kept and invested in the within-group (parochial cooperation) and between-group (outgroup spite) pools by frame, game, and communication. In the IPD contributions to the between-group pool are motivationally ambiguous. In the IPD-MD contribution to the within-group pool is an indication of parochial cooperation, and contribution to the between-group pool is an indication of outgroup spite. Outgroup spite is more prominent in GF. Efficiency (black circles, right vertical axis): mean earnings from the game as a percentage of the maximum possible earnings. Communication increases efficiency in the IPD-MD in IF, but not in GF.

The experiment was programmed in z-Tree (Fischbacher, 2007). All earnings from the team game and the SVO-slider task were converted into money at a conversion rate of 20 ECU to 1€, and paid in addition to a 2.50€ showup fee.

4 Results

Figure 2 presents the mean investments in the three (two) pools of the IPD-MD (IPD) by the framing and communication conditions. Figure 3 plots individual contributions towards parochial cooperation and outgroup spite, as well as condition averages, in the IPD-MD.

In the following analyses, we report statistical tests based on OLS regressions with parochial cooperation, outgroup spite, and total contributions as dependent variables, and framing (individual vs. group), communication (without vs. with) and game (IPD vs. IPD-MD, except for regressions on parochial cooperation, which is not defined in

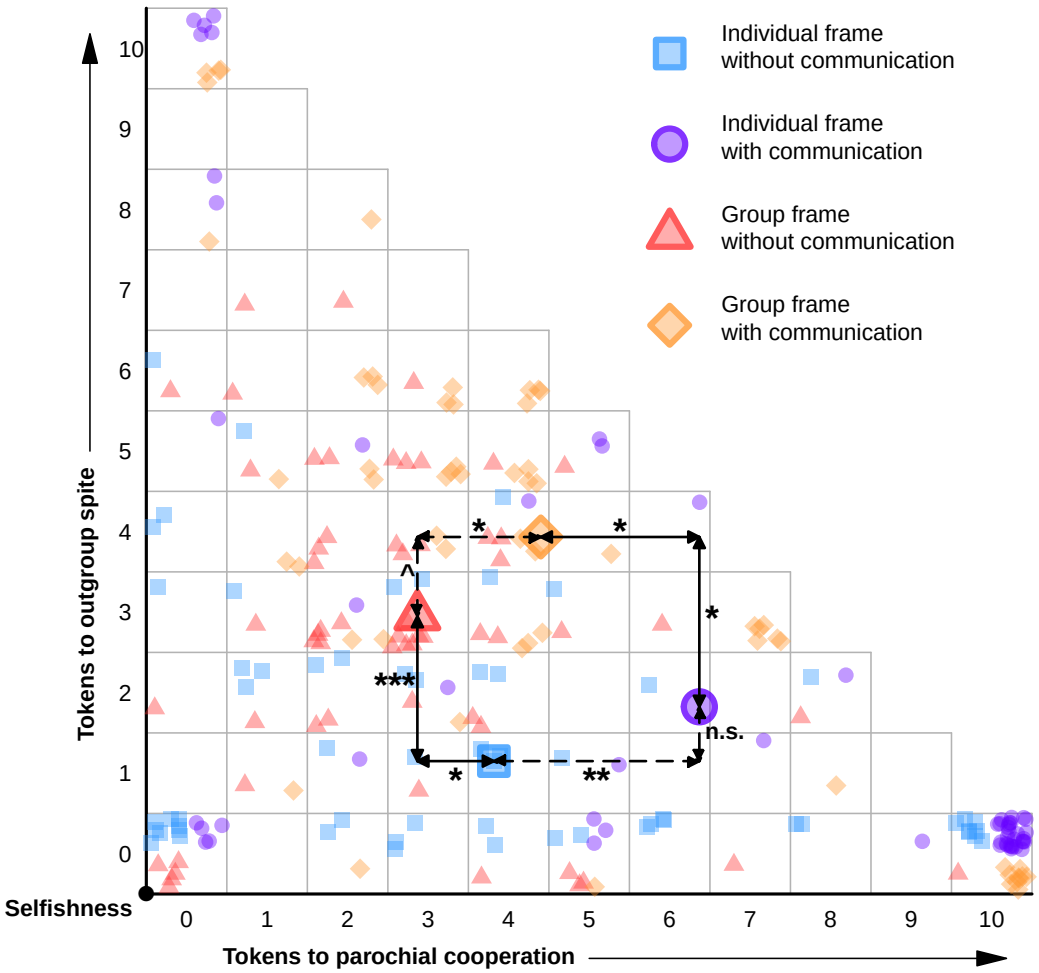

Figure 3: Individual choices in IPD-MD. Small symbols represent each individual's token allocation to parochial cooperation and outgroup spite. The position of the symbols is jittered to allow visibility of identical choices. Large symbols represent the mean values for each combination of frame and communication. Significance indicators refer to differences between the IF and GF conditions (solid segments) and between the without and with communication conditions (dashed segments). In GF there is more outgroup spite and less parochial cooperation than in IF. Communication increases parochial cooperation in both frames, and outgroup spite only (marginally) in GF. ($^{\wedge}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$).

the IPD) as independent variables. Comparisons between parochial cooperation and outgroup spite are based on SUR estimates (seemingly unrelated regression; Zellner, 1962). To account for within-group dependencies in the communication conditions, we cluster robust standard errors on groups (including, for the sake of comparison, groups in the no-communication treatments).

Regressions on efficiency (measured as the mean earnings from the game as a percentage of the maximum possible earnings) take the large (six-person) group as the unit

of analysis.[3] Finally, because social value orientation is an individual trait, the effects of SVO on contributions in the IPD-MD are estimated using a multivariate regression regressing parochial cooperation and outgroup spite contributions on the frame interacted with (standardized) SVO (excluding the communication conditions where the decisions of individual group members are not independent).

We first present results from the IF condition, focusing on contribution patterns, the effect of communication, efficiency, and SVO. Then we present results from the GF condition, highlighting differences from IF. Unless stated otherwise, all p-values are one-sided (per the hypotheses). See Appendix A for the regression tables.

4.1 Individual frame

Overall, the IF condition closely replicates the main results of Halevy et al. (2008) and De Dreu (2010), confirming Hypotheses 1, 2, and 3.

Contributions. Without communication, overall contributions (regardless of pool) were higher in the IPD-MD (49%) than in the IPD (37%; $t(156) = 2.34$, $p = .010$). Supporting Hypothesis 1, contributions to parochial cooperation in the IPD-MD (38%) were much higher than contributions to outgroup spite (11%; $z = 5.79$, $p < .001$).

Effect of intragroup communication on contributions. Communication significantly increased contributions in both games (to 82% in the IPD-MD: $t(156) = 4.81$, $p < .001$; to 72% in the IPD, $t(156) = 4.60$, $p < .001$). The increase in the IPD-MD is mainly due to parochial cooperation, which increased from 38% to 64% ($t(78) = 2.70$, $p = .004$). The increase in contributions to outgroup spite, from 12% to 18%, was not significant ($t(156) = 0.95$, $p = .172$). These results confirm Hypothesis 2.

Effect of communication on efficiency. Different contribution patterns lead to different efficiency levels. In the IPD, payoffs are maximized when everyone keeps their entire endowment, thus avoiding the destructive effect of the between-group pool. The IPD-MD provides a way to avoid destructive conflict by contributing to the within-group pool; payoffs are maximized when everyone uses this option.

Figure 2 presents the efficiency for each combination of game, communication, and frame (plotted as dots that refer to the right vertical axis). Communication increased contributions to the between-group pool in the IPD, and to the within-group pool in the IPD-MD. As a result, efficiency in the IPD decreased from 62% without communication to 28% with communication ($t(70) = 4.81$, $p < .001$), but increased in the IPD-MD from

[3]The maximum mean game earning is 50 in the IPD (if all players keep their token endowment), and 90 in the IPD-MD (if all players fully contribute to the within-group pool).

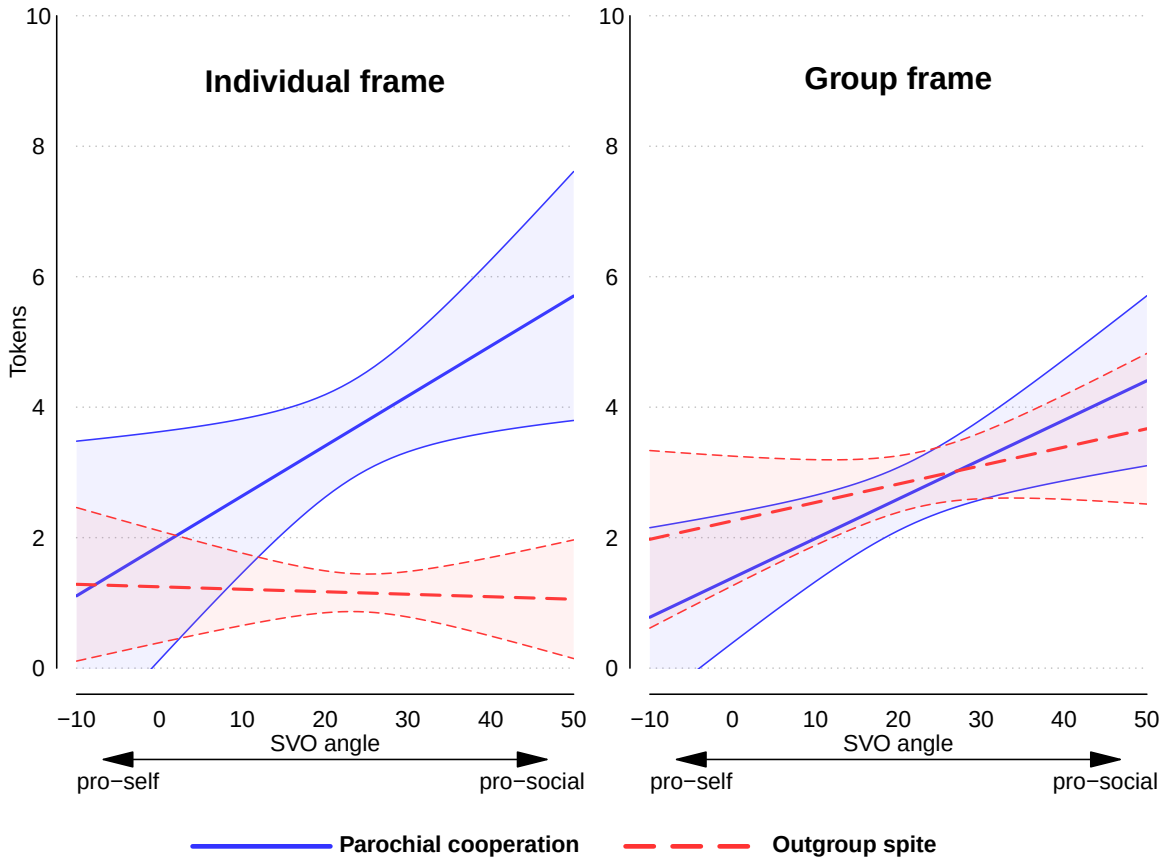

Figure 4: Social value orientation by contributions to parochial cooperation and outgroup spite. Linear regression lines with 95% confidence intervals. The relation of SVO to parochial cooperation and outgroup spite is different in IF, but similar in GF.

66% to 78% ($t(70) = 1.59, p = .058$). The interaction of game and communication is highly significant ($t(70) = 4.49, p < .001$).[4]

Social value orientation. Figure 4 plots the linear relationship between SVO and the number of tokens contributed towards parochial cooperation and outgroup spite. The results in the IF condition fully replicate those of De Dreu (2010), confirming Hypothesis 3. Social value orientation is significantly correlated with parochial cooperation ($\beta = 9.64, t(116) = 2.96, p = .002$), but not with outgroup spite ($\beta = -0.48, t(116) = 0.22, p = .413$).[5] These coefficients are significantly different from each other ($\Delta = 10.12, z = 2.00, p = .023$).

[4]The efficiency pattern in the IF condition closely mirrors the pattern in Halevy et al. (2008), where efficiency decreased from 65% to 32% in the IPD, and increased from 78% to 87% in the IPD-MD.

[5]The interpretation of the regression results is that an increase of one standard deviation in SVO is associated with an increase of β in contributions.

4.2 Group frame

Contributions. Moving from the IF to the GF condition (without communication) had the same effect in the IPD as in the data of Weisel and Zultan (2016). Contributions to the between-group pool increased from 38% to 48% ($t(156) = 2.26, p = .013$), confirming Hypothesis 4.

Making the group-level salient in the IPD-MD substantially altered the balance of parochial cooperation and outgroup spite, which now emerge as equally important motivations. Without communication, participants contributed 30% of their endowment to outgroup spite, slightly *more* than the 29% contributed to parochial cooperation, and significantly more than the 12% contributed in the IF condition ($t(156) = 6.90, p < .001$). This increase in outgroup spite was accompanied by a decrease in parochial cooperation, from 38% to 29% ($t(78) = 1.91, p = .030$). These results clearly show that outgroup spite is much more salient when conflict is framed at the group level than at the individual level, providing strong support for our main Hypothesis 5.

Effect of intragroup communication on contributions. Similar to the IF condition, intragroup communication significantly increased overall contributions in both the IPD (from 48% to 68%; $t(156) = 2.90, p = .002$) and the IPD-MD (from 58% to 83% ($t(156) = 5.07, p < .001$).

In the IPD-MD, contributions to both parochial cooperation and outgroup spite increased with communication (parochial cooperation: $t(78) = 2.08, p = .020$; outgroup spite: $t(156) = 1.57, p = .059$), supporting Hypothesis 6. Directly comparing the communication conditions in GF and IF (rather than testing the effect of communication relative to without communication), reveals that in GF (compared to IF) participants contributed more to outgroup spite (39% vs. 18%; $t(156) = 2.31, p = .011$), and less to parochial cooperation (44% vs. 63%; $t(78) = 1.80, p = .038$)), further supporting Hypothesis 6.

Effect of communication on efficiency. Similar to the IF condition, communication decreased efficiency in the IPD (from 52% to 32%; $t(70) = 2.74, p = .004$). We observed that, unlike in the IF, communication in the IPD-MD affected not only parochial altruism, but also outgroup spite. Consequently, communication had no apparent effect on efficiency (52% without communication, 53% with communication; $t(70) = 0.19, p = .425$), in line with Hypothesis 6. This difference between the frames is reflected in a significant triple interaction of game, communication, and frame ($t(70) = 1.69, p = .048$), affirming that the relationship between game, communication, and efficiency differs between the IF and GF conditions.

Social value orientation. The correlations of SVO with parochial cooperation and outgroup spite in the GF condition were not significantly different from each other ($\Delta = 4.05, z = 0.99, p = .161$; see Figure 4). The correlation of SVO with outgroup spite in GF is marginally significant ($\beta = 3.55, t(116) = 1.59, p = .057$), as is the difference from the same correlation in IF ($\Delta = 4.03, t(116) = 1.30, p = .098$). The correlation with parochial cooperation is significant and similar in magnitude to that found in the IF condition ($\beta = 7.61, t(116) = 2.26, p = .013$; compare to $\beta = 9.64$ in IF). These results support Hypothesis 7; SVO seems to be correlated with outgroup spite in the GF condition, and the difference between the relation of SVO to parochial cooperation and to outgroup spite is much reduced relative to IF.

Chat content analysis. The chat text from the communication conditions may help to better understand how the different frames affected participants' reasoning about their choices.[6] In particular, it can help to assess the reason for the elevated between-group pool contributions in the IPD-MD in GF (relative to IF). Three independent raters rated the communication transcripts of each group (in the communication conditions) on a 7-point Likert scale (from 'Strongly disagree' to 'Strongly agree'). Each rater rated six items. Two items assessed how much group members were generally concerned with the inward effect of the other group's actions on themselves (*Inward*; inter-rater reliability: .82), and about the outward effect of their own actions on the other group (*Outward*; .83). Four additional items specifically focused on the considerations that guided decisions to contribute to the between-group pool: doing better than the other group (*Compete*; .76); defending themselves from the other group (*Defend*; .80); helping the ingroup (*Help*; .84); or harming the outgroup (*Harm*; .65).

Table 2 presents the means and standard deviations of the ratings in the IPD-MD conditions (see Appendix C for the IPD ratings and more details). Based on these results, we can make two main observations. First, in IF the chat text reflects concern for both the inward effect of the outgroup on the ingroup, and the outward effect of the ingroup on the outgroup. In GF there is much more concern for the inward effect than for the outward effect (mainly because there is hardly any concern for the outward effect). This observation is in line with the relatively low contributions to the between-group pool in IF (and in previous studies using an individual frame, e.g., Halevy et al., 2008).

Second, the motivation to invest in the between-group pool in GF focuses more on the ingroup protection motives—defending, helping and competing—than in IF, with the strongest effect evident for the defense motive. There is little discussion of harming

[6]Since the effect of the frames may interact with the availability of communication, any conclusions that arise from analyzing chat text are limited to the 'with communication' conditions; any inference about the 'without communication' conditions is somewhat speculative.

Table 2: Mean ratings of communication content in the IPD-MD (standard deviations in parentheses).

		Individual		Group		p-value
General concern	Inward	6.04	(1.23)	5.67	(1.18)	0.347
	Outward	5.39	(1.52)	1.32	(0.65)	.000***
	Outward − Inward	0.65	(1.60)	4.35	(1.36)	.000***
Reason for contributing in between-group pool	Compete	2.53	(1.39)	3.57	(1.19)	.016*
	Defend	2.98	(2.16)	5.28	(1.48)	.000***
	Help	3.12	(1.88)	4.25	(1.40)	.040*
	Harm	1.67	(1.15)	1.45	(0.65)	.471

Note: Reported p-values based on two-tailed t-tests. ^$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

the out-group under either frame. Recall that objectively, contributions to the within-group pool serve to help and defend the ingroup exactly as much as contributions to the between-group pool. The group frame seems to lead group members to exercise their desire to help and defend their group via outgroup spite.

4.3 Results summary

Our results in the IF condition fully replicate those of Halevy et al. (2008) and De Dreu (2010). parochial cooperation was (i) more common than outgroup spite in the IPD-MD (Hypothesis 1); (ii) increased with intragroup communication, while outgroup spite did not (Hypothesis 2); (iii) and was positively related to SVO, while outgroup spite was not (Hypothesis 3). These patterns led to increased efficiency in the IPD-MD relative to the IPD, and in the IPD-MD with communication relative to without communication.

As we predicted, the picture was very different in the GF condition. parochial cooperation was (i) *not* more common than outgroup spite in the IPD-MD (Hypothesis 5); (ii) and *not* different from outgroup spite in its relation to SVO (Hypothesis 7). Although communication did not significantly increase outgroup spite in the IPD-MD, its combined effect on parochial cooperation and outgroup spite did *not* lead to an increase in efficiency, whereas in the IF condition it did (Hypothesis 6).

The relation between SVO and outgroup spite in the GF condition suggests that our main result—that outgroup spite emerges as a prominent factor when conflict is framed at the group level (Hypothesis 5)—is driven by pro-socials. This interpretation agrees with Weisel and Zultan (2016), who similarly conclude that when group threat is salient "Individual contributions to conflict… can be viewed as a manifestation of pro-social tendencies" (p. 129).

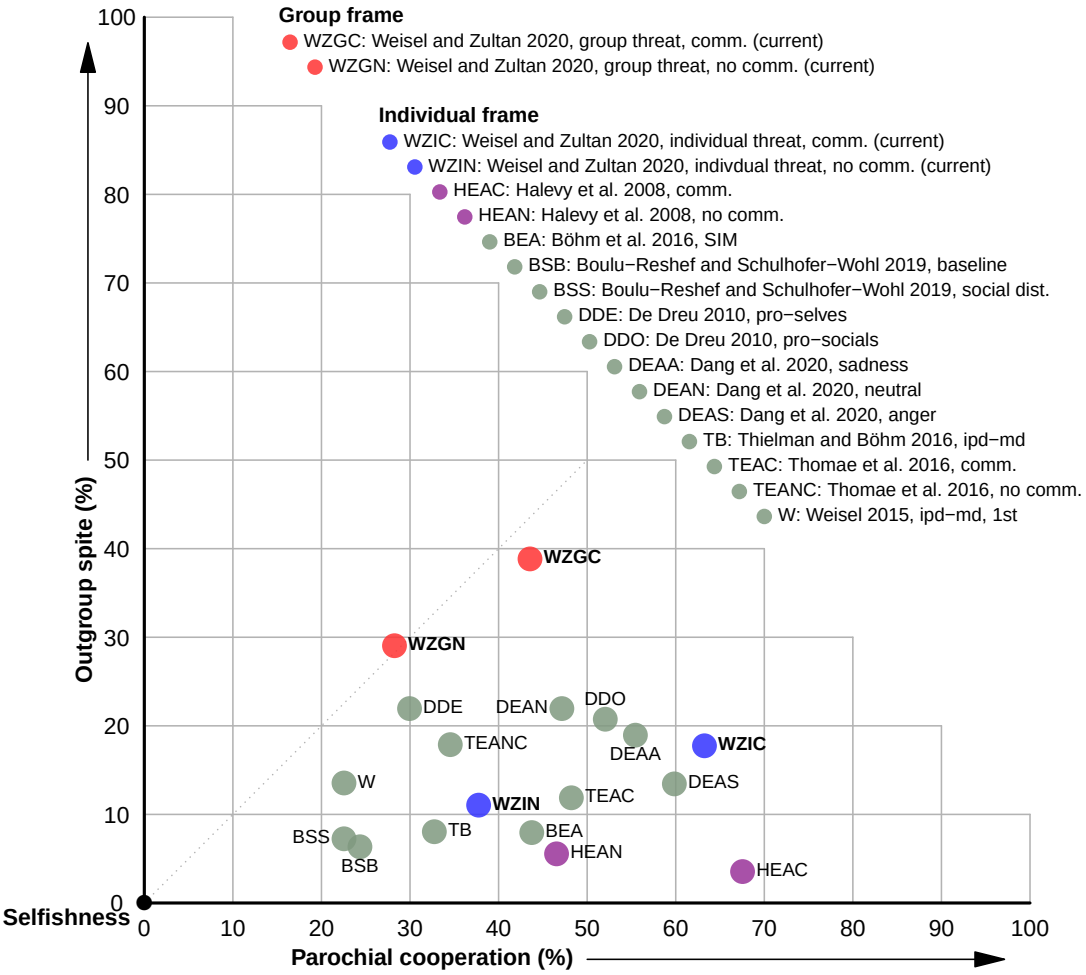

Figure 5: parochial cooperation and outgroup spite in previous laboratory studies employing the standard version of the IPD-MD. The current results, as well as the results from Halevy et al. (2008, who introduced the IPD-MD), are highlighted with colors. For the sake of comparison, we only included results from studies that employed the standard IPD-MD in a laboratory setting with minimal groups. Studies that involved hormone administration, natural groups, or asymmetric variants of the IPD-MD, were excluded.

Figure 5 plots the current results against the results of all published treatments (to the best of our knowledge) that tested the standard IPD-MD game in a controlled laboratory experiment (fourteen treatments from eight studies; see De Dreu et al., 2020 for a similar review that yields very similar summary statistics).[7] While it is apparent that our two IF conditions are representative of the existing results in the literature, outgroup spite in our two GF conditions is higher than in *all* other experiments. Our two GF treatments are also the closest to an equal balance of parochial cooperation and

[7]Only controlled laboratory experiments testing the standard version of the IPD-MD were included; studies that involved hormone administration (e.g., De Dreu et al., 2010), natural groups (e.g., Weisel & Böhm, 2015), or asymmetric variants of the IPD-MD (e.g., Halevy et al., 2010), were excluded.

outgroup spite. These patterns clearly agree with our main hypothesis (Hypothesis 5): when conflict is framed at the group level, rather than at the individual level, outgroup spite plays a much more central role.

The analysis of the content of communication sheds some light on the reasons for the differences between the frames. The content analysis suggests that when conflict is framed at the group level, group members tend to perceive the interaction as a competition and outgroup spite emerges from a desire to protect the ingroup.

5 Discussion

Social scientists have long been interested in situations where groups "have incompatible goals and are in competition for scarce resources" (Realistic group-conflict theory, Campbell, 1965, p. 287). However, it has been acknowledged that even in cases where there are objective incompatibilities between groups, "these realistic sources of conflict are typically exacerbated by *subjective processes* in the ways that individuals see and interpret the world and in the ways that groups function in the face of differences and *perceived threat* [emphasis added]" (Fisher, 2006, p. 177).

We show, in a controlled laboratory experiment, that the way intergroup conflict is framed can crucially affect the willingness and motivation of members of the conflicting groups to take part in conflict by contributing to their group. When intergroup conflict is framed at the individual level, unselfish group members are driven mainly by parochial cooperation, and prefer to contribute to their group without harming the outgroup. However, when the *same* intergroup conflict, in terms of the underlying strategic structure, is framed at the group level, outgroup spite emerges as an equally potent factor, with many group members choosing to inflict harm on the outgroup while helping their own group.

These results both replicate and qualify the results of a body of experimental work using the IPD-MD and related paradigms to examine the motivational underpinnings of individual participation in intergroup conflict (e.g., De Dreu et al., 2010; Halevy et al., 2008; Halevy et al., 2012; Lowery et al., 2006; Yamagishi & Mifune, 2009). Our design closely follows that of Halevy et al. (2008), who claim that "when possible, group members prefer to cooperate so as to maximize their absolute group gains, rather than to compete against the out-group for relative gains" (p. 410). Our assertion is that the preference for maximizing absolute, rather than relative, gains, is limited to cases where intergroup conflict is framed and perceived at the individual level, and does not hold when the focus is on the group as a whole.

5.1 Framing team games

A general implication of our results is that *framing matters*. The understanding that "an issue can be viewed from a variety of perspectives and be construed as having implications for multiple values or considerations" (Chong & Druckman, 2007, p. 104) is not new, of course, nor is the observation that such different perspectives can lead to significant, systematic, differences in behavior (Kahneman & Tversky, 1984). For example, just labeling a prisoner's dilemma game as a 'Wall Street Game' or a 'Community Game' drastically affects cooperation rates (Liberman et al., 2004); describing risky prospects as involving either losses or gains affects their attractiveness (Kahneman & Tversky, 1984); and framing social dilemmas in terms of either public goods (i.e., as a 'give-some' dilemma) or common resources (i.e., 'take-some'), can affect cooperation rates (Gächter et al., 2017; Sell & Son, 1997), preferences for leadership (Rutte et al., 1987), fairness perceptions (Van Dijk & Wilke, 2000), and interact with social value orientation (Balliet et al., 2009).

In light of this understanding of framing effects, researchers often try to avoid "loaded" terms such as "cooperation" and "defection", in favor of more neutral descriptions of choices and outcomes (e.g., a choice between options A and B) when explaining experimental game paradigms to participants. Still, *any* formulation of available actions and payoff rules in an experimental paradigm may shift behavior relative to alternative formulations. Since controlling for framing effects is often not feasible, researchers often opt for what they believe are neutral frames, assuming—or, perhaps, hoping—that even if their choice affects absolute levels of certain DVs, it is not likely to interact with independent variables.

Why is it, then, that the IPD was typically framed at the group level, with payoffs described as a function of a comparison between groups, while the IPD-MD was framed at the individual level, with payoffs described as a result of individual actions? Both the IPD and the IPD-MD belong to a class of intergroup games dubbed *team games*, attributed mainly to social psychologist Gary Bornstein. The first of these games to be developed were intergroup games over step-level public goods, in which "The group that wins the competition and receives the public good is the one whose members' total contribution … exceeds that of the other group" (Bornstein, 2003, p. 130). In these 'winner takes all' games payoffs are naturally explained as a function of a comparison between contributions in the two groups. The IPD evolved from these step-level games. It differs from them in that the payoffs depend not only on whether a team contributed more (or less) than the other, but also on the margin of victory; the larger the margin, the higher the payoff of the winning team, and the lower the payoff of the losing team. Thus, payoffs in the IPD were originally conceptualized as a function of the difference in contributions between the teams, and this early conceptualization probably guided

the authors to describe the game to participants with a focus on groups, as in the group frame that we used. In other words, the group frame was used as a matter of convenience and comparability to the step-level games that preceded the IPD in the evolution of team games.

Describing a game in terms of comparisons between groups is straightforward when there is only one figure to compare (e.g., contribution to the between-group pool in the IPD). In the IPD-MD, where there are two contribution options, the payoff is not a function of a simple comparison between contributions in the two groups; it also matters to which pool (within-group or between-group) the contribution is made. To avoid this complication, the authors who introduced the IPD-MD (Halevy et al., 2008) described the payoffs as a function of individual choices (i.e., using an individual frame), as this approach allows to keep the general description of the different options constant (N. Halevy, personal communication, May 7, 2020).

The use of either group or individual frames in past work was thus guided by pragmatic considerations; the main goal was to explain the strategic situation to participants in a logical, compact, and clear way. The current results, together with those of Weisel and Zultan (2016), demonstrate that these choices unknowingly affected some of the core results obtained using team games, namely the support of the conflict-cohesion hypothesis in IPD studies (e.g., Bornstein & Ben-Yossef, 1994), and the preference for parochial cooperation over outgroup spite in studies employing the IPD-MD (e.g., Halevy et al., 2008). This realization allows for a more nuanced understanding of intergroup conflict and of the motivation of individuals to take part in it. It also serves as a reminder that experimental instructions are rarely neutral; before generalizing results, care should be taken to verify that they do not depend on a particular frame.

Why does the group frame lead to more participation in conflict, and in particular to more outgroup spite? Weisel and Zultan (2016), studying variations of the IPD, observed that the frame only affects groups that are exposed to the threat of being harmed by the other group. based on this observation, Weisel and Zultan (2016) formulated the “perceived target of threat principle”, according to which individuals are motivated to act in the interest of what they perceive to be the target of threat from the outgroup. Our examination of the IPD-MD, however, did not distinguish between being under threat and competing with the other group. Extending the perceived target of threat principle to the current results is, therefore, not unequivocal. Furthermore, the distinction between parochial cooperation and outgroup hate in the IPD-MD is mute with respect to the benefit to the ingroup, as contributions to the withing-group pool (parochial cooperation) and to the between-group pool (outgroup spite) benefit the ingroup to the same degree.

The analysis of the chat text from the communication conditions suggests that the

group frame may lead group members to exhibit outgroup spite because they adopt a competitive mindset and wish to defend the ingroup in the context of the perceived competition. Under a competitive mindset, group members are not concerned only with their own and their group's absolute welfare, but also with winning the perceived competition with the outgroup (Van den Bos et al., 2008). Assuming such a desire to win a competition vis-à-vis the outgroup, harming the outgroup by contributing to the between-group makes sense, as it furthers the group's chance of winning the competition, and defends it from potentially losing it. Note that, strictly speaking, the insights gained from the content analysis do not necessarily apply to the conditions without communication, because the existence of within-group communication may in itself influence the perceptions of conflict (e.g., shift the focus from perception of threat to perception of inetergroup competition).

5.2 Perceptions of conflict

Team games such as the IPD and IPD-MD were constructed to carefully control the pay-off structure within and between conflicting groups. The current results demonstrate that even in such carefully designed settings, the framing and perception of intergroup conflict are crucial for its unfolding. The notion that not every case of intergroup conflict triggers the same processes within competing groups, and that common results may be moderated by the characteristics of conflict, and in particular by the way conflict is framed, and thus perceived by group members, is hardly alien to the literature. Highly relevant examples are the conflict-cohesion hypothesis, group mobilization, and the individual-group discontinuity effect.

With respect to the conflict-cohesion hypothesis, Coser (1956) observed that "conflict between groups or nations has often led to anomie rather than to an increase in internal cohesion" (p. 92), and states that group members must perceive the whole group, rather than themselves as individuals, to be under threat, for intergroup conflict to increase cohesion (see also Stein, 1976; Williams, 1947). In other words, the conflict-cohesion hypothesis should not be considered a general law, but one that is subject to what group members perceive to be the target of threat in intergroup conflict. In a similar vein, Pruitt (2006) argues that the mobilization of groups in conflict requires that individuals develop "a perception that the group as a whole has been victimized, that their own suffering and that of their fellow group members are part of a larger pattern" (p. 851).

The individual-group discontinuity effect states that conflict between groups tends to be more competitive and aggressive than conflict between individuals (Schopler & Insko, 1992; Wildschut & Insko, 2007). Similar to the emphasis on the perception of threat at the group level for the conflict-cohesion hypothesis to hold, *common fate* has

been suggested as the main factor which determines when groups interact in a more competitive manner than individuals (Campbell, 1958; Insko et al., 2013).

Taken together, these examples demonstrate that intergroup relations scholars have long been aware that the behavior of individuals in intergroup conflict is not guided solely by the objective structure of the conflict. For groups to overcome the internal collective action that they face in intergroup conflict, group members must perceive themselves as a unified group, rather than as a collection of individuals (i.e., as a 'group' as opposed to a 'crowd', Cohen, 1953). Team games, while making many substantial contributions to the study of conflict, tend to focus on the objective structure of the game. Our study shows that it is possible to incorporate subjective perceptions in a controlled and systematic way into these paradigms.

5.3 Implications

Early results obtained with the IPD-MD game (De Dreu, 2010; De Dreu et al., 2010; Halevy et al., 2008; Halevy et al., 2012), which showed that most of the destructive, competitive, behavior observed in the IPD is eliminated when an option to help the ingroup without harming the outgroup was introduced, portrayed a rosy picture from a conflict resolution perspective, because "intergroup conflict can be resolved by channeling group members' altruism toward internal group causes" (Halevy et al., 2008, p. 410). If parochial cooperation is the primary factor, then—depending on the availability of appropriate internal group causes (that do not harm the outgroup)—the resolution, or at least reduction of conflict, indeed seems feasible. That parochial cooperation, and not outgroup spite, was found to be positively linked to intragroup communication (Halevy et al., 2008) and to pro-social tendencies (De Dreu, 2010; De Dreu et al., 2010) further emphasized the promise of the IPD-MD as a route towards conflict resolution, suggesting that conflict can be resolved, and social welfare increased, by nourishing group-level cooperative social norms.

Simply put, we show that "it ain't necessarily so" (Gershwin & Gershwin, 1940). Introducing a benevolent 'parochial cooperation' option in the IPD-MD was effective in reducing competition when conflict was perceived at the individual level, but when conflict was framed at the group level, outgroup spite was as strong as parochial cooperation, and efficiency (in the IPD-MD) did not increase (relative to the IPD), even when group members could communicate before making their decisions. Furthermore, intragroup communication and chronic pro-social tendencies, which were associated with parochial cooperation much more than with outgroup spite in an individual frame, were similarly linked to both factors in the group frame.

The communication and SVO results are of particular relevance for conflict resolution. The IPD-MD represents a rather favorable scenario from a conflict resolution

perspective, because within-group cooperation is possible without imposing harm on the outgroup. However, if outgroup spite is an important factor—as seems to be the case when conflict is perceived at the group level—IPD-MD-like interactions are effectively transformed to IPD-like ones, in which within-group cooperation necessarily harms the outgroup. Increased within-group cooperation in such settings, either acute (due to established solutions to single-group social dilemmas such as intragroup communication and punishment; Balliet, 2010; Balliet et al., 2011) or chronic (as measured by SVO) inevitably leads to the escalation of conflict and to reduced overall welfare. To avoid these negative consequences, the focus should be on increasing cooperation between, rather than within, groups (e.g., via between-group communication; Bornstein & Gilula, 2003; Bornstein et al., 1989). For highly differentiated groups (i.e., groups which are defined along a single primary categorization, such as ethnicity or religion), however, this may not be an easy task (Brewer, 1999).

From the perspective of a social planner, conflict resolution is almost always a sensible goal, as it increases overall welfare. In some situations, however, leaders of firms or countries may prefer that members of their group (e.g., employees, soldiers) actively engage in intergroup conflict by harming the outgroup, for example in cases where the interaction is, or is perceived to be, a winner-takes-all competition. Such leaders are advised to strengthen group members' identification with the group, in particular in the sense that they feel threatened, *as a group*, by the competition.

5.4 Limitations and open questions

Intergroup conflict is complex, and studying it experimentally is a considerable challenge (Minson et al., 2019). Rising to the challenge, team games were developed in light of research on intergroup conflict that failed to consider the collective action problem within each group, and have proven invaluable for the experimental study of intergroup conflict, providing a framework that simultaneously considers conflict at the intragroup, intergroup, and collective levels (Bornstein, 2003).

The purpose of game models such as the PD, the IPD, and the IPD-MD "is not to reproduce reality, but to increase our understanding of fundamental processes by simplifying it" (Snidal, 1985). By definition, such models neglect to consider some aspects of reality. Our study highlights an aspect of intergroup conflict that previous work using team games did not consider explicitly; namely, the framing and perception of intergroup conflict. We show that the way in which intergroup conflict is framed and perceived can dramatically affect individual behavior. Nevertheless, similar to the limited generalizability of previous findings that arise from the use of a particular frame (IF or GF), the generalizability of the current findings may also be limited by our design choices.

We examined one-shot, symmetric interactions between small, randomly composed groups, in a laboratory setting; outgroup spite could be expressed only by harming the outgroup; and we rely on behavioral measures. Each of these features may limit the generalizability of our results, and, at the same time, suggest avenues worthy of future research. Real world conflicts are rarely isolated singular events. Rather, groups often interact repeatedly, allowing for dynamics that are absent from isolated interactions. Using an individual frame, Halevy et al. (2012) found a strong preference for parochial cooperation throughout a repeated IPD-MD game. In the current study, under a group frame, parochial cooperation and outgroup spite were equally salient in guiding group members' behavior. The dynamic of these factors over time when conflict is perceived at the group level is an open question. An intriguing—and disturbing—possible outcome is that conflict will escalate, with outgroup spite gaining prominence as the interaction is repeated. Alternatively, if the effects of the particular frame diminish as behavior adapts to the actual incentive structure, the behavior observed in Halevy et al. (2012) may extend to the group frame.

In their standard form, the IPD and IPD-MD are symmetric; members of both groups have equal resources, and simultaneously choose among the same set of available actions. A small number of experimental studies on intergroup conflict consider asymmetric conflict, and show that relative deprivation (Halevy et al., 2010), the availability of unilateral preemptive strikes (Böhm et al., 2016), and being on the defensive end in attack-defense settings (De Dreu et al., 2016), can increase the propensity of individuals to partake in intergroup conflict. These studies vary in the presentation of the conflict situation. While Halevy et al. (2010) and Böhm et al. (2016) use an individual frame, the Attacker-Defender game introduced by De Dreu and colleagues is framed as a competition between groups.

A unique contribution in this context is that of Weisel and Zultan (2016), who examined an asymmetric version of the IPD, comparing individual and group frames (see Subsection 1.3 for details). When the asymmetric game was framed at the group level, contributions in victim groups were higher than in attacker groups, in line with the results of De Dreu et al. (2016). The pattern reversed when the game was framed at the individual level; victim contributions diminished substantially, and were considerably *lower* than attacker contributions (Weisel, 2019). These results, together with those of the current paper, strongly suggest that the framing and perception of intergroup conflict should be taken into account when interpreting past results and planning future work on the respective roles of parochial cooperation and outgroup spite in asymmetric intergroup conflict.

The large majority of experimental intergroup conflict research, including the current work, rely on artificially induced laboratory groups, and the operationalization of outgroup spite as actively harming the outgroup, rather than avoiding to help it

(Greenwald & Pettigrew, 2014; Mummendey et al., 1992). Weisel and Böhm (2015) addressed both of these issues (see also Aaldering & Böhm, 2020; Weisel, 2015). The main findings are that outgroup spite is more pervasive when it can be expressed by help-avoidance, particularly in conflict between high-enmity groups. The interaction of these factors with the level in which conflict is perceived is an open question.

We rely on behavioral measures, namely the choices that participants make in the IPD or IPD-MD. While contributing to the between-group pool factually harms the outgroup—which is why we interpret this behavior as outgroup spite—we cannot rule out that other factors, other than a genuine desire to harm the outgroup, may drive this behavior. While the objective intergroup conflict is identical in the individual and group frames, the group frame is likely to trigger a heightened sense of competition, and possibly a desire to defend the ingroup in this competition. These notions are supported by the analysis of the chat text. One straightforward way to complement the behavioral measures is to explicitly measure, in the context of experimental team games, constructs such as personal victimization, group cohesion and group entitativity (Canetti & Lindner, 2014; Lickel et al., 2000; Shnabel et al., 2018).

Another way to tap into the motivations to contribute to the between-group pool (and to the other options) is to measure first-order beliefs about the decisions of others (both ingroup and outgroup members). If group members expect more outgroup contributions to the between group-pool in the group frame, this can be seen as support for the interpretation that contributions to the between-group pool under the group frame reflect a perceived competition between the groups. Measuring beliefs may also allow to classify group members as "conditional outgroup-haters" whose willingness to harm the outgroup depends on the degree to which they believe the outgroup will harm them (similar to "conditional cooperators" in single group public good games Fischbacher and Gachter, 2010; Fischbacher et al., 2001). Note, however, that such correlational analyses do not necessarily imply a causal relation. Correlations between beliefs and actions may, for example, reflect rational expectations rather than a motivation to retaliate.

Some studies found that under certain circumstances, people are willing to harm the outgroup even when the IPD-MD game was framed at the individual level. Weisel and Böhm (2015) examined natural groups (as opposed to minimal laboratory groups), to find that people are willing to harm an outgroup only if it is perceived (outside the game context) as extreme and potentially threatening. Halevy et al. (2010) found that outgroup spite emerges when one group is deprived *as a group* compared to the other group, especially when the deprivation was caused by the outgroup. In light of our results, we propose that outgroup spite may have emerged in these studies because the use of natural, high-enmity groups in Weisel and Böhm (2015), and the group-level discrimination in Halevy et al. (2010), led group members to perceive

the conflict at the group level, similar to the effect of the framing manipulation in the current experiment. Thus, the level with which conflict is perceived can be seen as a unifying explanation for the emergence of outgroup spite in seemingly different contexts. Future work may put this conjecture to a direct test.

We use the terms "parochial cooperation" and "outgroup spite" to describe specific behavioral motivations in the context of intergroup conflict. Other researchers used different terms to convey similar concepts, e.g., "ingroup favoritism" and "outgroup hostility" (Greenwald & Pettigrew, 2014), or "ingroup love" and "outgroup hate". The latter in particular (i.e., ingroup love and outgroup hate) have been used by many of the relatively recent publications that the current work builds on (e.g., Brewer, 1999; De Dreu, 2010; De Dreu et al., 2010; Halevy et al., 2008; Halevy et al., 2012; Weisel & Böhm, 2015). The reason we opted for parochial cooperation and outgroup spite instead of ingroup love and outgroup hate is to avoid the emotional connotation often associated with "love" and "hate". Emotions, however—in particular moral group-based and collective emotions, such as love, hate, anger and guilt—clearly play an important role in the initiation, preservation, and resolution of intergroup conflict (e.g., Bar-Tal et al., 2007; Fischer et al., 2018; Halperin, 2014; Halperin et al., 2011; Kessler & Hollbach, 2005; Weiss-Klayman et al., 2020). Thus far, experimental work using team games and related paradigms has been mostly separate from research on group-based and collective emotions. Integrating these lines of work is a challenge for future work.

5.5 Conclusion

Understanding the motivation of individual group members to sacrifice private resources in order to help their group vis-à-vis a competing group, even when the potential benefits from conflict are public goods, is vital for the understanding of intergroup conflict. We demonstrate that the objective conflict that exists between groups can be secondary to the subjective perception of conflict in determining the motivation of individuals to participate in conflict. Previous experimental work suggested that the main motivation is parochial cooperation. Holding the objective strategic structure of conflict constant, we show that the balance between parochial cooperation and outgroup spite is dramatically affected by the framing, and thus perception, of the conflict. When conflict is framed and perceived at the group, rather than the individual, level, outgroup spite and parochial cooperation are equally salient motivations.

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Appendix A Regression tables

Table A.1: Regressions on contributions and efficiency

	Parochial cooperation	Outgroup spite	Total	Efficiency
Constant	3.817***	1.150***	4.967***	0.661***
	(0.40)	(0.15)	(0.39)	(0.05)
Comm.	2.552***	0.675	3.226***	0.115
	(0.95)	(0.71)	(0.67)	(0.07)
Group frame	−0.950^	1.800***	0.850^	−0.142*
	(0.50)	(0.26)	(0.51)	(0.07)
Comm. × Group frame	−1.018	0.309	−0.710	−0.101
	(1.20)	(0.95)	(0.83)	(0.10)
IPD		2.633***	−1.183*	−0.040
		(0.36)	(0.51)	(0.07)
IPD × Comm.		2.709***	0.157	−0.453***
		(1.02)	(0.99)	(0.10)
IPD × Group frame		−0.750	0.200	0.037
		(0.53)	(0.69)	(0.10)
IPD × Comm. × Group frame		−1.711	−0.692	0.242^
		(1.38)	(1.30)	(0.14)
N	237	471	471	78
R^2	0.134	0.336	0.218	0.512

Notes: Robust standard errors clustered on groups. $^p < 0.10$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, two-sided.

Table A.2: Regressions for SVO in IPD-MD without communication

	Parochial cooperation	OG spite
Constant	3.622***	1.160***
	(0.387)	(0.151)
Group frame	−0.859^	1.742***
	(0.462)	(0.264)
SVO	0.964*	−0.048
	(0.434)	(0.217)
Group frame × SVO	−0.204	0.403
	(0.512)	(0.336)
N	120	120
R^2	0.134	0.235

Notes: Robust standard errors clustered on groups in parentheses. $^p < 0.10$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, two-sided.

Appendix B Experimental instructions

<The instructions for the IPD exclude all references to Pool X>

Welcome and thank you for participating in this experiment. Please remain quiet and switch off your mobile phone. Do not speak to the other participants. Communication between participants will lead to the automatic end of the session with no payment to anyone. Whenever you have a question, please raise your hand and one of the experimenters will come to your cubicle.

Please read the instructions carefully, the better you understand the instructions the more money you will be able to earn. The instructions are the same for all participants.

You will receive € 2.50 for having shown up on time. The experiment allows you to earn additional money. Since your earnings during the experiment will depend on your decisions, and the decisions of the other participants.

The experiment consists of two phases. The instructions for the second phase will be handed out after the first phase is finished. The two phases are independent, i.e., the decisions you and the other participants make in any phase do not influence the other phase. In each phase, you will interact with different participants.

You will receive no feedback about the decisions of the others until both phases have ended).

During the experiment all sums of money are listed in ECU (for Experimental Currency Unit). Your earnings during the experiment will be converted to € at the end and paid to you in cash. The exchange rate is 150 ECU = € 1.

Instructions for Phase 1

In this phase each participant is a member of a 3-person group. There are two types of groups, A and B. Each A group is paired with a B group. You will be randomly assigned to one of the two groups, Group A or Group B.

Each participant receives 90 ECU and 10 tokens, and will have to decide how to invest the tokens. Tokens can be **kept**, invested in **pool X**, or invested in **pool Y**. The decisions are made independently, so no participant knows the decisions of other participants when making a decision. The tokens are worth money. The amount of money they are worth depends on whether and how you invest them:

Individual frame condition

- For each token you keep for yourself, you will receive 5 ECU.
- **IPD-MD only:** Pool X: For each token you invest in Pool X, each person in your group, including yourself, will receive 3 ECU.
- Pool Y: For each token you invest in Pool Y, each person in your group, including yourself will receive 3 ECU. In addition, each person in the other group will lose 3 ECU.

Group frame condition

- For each token you keep for yourself, you will receive 5 ECU.
- **IPD-MD only:** Pool X: The payoffs from Pool X are determined by the total number of tokens invested by your group as follows: The number of tokens invested by all members of your group in Pool X will be counted. You and each member of your group will receive 3 ECU for each token in this pool.
- Pool Y: The payoffs from Pool Y are determined by the comparison of investments made by your group and by the other group as follows: The number of tokens invested by all members of your group in Pool Y will be compared to the number of tokens invested by all members of the other group in Pool Y. Each member of the group that invested more tokens in Pool Y will receive 3 ECU for each token they invested more than the other group in this pool. Each member of the group that invested fewer tokens in Pool Y will lose 3 ECU for each token they invested less than the other group in this pool.

Communication condition

Before you make your decisions, the three members of the group can communicate via chat for five minutes. everything you write will be seen only by the two other members of your groups, and no other of the participants in the experiment.
You are not allowed to make threats or reveal your identity. The experimenters will monitor the conversation. If any participant violates these rules, the experiment will end immidiately.
The chat will end after five minutes, after which each participant will enter his decision independently on the computer screen.

The decisions of all participants will remain confidential.

Example

<The example for the IPD has the same amounts kept with the remainder invested in Pool Y>

The members of Group A and Group B invested according to the following tables:

	Group A			
	Member 1	Member 2	Member 3	**Total**
Pool X	3	4	1	**8**
Pool Y	2	3	6	**11**
Kept	5	3	3	

	Group B			
	Member 1	Member 2	Member 3	**Total**
Pool X	2	6	1	**9**
Pool Y	6	4	4	**14**
Kept	2	0	5	

Member 1 of Group A

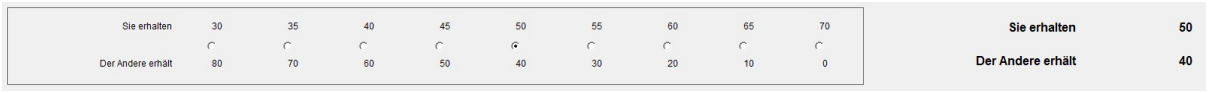
–	Receives 3 ECU for each of the tokens in Pool X	$+(8 \times 3)$	=	+24
–	Receives 3 ECU for each of the tokens in Pool Y	$+(11 \times 3)$	=	+33
–	Loses 3 ECU for each of the tokens in Pool Y of Group B	$-(14 \times 3)$	=	−42
–	Receives 5 ECU for each token kept	$+(5 \times 5)$	=	+25
–	Receives 90 ECU as the initial endowment			+90
–	And earns a total of 130 ECU			+130

Member 1 of Group B

–	Receives 3 ECU for each of the tokens in Pool X	$+(9 \times 3)$	=	+27
–	Receives 3 ECU for each of the tokens in Pool Y	$+(14 \times 3)$	=	+42
–	Loses 3 ECU for each of the tokens in Pool Y of Group B	$-(11 \times 3)$	=	−33
–	Receives 5 ECU for each token kept	$+(2 \times 5)$	=	+10
–	Receives 90 ECU as the initial endowment			+90
–	And earns a total of 136 ECU			+136

Instructions for Phase 2

In this phase you will make a series of decisions about allocating resources (ECU) between yourself and another person. For each of the following items, please indicate the distribution you prefer most by clicking the respective position. There are no right or wrong answers, this is all about personal preferences. In the example below, a person has chosen to distribute the resources so that he/she receives 50 ECU, while the other person receives 40 ECU.



After all participants have made their decisions you will be randomly assigned to be an “Allocator” or a “Recipient”. If you are an allocator then one of your decisions (randomly chosen) will determine your payoff and the payoff of another participant. If you are a recipient then your payoff will be determined by one of the other participants.

Appendix C Content analysis

Three independent raters rated the communication transcripts of each group (in the communication conditions) on a 7-point Likert scale for the following items (interclass correlation for inter-rater reliability in parentheses):

Inward: Group members care about the effect of the other group's actions on themselves (.82).

Outward: Group members care about the effect of their own actions on the other group (.83).

Compete: Group members feel that the group is in competition with the other group (.76).

Defend: Group members wish to invest (in pool x) in order to defend themselves from the other group (.80).

Help: Group members wish to invest (in pool x) in order to help their group (.84).

Harm: Group members wish to invest (in pool x) in order to harm the other group (.65).

Table C.1 presents the means and standard deviations of the ratings. Based on these results, we can make several observations:

1. The frame of the game has little effect on the content of the communication in the IPD.

2. In general, communication focuses on the effect of the outgroup on the ingroup rather than vice versa. An exception is the IPD-MD under the individual frame, where participants also discuss the effect of their investment on the outgroup. This is in line with the observed low investments in the between pool.

3. The motivation to invest in the between pool in the IPD-MD, as reflected in the group discussion, focuses more on the ingroup protection motives—defending, helping and competing—in the group frame compared to the individual frame, with the strongest effect evident for the defence motive. There is little discussion of wanting to harm the out-group under either frame.

Taken together, these observations suggest that the individual frame drives participants to invest less in the between pool to avoid the negative externality on the outgroup. The group frame, on the other hand, triggers the motivation to defend the ingroup in the perceived competition with the outgroup by investing in the between pool.

Table C.1: Ratings of communication content by game and frame.

IPD						
		Individual		**Group**		**p-value**
General concern	Inward	5.50	(1.26)	5.29	(1.84)	.690
	Outward	2.90	(1.91)	2.33	(1.22)	.299
	Outward − Inward	2.60	(2.33)	2.96	(1.66)	.598
Reason for contributing in between-group pool	Compete	3.95	(1.64)	4.33	(1.76)	.498
	Defend	3.87	(1.27)	4.18	(1.46)	.495
	Help	5.62	(1.25)	5.61	(1.06)	.982
	Harm	1.77	(0.89)	2.04	(0.76)	.330
IPD-MD						
		Individual		**Group**		**p-value**
General concern	Inward	6.04	(1.23)	5.67	(1.18)	0.347
	Outward	5.39	(1.52)	1.32	(0.65)	.000***
	Outward − Inward	0.65	(1.60)	4.35	(1.36)	.000***
Reason for contributing in between-group pool	Compete	2.53	(1.39)	3.57	(1.19)	.016*
	Defend	2.98	(2.16)	5.28	(1.48)	.000***
	Help	3.12	(1.88)	4.25	(1.40)	.040*
	Harm	1.67	(1.15)	1.45	(0.65)	.471

Note: Standard deviations in parentheses. Reported p-values based on two-tailed t-tests. $^p < .10$, $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.