Parochial and universal cooperation in intergroup conflicts

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Chapter 5
When Parochialism Hurts Out-group Competitors, Pro-social Individuals Extend Their Calculated Cooperation to the Out-group in Intergroup Conflict

Humans are a cooperative species. Pro-social behavior is nearly universal (Henrich et al., 2001), and accumulating evidence suggests that it occurs automatically and intuitively (Rand, Greene, & Nowak, 2012; Zaki & Mitchell, 2013) and already at a very early age (Warneken & Tomasello, 2006). Especially towards members of their own group, people are willing to contribute valuable resources at a cost to themselves (Efferson, Lalive, & Fehr, 2008; Fu, Tarnita, Christakis, Wang, Rand, & Nowak, 2012; Hammond & Axelrod, 2006; Hewstone, Rubin, & Willis, 2002).

Evolutionary theory as well as game theoretic analyses suggest that such parochial cooperation can be understood as a consequence of intergroup competition: The group with the most members making personally costly contributions to their in-group wins the competition. Seen this way, groups with more parochial cooperators have an adaptive advantage, because self-sacrifice enhances within-group functioning and general wellbeing (Bowles, 2008; 2009; Choi & Bowles, 2007; Lehmann & Feldman, 2008). Indeed, evolutionary models as well as experimental research indicate that intergroup competition can fuel within-group (= parochial) cooperation (Arrow, 2007; Bernhard, Fischbacher & Fehr, 2006; Erev, Bornstein & Galili, 1993; Gneezy & Fessler, 2012; Gunnthorsdottir & Rapoport, 2005). People's inclination to parochial cooperation is widespread and strongly internalized (Balliet, Wu, & De Dreu, 2014; De Dreu, Balliet, & Halevy, 2014). Individuals favor fellow group members over members of other groups and even discriminate against or derogate other groups (Brewer, 1999). Such in-group favoring and out-group derogating behavior may in turn fuel intergroup conflict, thereby harming the intergroup relations and the broader population in which the competing groups are embedded (De Dreu, 2010a). Parochial cooperation thus helps strengthening the own group in an intergroup competition, but this could come at the expense of the other party, for example when partaking in civil or military service for one's country, especially during an interstate conflict or war. Many intergroup competitions however allow for a mutually beneficial (universal) way of cooperation; for example through diplomacy and negotiations. Examples include to negotiate bilateral arms reduction or, in a less severe conflict, to negotiate free trade agreements between parties and improve relations and trade outcomes for all parties involved. Thus, parochial cooperation may help the own group but possibly in doing so increase tension and conflict between the competing groups. Alternatively, universal cooperation could decrease intergroup tension and yield good outcomes for both parties.

Using two experiments, the current research investigates manifestations of parochial cooperation depending on the structure of the conflict, i.e., presence or absence of intergroup competition. Parochial cooperation is described from three different theoretical viewpoints, based on which two experiments are reported to test when individuals resort to parochial cooperation, and under what circumstances their cooperation can be shifted towards more universal cooperation efforts. We investigate the modulating role of individuals' natural tendency to cooperate (social value orientation) to test which individuals are particularly sensitive to the structure of the intergroup setting and prone to each form of cooperation. We thereby uncover whether individuals are willing to display parochial cooperation at a cost to the other party, thereby increasing tension and conflict, or resort to universal cooperation, benefitting both their own and the other party.

Parochial cooperation

Whether intergroup competition is necessary to elicit parochial cooperation or not is debatable and differs between theoretical viewpoints. Below, three theoretical perspectives regarding the motivational underpinnings of parochial cooperation will be discussed.

Firstly, the evolutionary model of 'Group Selection Theory' (Bowles & Gintis, 2011) suggests parochial cooperation as an explanation for the evolvement of altruism and cooperation. Although generosity and self-sacrifice in general are not adaptive to the individual fitness and survival, parochial cooperation is. According to the Group Selection Theory, a larger number of cooperators in a group has an adaptive function and helps the group to survive and prosper. Theoretical models based on archeological data as well as simulation models have supported this theory, showing that groups with a larger number of members willing to self-sacrifice for their group in the face of warfare, were more successful. Conversely, aggression towards members of another group promoted the welfare of the own group, suggesting that parochial cooperation evolved due to its functionality in times of war, and that intergroup competition was both necessary and sufficient to promote parochial cooperation (Arrow, 2007; Bowles, 2008; Bowles, 2009; Choi & Bowles, 2007; De Dreu et al., in press; Lehmann & Feldman, 2008). Intergroup competition thus fuels the display of parochial cooperation.

A second theoretical perspective on parochial cooperation is related to Group Selection Theory, and proceeds on the basis of the evolutionary tenable

assumption that humans are social animals. Throughout the times, individuals have learned to cooperate with each other by trusting one another and relying on each other's skills. This cooperative interdependence is needed for survival of the group. Such cooperative interdependence however cannot be unlimited: Only members of the own group are trusted to reciprocate this cooperation, which limits on the one hand the amount of individuals that receive and give cooperation, while on the other hand also limiting the risks associated with unreciprocated cooperation. This conditional cooperation thus creates a social category of a group with members willing to cooperate with each other (Brewer, 1999).

The occurrence of such bounded or parochial cooperation has been confirmed multiple times by Yamagishi and colleagues, showing that cooperation with the own group only occurs in a setting where the receiver is not only a group member, but also knows that the sender is a group member too (Kiyonari & Yamagishi, 2004; Yamagishi, Mifune, Liu, & Pauling, 2008; Yamagishi & Mifune, 2008; Yamagishi & Mifune, 2009; Yamagishi, Jin, & Kiyonari, 1999). The authors suggest reputation concerns to play an important role in this effect: One does not want to risk the loss of reputation and sanctions imposed by other group members by refusing to cooperate. However, cooperating with a member of another group does not impose reputational concerns and is furthermore unlikely to yield positive outcomes for oneself or the own group. Other studies support the importance of reputation in bounded cooperation (Milinski, Semmann, Bakker, & Krambeck, 2001; Nowak & Sigmund, 1998) as well as the idea that cooperation to own group members has become an institutionalized heuristic (Efferson, Lalive, & Fehr, 2008). Based on this 'Group Heuristics Model', it can be concluded that individuals engage in indirect reciprocity, or parochial cooperation, to further the interests of their group, including their own interests. This approach deviates from Group Selection Theory in that it considers intergroup competition neither a necessary nor sufficient precursor of parochial cooperation. In fact, according to the Group Heuristics Model, the conception of an out-group is not even needed to instigate indirect reciprocity: Reputation concerns are sufficient to regulate parochial cooperation without the necessary presence of an intergroup setting. However, cooperation can only really be perceived as parochial when there is a comparison available with another group to which the reciprocal behavior does not extend. In an intergroup setting, the Group Heuristics Model acknowledges that intergroup aggression and conflict may occur as 'by-product' of parochial cooperation.

Individuals will not refrain from parochial cooperation when this has negative side effects for another party (Yamagishi & Mifune, 2008).

A last and quite different theoretical perspective is the S*ocial Identity Approach*. It suggests that individuals categorize themselves as part of a group (the in-group), automatically leading people not belonging to that group to form the *out-group* (Tajfel & Turner, 1986). The theory states that individuals largely derive self-esteem from their group, rendering it important for them to develop and maintain a positive group identity. One way to do so is by favoring the in-group and emphasizing its positive characteristics *(in-group favoritism; viz. in-group love)*. Another, closely related way is by derogating the out-group and discriminating against them: emphasizing their negative features and the distinctions between the in- and the out-group *(out-group derogation; viz. out-group hate*; Brewer, 1999*)*. Both tendencies are expressed in and give rise to *intergroup bias*: Devaluing the other group by valuing the own group. Research supporting this behavior is abundant, and indicates that prejudice and stereotyping largely originate from in-group favoritism; the tendency to positively distinguish the own group (see for reviews Hewstone, Rubin, & Willis, 2002; Hornsey, 2008). The Social Identity Approach does not include the concept of indirect reciprocity and reputation concern, but states that mere categorization is enough to create in-group favoritism and therefore parochial cooperation[1] (De Dreu et al., 2014).

According to the Social Identity Approach, intergroup competition is not necessary to promote in-group favoritism or out-group derogation; instead both tendencies are the outcome of positive social identity striving. However, such positive identity striving may invite negative evaluations of the other group, which in turn can fuel intergroup competition and conflict (Brewer, 1999; De Dreu et al., 2014, in press). An important difference between the Social Identity Approach and the Group Heuristics Model is the necessary presence of an out-group for the former: Without an out-group, there is no categorization between and identification with the groups, hence no in-group favoritism and no parochial cooperation (whether or not including out-group derogation).

In sum, Group Selection Theory (Bowles & Gintis, 2011; henceforth GST), the Group Heuristics Model (Yamagishi & Mifune, 2008; henceforth GHM), and the Social Identity Approach (Ellemers & Haslam, 2012; henceforth SIA) all suggest that individuals are strongly motivated or even predisposed to show parochial cooperation. The perspectives differ however in the extent to which they assume that parochial cooperation is fueled by intergroup competition. Whereas GST states

intergroup competition to be both necessary and sufficient to engender parochial cooperation, SIT presumes that the mere presence of another group is enough to elicit in-group favoritism and according to GHM, indirect reciprocity is based on reputation concerns and does not strictly require the presence of another group to occur. Furthermore, none of these perspectives considers individuals' willingness to display universal cooperation once intergroup competition is present. The current experiments will test to what extent intergroup competition fuels or reduces parochial as well as universal cooperation. More specifically, we investigate how individuals' natural inclination towards cooperation affects their cooperation efforts in an intergroup setting, depending on the presence or absence of competition with another group.

Social Value Orientation and Cooperation in Intergroup Conflict

In an intergroup conflict, cooperation constitutes a dilemma. Each individual is faced with a conflict of interest regarding how to invest their resources (time, money, etc.): What might be best for themselves is not best for their group, and what is best for the group is not best for both groups together (Bornstein, 1992; Halevy et al., 2008; Wit & Kerr, 2002). Contributing personal resources to the own group will strengthen its position, yet may simultaneously harm the other group. Investing in or cooperating with the other group or the collective of both groups combined (universal cooperation) may lead to disapproval and exclusion by the own group members who perceive this behavior as disloyal or even treacherous (De Dreu, 2010b). Individuals' choice of cooperation largely determines the course of the conflict: Towards an arms race where both of the groups increase their strength and threat towards each other, or towards a collectively beneficial outcome and conflict resolution (De Dreu, 2010a).

People's disposition to cooperate is reflected in their social value orientation: the dispositional tendency to prefer good outcomes for oneself only (pro-self orientation) or for both oneself and others (pro-social orientation; Messick & McClintock, 1968; Van Lange, 1999). Pro-socials value equality and reciprocity and tend to cooperate with others, while pro-selves only value personal success and tend to exploit others by non-cooperation (for reviews, see Van Lange, 1999; 2000). Research has repeatedly demonstrated the predictive value of social value orientation for cooperation: Pro-socials are more willing to sacrifice their self-interest for the benefit of the collective in social dilemma games (for reviews, see Au & Kwon, 2004; Balliet, Parks, & Joireman, 2009; Bogaert, Boone, & DeClerck,

2008; Van Lange, De Cremer, Van Dijk, & Van Vugt, 2007), make more generous concessions in negotiations and bargaining settings (De Dreu & Van Lange, 1995; Van Dijk, de Cremer, & Handgraaf, 2004), expect others to cooperate more (De Dreu & Van Kleef, 2004; Iedema & Poppe, 1994; 1995; Van Kleef & De Dreu, 2002) and recall more cooperative heuristics than pro-selves (De Dreu & Boles, 1998). They are also more willing to sacrifice themselves in close relationships (Van Lange, Agnew, Harinck, & Steemers, 1997) and to sacrifice personal interests to pursue organization-wide goals (Nauta, De Dreu, & Van der Vaart, 2002). This can and often has been interpreted as supportive of the idea that pro-socials would invest in universal cooperation and prefer to cooperate with as many people as possible.

In an intergroup setting, where in- and out-group have competing interests, the dynamics of the situation complicate the meaning and consequences of cooperation. Although universal cooperation would yield best outcomes for both parties, fellow group members may perceive this form of cooperation as disloyal and, unlike parochial cooperation, not in the direct best interests of the own group. Accumulating recent research evidence suggests that especially pro-socials are *parochial* cooperators, limiting their cooperation to their own group (Aaldering, Greer, Van Kleef, & De Dreu, 2013; Aaldering, Van Kleef, Greer, & De Dreu, 2014; Abbink, Brandt, Hermann, & Orzen, 2012; De Dreu, 2010b, De Dreu et al., 2010). This research repeatedly found pro-socials willing to sacrifice themselves for the benefit of their group, in some cases even at the expense of the other group (Aaldering et al., 2013; Abbink et al., 2012).

When faced with the cooperation dilemma in an intergroup conflict, pro-socials may thus opt for parochial cooperation, thereby actually fueling the conflict and subsequently harming intergroup relations (Aaldering et al., 2013). Although this conclusion seems at odds with the rich tradition of research suggesting that pro-socials are concerned with the collective welfare (for reviews, see Au & Kwon, 2004; Balliet et al., 2009; Bogaert et al., 2008; Van Lange et al., 2007), it can be explained in light of the research paradigms in these respective literatures.

Two important differences between these paradigms can be distinguished. Firstly, studies supporting the conception of pro-socials as universal cooperators in social dilemmas did not consider the dynamics of an intergroup setting. Most studies investigated individuals' willingness to self-sacrifice personal interests for another group, where no distinction was made between in- and out-group. Thus, what seems to be universal cooperation may have been a display of parochial

cooperation, in line with the GHM: Cooperation with other individuals within a group (or 'the collective' in many of these studies) where reputation concerns are at stake. The absence of an out-group in this paradigm precludes definite conclusions about the nature of pro-socials' cooperation (parochial or universal).

Secondly, studies indicating that pro-socials are parochial cooperators willing to harm the other party did not include a clearly available alternative option for mutually beneficial, universal cooperation. An exception to the latter includes the experiments by De Dreu and colleagues (De Dreu, 2010b; De Dreu et al., 2010). They employed the Intergroup Prisoner's Dilemma Maximizing Differences Game (Halevy, Bornstein, & Sagiv, 2008) to investigate differences in in-group love and out-group hate among pro-social and pro-self individuals. Individuals could choose to make costly (but potentially profitable) investments in their own group (in-group love), or in a between-group pool, where investments in the own group would reduce profit of the out-group members (out-group hate). Pro-socials consistently showed more in-group love than pro-selves. In this game, universal cooperation could have been displayed by a reduction in out-group hate next to the obtained increase in in-group love among pro-socials, which was not found, suggesting parochial instead of universal cooperation among pro-socials. However, this universal cooperation option is not easily accessible and thus does not provide convincing evidence that pro-socials are parochial only. Furthermore, although there was no difference in out-group hate depending on social value orientation, investments in out-group hate altogether were very low, suggesting a possible floor effect. Whether parochial cooperation was fueled or reduced by the presence of intergroup conflict was not investigated, hence results are consistent with all of the previously described theoretical perspectives.

The current experiments incorporate an intergroup setting with and without competition as well as a collectively beneficial option into the design. This paradigm therefore allows for a clear test of the occurrence of parochial cooperation under competition and the modulating role of social value orientation with respect to parochial versus universal cooperation.

The Nested Social Dilemma (NSD; Halevy, Chou, Cohen, & Livingston, 2012; Wit & Kerr, 2002) models an intergroup setting, where individuals are member of one of two groups, which in turn form a common collective. Interests on each of these levels are conflicting: Individuals are best off by keeping their endowments if other group members do invest, but everyone is worse off if nobody invests. Personal investments on the in-group level yield equal returns for all in-

group members, while personal investments on the collective level yield equal returns for all members of both groups. Highest individual outcomes are reached either if all group members invest everything in their group, or if all group members invest everything in the collective. Highest in-group outcomes are reached if all group members invest everything in their group; highest collective outcomes are reached if all group members invest everything in the collective. In sum, individuals have to decide whether to withhold resources, to invest them in their own group (parochial cooperation), or to invest them in the collective (universal cooperation). Research using the NSD has shown that individuals are generally most willing to sacrifice for their group (Wit & Kerr, 2002). Such results have been obtained with minimal-group laboratory experiments, where individuals' group membership consisted of nothing more than mere categorization yet strongly affected decision making (Polzer, Stewart, & Simmons, 1999; Wit & Kerr, 2002). These results support the notion of people's proclivity towards parochial cooperation (Rand & Nowak, 2013).

Findings regarding effects of social value orientation in an NSD are inconclusive, with one study finding pro-socials to invest more in the collective (but not the own group) than pro-selves (De Pauw, Wit, & Van Den Broeck, 2014), a second one showing them to invest more in the own group (but not in the collective) than pro-selves (Polzer, 2004) and another one showing that it depends on the personal contribution costs associated with investments in each pool (Böhm, Bornstein, & Koppel, 2014). While investments in an NSD reflect parochial or universal cooperation and can thus reveal pro-socials' inclination towards benefitting the own group or the collective compared to pro-selves, this game does not mirror an intergroup conflict where parochial cooperation comes at the expense of another party. To investigate the extent to which the presence of competition in an intergroup setting would fuel or reduce pro-socials' parochialism, we adapted the standard NSD to a competitive version (based on the Intergroup Prisoners' Dilemma, see Bornstein, 1992). Investigating the effect of intergroup competition on cooperation would firstly show whether intergroup competition is needed to elicit parochialism, especially among pro-socials. It would furthermore provide more knowledge on pro-socials' cooperation efforts: Are pro-socials parochial cooperators, even when this incurs a cost on the other group or will they primarily display universal cooperation? The presence of competition between the two groups could lead pro-socials to either stand up for their group and show their dark side by investing in their own group, thereby harming the other group, or to

shift their focus to the collective, displaying universal cooperation and a reluctance to hurt the other party.

In conclusion, with the current experiments we show whether intergroup competition fuels or reduces parochialism and how individuals' social value orientation affects their cooperation decisions.

Experiment 1

Based on the extant literature suggesting that individuals have a general tendency towards parochial cooperation (e.g., Rand & Nowak, 2013), we predicted overall more investments in the in-group compared to the collective *(Hypothesis 1)*. We furthermore predicted two main effects of social value orientation. Based on recent literature suggesting that pro-socials are parochial cooperators (Abbink et al., 2012; De Dreu, 2010b), we expected pro-socials to invest more in their in-group than pro-selves (*Hypothesis 2a)*. At the same time, and based on the long-standing research tradition showing that pro-socials are more willing than pro-selves to sacrifice personal interests for the collective benefit (e.g., Bogaert et al., 2008), we expected pro-socials to invest more in the collective than pro-selves (*Hypothesis 2b)*.

Next, we explored whether the presence of intergroup competition (competitive NSD) would increase or decrease the occurrence of parochialism per sé compared to an intergroup setting without competition between the groups (regular NSD). According to SIA and GHM, the presence of competition should not increase parochialism, which also occurs without competition. However, according to GST and in line with research showing that between-group competition boosts within-group cooperation (Bowles & Gintis, 2011; Erev et al., 1993; Gunnthorsdottir & Rapoport, 2005), intergroup competition should increase parochialism. Finally, it is also conceivable that individuals prefer to display parochialism *without* harming the other party. In-group love rather than out-group hate has been shown to be the primary motivator of parochial behavior (Balliet et al., 2014; De Dreu et al., 2014; De Dreu, 2010b; Dovidio & Gaertner, 2010; Halevy et al., 2008; Halevy, Weisel, & Bornstein, 2012). Individuals may be reluctant to help their own group when this simultaneously hurts the other party, especially when there is a mutually beneficial alternative available. We propose that individuals' social value orientation plays a key role in directing their cooperation behavior. Two contrasting hypotheses were developed based on two different perspectives.

The first perspective is in line with the GST that intergroup competition should increase parochialism. Especially pro-socials should be parochial cooperators at the expense of the conflicting other party, and studies have confirmed that especially pro-socials are willing to harm the out-group in an intergroup conflict if this will benefit their own group (Aaldering et al., 2013; Abbink et al., 2012). According to this perspective, pro-socials' tendency towards parochial cooperation is so strong that they will focus on defending the best interests of their in-group, possibly even when another solution to the conflict may be available. Stronger competition between the groups should thus actually fuel parochial cooperation. We therefore hypothesized that pro-socials would show more parochial cooperation, i.e., invest more in their in-group, when there is competition between the two parties. No difference in investments in their in-group depending on competition is anticipated for pro-selves (*Hypothesis 3a*).

The other perspective suggests that pro-socials are willing to sacrifice personal interests for as many people as possible (Bogaert et al., 2008). Given the unavailability of a mutually beneficial option in the previously described studies (Aaldering et al., 2013; Abbink et al., 2012), we argue that pro-socials, although initially parochial, prefer not to harm the out-group and will only do so if there is no other way to benefit their in-group. This is in line with recent literature suggesting that pro-socials' behavior is largely driven by a desire for equality, more than by benevolent intentions towards others (Haruno & Frith, 2010; Van Lange & Van Doesum, 2012). Given this concern for equality, pro-socials should be reluctant to incur losses on the out-group. Instead, if there is an option for mutual benefit, they will direct their cooperation there, thereby still helping their in-group. Based on this perspective, we hypothesized less investments in the in-group by pro-socials when competition is present versus absent (*Hypothesis 3b*), and, as a corollary, more universal cooperation- investments in the collective to benefit both parties together (*Hypothesis 3c*).

Furthermore, we probed pro-socials' motives for their investments. According to the GHM, (indirect) reciprocity drives parochial cooperation. Expectations about group members' investments in each pool should therefore predict own investments in the respective pools *(Hypothesis 4a)*. Pro-socials have a strong tendency towards reciprocity and despite their initial inclination towards cooperation, they will reciprocate encountered competition (Kelley & Stahelski, 1970; Van Lange, 1992). Research has shown that pro-socials expect others to act pro-socially too, whereas pro-self individuals expect others to act like pro-selves

(Iedema & Poppe, 1994; 1995). Combining these results suggests that pro-socials, more than pro-selves, would expect similar investments from their other group members *(Hypothesis 4b)*. From this it follows that the predicted effects of social value orientation on parochial as well as on universal cooperation are mediated by pro-socials' higher expectations about their in-group members' investments *(Hypothesis 4c)*. We finally explored whether the presence of competition would affect expectations about in- and out-group members' investments.

Lastly, we investigated individuals' identification with their in-group. According to the SIA, one should identify highly with other in-group members, which should lead to in-group favoritism (and in turn parochial cooperation) (Tajfel & Turner, 1986; Hewstone et al., 2002; Hornsey, 2008). We thus tested whether higher identification predicted higher in-group investments *(Hypothesis 5a)*. Additionally, we tested whether social value orientation and the presence of competition would influence identification. Pro-socials tend to identify on a group (or collective) level more than pro-selves, as has repeatedly been shown by research into social dilemmas (De Cremer & Van Dijk, 2002; Van Lange, Liebrand & Kuhlman, 1990). Pro-socials should thus identify more with their in-group than pro-selves *(Hypothesis 5b)* which should mediate their higher in-group investments *(Hypothesis 5c)*. Exploratively, we also investigated the effect of competition on identification. Although intergroup competition is according to SIA not a prerequisite for in-group identification and displays of in-group favoritism, it is conceivable that the presence of intergroup competition enhances the salience of one's in-group and as such increases identification and respective investments. Intergroup competition might thus increase identification with the own group, leading to higher displays of parochial cooperation.

Method

Participants and design

Initially, one hundred seventeen undergraduate students from the University of Amsterdam participated in this experiment in exchange for 10 euro or course credit. Sixteen participants were not classifiable as either pro-socials or pro-selves and were therefore removed from the analyses. The hundred-one remaining pro-social and pro-self participants (74.4% female, mean age = 21.98, *SD* = 4.30) were randomly assigned to the NSD or NSD with between-group competition condition of a factorial design. Main dependent variables were investments in the own group and the collective.

Procedure and Task

Upon arrival in the laboratory, participants signed informed consent and were seated in individual cubicles behind a computer. The experiment was computer-based and self-paced. It started with the well-validated decomposed-game measure to assess Social Value Orientation (SVO; De Dreu & Van Lange, 1995; Van Lange & Kuhlman, 1994; also see Eisenberger, Kuhlman, & Cotterell, 1992; Parks, 1994). Participants were asked to make decisions in nine decomposed games. In each game, three options of point distributions between themselves and another person were provided. They were asked to imagine that this person was an unknown other, someone they would never meet, and that the points were valuable. Each option represents a particular SVO. An example is the choice between option 1 (500 points for self and 500 points for other; pro-social), option 2 (560 points for self and 300 for other; individualistic) and option 3 (500 points for self and 100 for other; competitive). Participants were categorized as pro-social (n = 54) or as pro-self (n = 47 combined) if they made at least six choices consistent with one of the three orientations. We combined individualists and competitors into one category of pro-self orientation because no differences in behavior among these subtypes were expected, relatively few classified as competitor (n = 6), and results can thus be more easily compared to previous work (Aaldering et al., 2013; De Dreu & Van Lange, 1995; Van Dijk et al., 2004; Van Kleef & Van Lange, 2008; Van Lange, 1999).

Following the decomposed game measure, participants completed a filler task before the decision making task started. Participants then learned that they were randomly assigned by the computer to Team Triangle or Team Square, each consisting of four members who were not necessarily all present at the same time but would all play the same game. Participants received task instructions that they would receive ten chips which they could invest in Pool X or in Pool Y, or keep to themselves. Following the nested social dilemma game as used by Halevy and colleagues (2012; henceforth NSD), one chip invested in Pool X (the in-group pool) would be multiplied by four and divided by four among all group members; thus each group member would receive one chip. One chip invested in Pool Y (the collective pool) would be multiplied by four and divided by eight: All members of both the own and the other group would receive 0.5 chips. Finally, participants could choose not to invest any money, in which case the chips kept to themselves would be multiplied by two. Each chip was worth € 0.50 and one third of the

participants received the money they earned with their investments based on the chip divisions of themselves and the seven consecutive participants in the same condition. Personal investments costs were equal for investments in the in-group and in the collective pool, thus there was no rational economic incentive on the individual level to invest more in either pool (Böhm et al., 2014).

The competition condition consisted of an adapted NSD game following the structure of an Intergroup Prisoner's Dilemma (IPD), in which an investment in the own group automatically inflicts a loss on the out-group (Bornstein, 1992; henceforth: NSD IPD). In this game, investing a chip in the group pool (Pool X) would not only be multiplied and divided by four among the group members, but also multiplied by minus two and divided by four among the members of the other group. One chip invested in the own group would thus not only lead to a gain of one chip for each of the group members but also incur a loss of 0.5 chips for each of the members of the other group. The other instructions remained the same. Participants were told in both conditions that all members of both groups would make decisions regarding their ten chip endowment, and that their final outcomes would be determined by their own as well as by the other group members' decisions.

Before the actual investments were made, participants answered practice questions about consequences of hypothetical chip divisions to make sure they understood the task correctly. Afterwards, participants made three choices on investments of their chips in Pool X (group pool), Pool Y (collective pool), and the amount of chips they wanted to keep to themselves. Subsequently, they indicated the amount of chips they expected their fellow group members as well as the members of the other group to invest in each of the pools. Finally, a manipulation check was assessed. Upon finishing the experiment, participants were thanked, paid and debriefed. The participants who earned extra money based on their decisions were informed after all data was gathered and the extra pay-offs were computed.

Measures

Main dependent variables were the amount of chips invested in the group pool and the collective pool.

The manipulation check for intergroup structure consisted of four items. Participants were asked to indicate what reason there would be for members of their group as well as for the other group members to invest in Pool X and in Pool

Y. They could choose between (1) to generate profit for Team Triangle; (2) to generate loss for Team Square; (3) both 1 and 2; (4) neither 1 nor 2 nor 3); (5) to generate profit for both Team Triangle and Team Square; (6) to prevent Team Square from losing chips; (7) both 5 and 6; (8) neither 5 nor 6 nor 7. If they had understood the task instructions correctly, participants in the NSD IPD should have higher scores than participants in the NSD on item 3 for investments in Pool X and on item 7 for investments in Pool Y.[1]

Participants' expectations about their in-group members' investments were measured by requesting them to type in the amount of chips they expected their group members to invest in each of the pools. Additionally, they were asked to indicate how many chips they expected the members of the other group to invest in each of the pools.

Identification with the own group was measured with four items on a seven point scale (adapted from Doosje, Ellemers, & Spears, 1995): 'Me and the other members of Team Triangle are alike', 'I feel connected to Team Triangle', 'I would like to meet the other members of Team Triangle again' and 'I would like to do another task with the members of Team Triangle' (1 = not at all, 7 = very much Cronbach's alpha = .87).[2]

Results

Manipulation Check

Answers to the manipulation check were compared with a Chi-square test. Participants playing the NSD IPD more often indicated 'to help the own group and to harm the other group' than participants who played the NSD as reason to invest in their group (χ^2 [1, N =101] = 11.74, p = .001). Participants playing the NSD IPD reported more often 'to prevent harming the other group and to help both groups together' as a reason to invest in the collective than participants who played the NSD (χ^2 (1, N = 101) = 10.05, p = .002). This shows that participants correctly understood the structure of the games and thus supports the manipulation.

Correlations between the investment decisions, expectations of in- and out-group members' investments and identification with the in-group are displayed in Table 1. Investments in each of the pools are strongly negatively correlated. Individuals' expectations about both in- and out-group members' investments in each of the pools are strongly related to their own investment in the respective pool, which fits GHM. Finally, more identification with the in-group is neither

associated with more investments in the in-group, nor with any of the expectation measures. This is inconsistent with a core derivation from SIA.

Table 1. Correlations between investments, expectations and own group identification (Experiment 1)

	1	2	3	4	5	6	7	8	9	
1. Inv in-gr										
2. Inv coll	-.401*									
3. Inv self	-.489*	-.603*								
4. Exp ingr	.414*	-.335	-.041							
5. Exp coll	-.263*	.648*	-.388*	-.450*						
6. Exp self	-.069	-.397*	.439*	-.362*	-.670*					
7. Exp og ig	.429*	-.239*	-.146	.375*	-.329*	.031				
8. Exp og coll	-.234*	.628*	-.395*	-.219*	.688*	-.537*	-.537*			
9 Exp og self	-.208*	-.399*	.561*	-.166	-.367*	.521*	-.491*	-.471*		
10. Ident. Ingr	.091	.170	-.242*	.093	.063	-.143	-.023	.011	.012	

*p < 0.05

Investments

A 2 (social value orientation: pro-social vs. pro-self) X 2 (game structure: NSD vs. NSD IPD) mixed-model ANOVA was performed with investments in the in-group pool and the collective pool as within-subject variables. The main effect of pool supported Hypothesis 1: More investments were made in the in-group than in the collective pool ($M_{subgroup}$ = 3.21, *SD* = 2.22 vs $M_{collective}$ = 2.03, *SD* = 2.42, *F* [1, 97] = 14.95, $p < .001$, $\eta_p^2 = .13$). A main effect of social value orientation furthermore indicated that pro-socials' overall investments were higher than pro-selves' (*F* [1, 97] = 16.09, $p < .001$, $\eta_p^2 = .14$).

ANOVAS on the separate pools showed that competition affected investments in both pools: More investments were made in the in-group *without* (NSD) compared to *with* (NSD IPD) competition (*F* [1, 97] = 4.47, $p = .04$, $\eta_p^2 = .04$, M_{NSD} = 3.72, *SD* = 1.87 vs M_{NSDIPD} = 2.75, *SD* = 2.41), and more investments in the collective pool were made *with* (NSD IPD) compared to *without* (NSD)

competition (F [1, 97] = 4.94, p = .03, η_p^2 = .05, M_{NSDIPD} = 2.56, SD = 1.44 vs M_{NSD} = 1.44, SD = 1.97). These results are not in line with GST, which would predict higher in-group investments under competition.

Contrary to Hypothesis 2a, there was no effect of social value orientation on in-group investments, F (1, 97) < 1, *ns*. Pro-socials did however invest more in the collective pool than pro-selves, which supports Hypothesis 2b ($M_{pro\text{-}social}$ = 2.99, SD = 2.79, $M_{pro\text{-}self}$ = 0.92, SD = 1.19, F [1, 97] = 21.50, p < .001, η_p^2 =.18).

Finally, of interest for the contrasting Hypotheses 3a and 3b, main effects were qualified by a three-way interaction between social value orientation, game structure and pool, F (1, 97) = 6.89, p = .010, η_p^2 = .066. To investigate the exact nature of the interactions, simple-effects analyses were conducted. Our contrasting Hypotheses 3a and 3b stated that pro-socials would either invest more (H3a), or less (H3b) in the in-group pool in the NSD IPD compared to the NSD. Results supported Hypothesis 3b: Pro-socials invested less in their in-group in the NSD-IPD compared to the NSD (F [1, 97] = 11.26, p = .001, η_p^2 = .10) (See Figure 1a). In addition, Hypothesis 3c was supported, showing that pro-socials invested more in the collective pool in the NSD IPD compared to the NSD, (F [1, 97] = 8.910, p = .004, η_p^2 = .08) (See Figure 1b).

All in all, these results show that parochialism was especially apparent when competition between the two groups was absent (the regular NSD) compared to when it was strongly present (the NSD-IPD). Especially among pro-socials did competition decrease parochial cooperation. Intergroup competition increased investments in the collective, rather than the in-group pool.

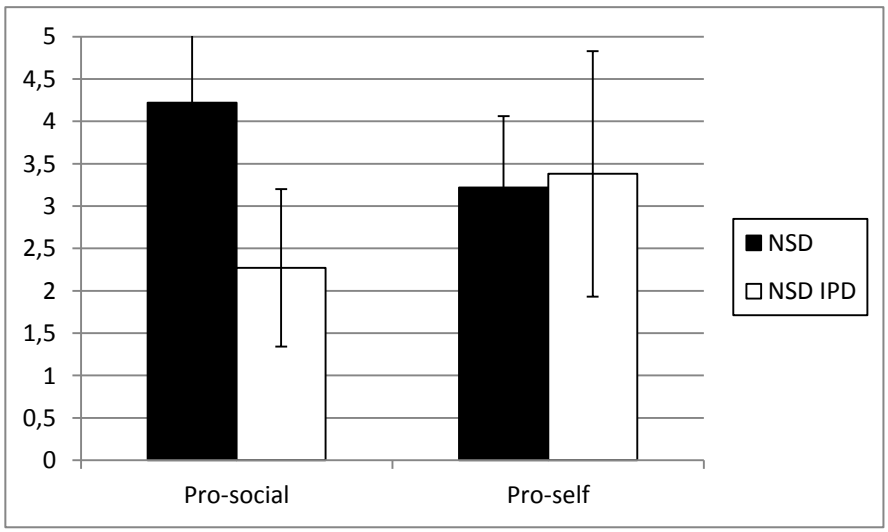

Figure 1a. Investments in the own group pool (Experiment 1)

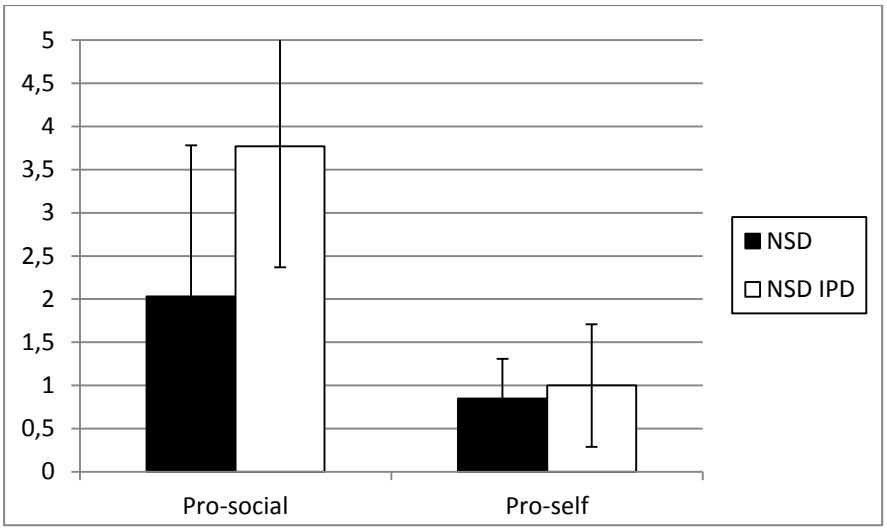

Figure 1b. Investments in the collective pool (Experiment 1)

Perceptions

Regressing investments in the in-group and the collective pool on individuals' expectations about in-group members' investments in these respective pools showed the predicted effects in line with GHM. Expectations of group members' investments in the in-group pool predicted own investments in this pool (B = .55, SE = .12, t[99] = 4.52, p < .001, Adj. R^2 = .16) and expectations of in-group members' investments in the collective pool predicted own investments in this pool (B = .75, SE = .09, t[99] = 8.46, p < .001, Adj. R^2 = .41). Hypothesis 4a was supported.

To test Hypothesis 4b, a 2 (social value orientation: pro-social vs. pro-self) X 2 (Task structure: NSD vs. NSD IPD) Manova was conducted on the expected investments of in-group and out-group members on both the in-group and the collective pool.

Expectations regarding in-group members' investments in the in-group did not differ depending on either social value orientation (F (1, 98) < 1, *ns.*) or game structure (F (1, 98) = 2.3, p = .113). Expectations regarding in-group members' investments in the collective pool were higher for pro-socials compared to pro-selves ($M_{pro\text{-}socials}$ = 2.25, SD = 2.48, $M_{pro\text{-}selves}$ = .98, SD = 1.31, F (1, 98) = 9.11, p = .003, η_p^2 = .086) and also for participants playing the NSD IPD compared to the NSD ($M_{NSD\ IPD}$ = 2.08, SD = 2.30, M_{NSD} = 1.20, SD = 1.78, F (1, 98) = 3.73, p = .056, η_p^2 = .037). These expectations thus reflect own behavior and partially support Hypothesis 4b. To test Hypothesis 4c, a Bootstrapping analysis with 5000 resamples was conducted, showing that pro-socials invested more in the collective

pool than pro-selves because they expected higher investments from their in-group members in this pool (95% CI: -1.56 to -.29, Z = -2.92, p = .004). No differences depending on social value orientation or presence of competition were found on expectations regarding out-group members' investments in either pool. Overall, results are in line with the GHM: Expectations about in-group members' cooperation decisions predict own cooperation behavior. For pro-socials, but not pro-selves, expectations about group members' investments drive their own investments in the collective pool.

To investigate the effect of identification on parochial cooperation, a regression analysis was conducted. Identification did not predict in-group investments (B = .15, SE = .16, t[99] = .91, p = .36, Adj. R^2 = -.00), rejecting Hypothesis 5a. A 2 (svo) X 2 (task structure) Anova revealed a main effect for social value orientation on group identification: pro-socials identified more strongly with their in-group members than pro-selves ($M_{pro\text{-}socials}$ = 3.69, SD = 1.29, $M_{pro\text{-}selves}$ = 3.10, SD = 1.40, F (1, 98) = 4.76, p = .032, η_p^2 = .047), supporting Hypothesis 5b. No effect of task structure nor an interaction was found for identification with the own group. As could be expected given the lack of direct effect of svo on in-group investments, a 5000 resample Bootstrapping analysis (95% CI) showed no mediation of identification on the relation between svo and in-group investments. (CI: -.41 - .06), rejecting Hypothesis 5c. Taken together, these results yield only weak support for SIA: Although pro-socials identified more with their in-group members than pro-selves, identification did not drive subsequent parochial behavior.

Discussion Experiment 1

The results of Experiment 1 show that humans generally tend towards parochial rather than universal cooperation, corroborating evolutionary and social-psychological theories (Bernhard, Fischbacher, & Fehr, 2006; Brewer, 1999; Efferson et al., 2008). Parochialism however decreases under intergroup competition, which is at odds with GST suggesting that intergroup competition drives parochialism (Gintis & Bowles, 2011). In line with abundant literature on social value orientation and cooperation, results furthermore show that pro-socials are more than pro-selves willing to invest their personal resources into the collective benefit and expect their group members to do the same. The latter supports research suggesting pro-socials strongly care about reciprocity and expect this from others as well (Iedema & Poppe, 1994; 1995; Van Lange, 1992). These

findings are also in line with the GHM on indirect reciprocity (Yamagishi & Mifune, 2008) Interestingly and surprisingly, we did not find pro-socials to invest more than pro-selves in their in-group, a sign that pro-socials may not be especially parochial. This corroborates recent findings by De Pauw et al (2014) but seems at odds with several studies suggesting that, overall, pro-socials have a parochial nature (Aaldering et al., 2013; Aaldering et al., 2014; De Dreu, 2010b, de Dreu et al., 2010).

The nature of pro-socials' limited parochial cooperation became apparent, however, when qualifying the findings of intergroup competition: Pro-socials only showed parochial cooperation when this would not hurt the other group. When parochialism would come at a cost to the other group, pro-socials shifted their investments towards universal cooperation. This initial evidence points to the conclusion that pro-socials are not willing to help their group at all costs and instead invest in the collective good, helping both groups and yielding the most optimal results. They thus choose a more difficult pathway to indirectly still benefit their in-group, yet without associated costs to the out-group. This pattern of behavior can be interpreted as a display of collective concern, and/ or a reluctance to harm the other group, and/or an indirect form of parochial cooperation.

Experiment 2

Experiment 2 was designed, first of all, to replicate the findings of Experiment 1 and thereby add to the robustness and reliability of the effects. We expected a general tendency towards parochialism by observing overall more investments in the in-group than in the collective pool (*Hypothesis 1a*) and increased parochialism in absence compared to in presence of intergroup competition (*Hypothesis 1b)*. We further expected pro-socials to invest more than pro-selves in both their in-group (*Hypothesis 2a)* and the collective *(Hypothesis 2b)*, to invest more in their in-group without compared to with intergroup competition (*Hypothesis 3a*), and to invest more in the collective with compared to without intergroup competition *(Hypothesis 3b)*.

Given the mixed results obtained in Experiment 1 for individuals' and especially pro-socials' motivation underlying their cooperation, we again tested the mediating role of expectations about group members' investments (GHM) and identification (SIA). Following the GHM, we expected that individuals' expectations about group members' investments in both the in-group and the collective pool would predict their own investments *(Hypothesis 4a)*; that pro-socials would

expect higher investments from their in-group members than pro-selves in both pools *(Hypothesis 4b)* and that the main effect of social value orientation on investments would be mediated by expectations about in-group members' investments *(Hypothesis 4c)*.

Following SIA, we predicted identification to predict in-group investments *(Hypothesis 5a);* pro-socials to identify more with their in-group than pro-selves *(Hypothesis 5b)* and identification to mediate the effect of social value orientation on in-group investments *(Hypothesis 5c)*.

A related goal of Experiment 2 was to investigate whether pro-socials' universal cooperation is an automatic reaction (which would provide support for the notion that they are universal rather than parochial cooperators), or whether it is a calculated strategy to serve the own group without harming the other group too much. If the latter is true, pro-socials should decrease collective investments when they do not have sufficient time or resources to calculate this strategy. Put differently, if they are really parochial, pro-socials will only display universal cooperation when they are able to weigh the different options and look for the optimal strategy.

To test this idea, we replicated the design of the first experiment and added a mental depletion manipulation for half of the participants. Research has repeatedly shown that mental depletion hampers self-control (Baumeister, Braslavsky, Muraven, & Tice, 1998; Masicampo, & Baumeister, 2008). Under mental depletion, the ability for cognitive deliberation decreases and individuals rely more on heuristics (Hagger, Wood, Stiff, & Chatzisarantis, 2010; Masicampo & Baumeister, 1998; Pohl, Erdfelder, Hilbig, Liebke, & Stahlberg, 2013). Recent research suggests that ego depletion can also increase cooperative behavior (Halali, Bereby-Meyer, & Meiran, 2013; Rand et al., 2012; Schulz, Fishbacher, Thöni, & Utikal, 2012). Cooperation and reciprocity are highly valued by pro-social individuals and should thus affect their decision making to a greater extent than pro-selves' (Van Lange, 1999). Indeed, compared to pro-selves, pro-socials show more other-regarding behavior under cognitive load compared to no cognitive load (Cornelissen, Dewitte, & Warlop, 2011). By exploring the changes in their investment behavior under cognitive load, we hope to uncover whether i) pro-socials' universal cooperation is deliberate or automatic, and whether ii) their reluctance to inflict harm on the out-group is strong and intuitive enough to shift their cooperation to investing in the collective under competition, even after mental depletion. If our interpretation of their universal cooperation as a calculated strategy to help their in-group without

harming the other group is correct, it follows that pro-socials should invest less in the collective in the NSD IPD under cognitive load compared to no cognitive load (*Hypothesis 6*). This study will thus contribute to our understanding on whether pro-socials are intuitively universal cooperators or harm-averse parochialists.

Method

Sample and Design

One hundred ninety-one participants, mostly undergraduate students from the University of Amsterdam, took part in the experiment in exchange for €5 show-up fee or course credit. Seventeen participants were not classifiable as either pro-social or pro-self and were consequently removed from the data, leaving a sample of 174 (64.9% female, mean age = 22.33, *SD* = 5.40). Pro-social and pro-self participants were randomly assigned to the conditions of a 2 (NSD vs. NSD IPD) x 2 (mental depletion vs. no mental depletion) factorial. Main dependent variables were investments in the in-group and in the collective.

Procedure and Measures

The procedure and tasks in the experiment were exactly the same as those in Experiment 1, with the addition of the mental depletion manipulation as the only exception. Following the instructions and practice questions of the game (NSD or NSD IPD depending on condition), participants were introduced to a Stroop task, which has previously been successfully used as mental depletion manipulation (Halali et al., 2013; Halali, Bereby-Meyer, & Ockenfels, 2013; Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009). The task was introduced as a visual processing task after participants had read the instructions for the decision making task. Participants were presented with color words (“blue”, “green”, “red” or “black”) on the screen and were asked to report the color in which the word appeared, using the appropriate color-coded key on the keyboard. After a trial with 12 stimuli, the alleged real task consisting of 24 stimuli started. In the no depletion condition, the words were congruent with the color in which they were presented. In the depletion condition, the words did not match the color, and participants had to suppress their automatic tendency to press the key for the color that the word spelled, rather than the ink color. Following the Stroop task, participants received a summary of the instructions in the decision making task as reminder, and proceeded by making their decisions. Two manipulation checks for the Stroop task were administered. One followed directly after the investment decisions, consisting of two questions:

"It took effort to indicate the color of the word" and "Indicating the color of the word was tiring", with a 7 point answering scale (Cronbach's alpha = .66). The second one consisted of four questions at the end of the experiment: "I found this task difficult/ frustrating/ tiring/ fun" on a 7 point scale (The last item was reverse coded, Cronbach's alpha = .70). The same questions were assessed to measure expectations and identification with the own group (For the latter scale, Cronbach's alpha = .85)[2].

Results

Manipulation Check

A Chi-square analysis was conducted to check the manipulation of game structure. Participants who played the NSD IPD more often indicated 'to help the own group and to harm the other group' than participants who played the NSD as reason to invest in Pot X (χ^2 [1, N = 174] = 20.22, p < .001). Due to a technical problem, data for reasons to invest in Pool Y were not correctly saved. However, based on the results on reported reasons to invest in Pool X and on the fact that the manipulation worked well in Experiment 1, we conclude that the participants correctly understood differences in game structure and that the manipulation was successful.

To check the manipulation of resource depletion, a 2 (mental depletion yes vs. no) x 2 (game structure: NSD vs. NSD IPD) x 2 (SVO: pro-social vs. pro-self) mixed-model ANOVA was conducted with the two scales measuring depletion as within-subject factors. Results supported the manipulation, revealing main effects of depletion: Participants indicated that indicating the color of the word was more tiring in the depletion (M = 3.37, SD = 1.38) compared to the non-depletion condition (M = 1.98, SD = 1.10, F [1, 166] = 51.13, p < .001, η_p^2 = .24. They also indicated afterwards that they found the task harder, more frustrating, and less fun after depletion (M = 3.38, SD = 1.23) compared to no depletion (M = 2.67, SD = 1.09, F [1, 166] = 13.53, p < .001, η_p^2 = .075).

Correlations between the investment decisions, expectations of own and other group members investments and identification with the own group are displayed in Table 2. Investments in each of the pools are strongly negatively correlated. Expectations about investments by both in- and out-group members in each of the pools are positively related to own investments in the respective pools. Identification with the in-group is positively related to own investments in the in-

group. Except for the latter finding, these correlations are highly similar to those observed in Experiment 1.

Table 2. Correlations between investments, expectations and own group identification (Experiment 2)

	1	2	3	4	5	6	7	8	9
1. Inv in-gr	1								
2. Inv coll	-.306*								
3. Inv self	-.538*	-.638*							
4. Exp ingr	.603*	-.088	-.409*						
5. Exp coll	-.289*	.531*	-.237*	-.309*					
6. Exp self	-.331*	-.328*	.558*	-.680*	-.487*				
7. Exp og ig	.478*	-.069	-.325*	.631*	-.181*	-.440*			
8. Exp og coll	-.181*	.419*	-.225*	-.127	.653*	-.387*	-.363*		
9 Exp og self	-.274*	-.302*	.489*	-.459*	-.404*	.733*	-.587*	-.541*	
10. Ident. Ingr.	.269*	-.145	-.089	.124	-.132	-.012	.036	-.089	.045

*p < 0.05

Investments

To test the hypotheses, a 2 (SVO: pro-social vs. pro-self) x 2 (game structure: NSD vs. NSD IPD) x 2 (mental depletion vs. no mental depletion) mixed-model ANOVA was performed with investments in in-group and in collective as within-subjects factor.

Main effects supported Hypothesis 1a: More investments were made in the in-group pool (M = 3.015, SD = 2.25) compared to the collective pool (M = 1.94, SD = 2.46, F [1, 166] = 14.95, p < .001, η_p^2 = .083). Furthermore and also replicating the results of Experiment 1, pro-socials overall invested more than pro-selves (F [1, 166] = 24.18, p = .237, η_p^2 = .008) and, supporting Hypothesis 1b, in-group investments were higher without compared to with competition (F [1,166] = 4.53, p = .04, η_p^2 = .03, M_{NSD} = 3.56, SD = 2.15 vs M_{NSDIPD} = 2.74, SD = 2.29). No main effect of competition was observed for investments in the collective (F [1, 97] < 1, *n.s.*).

In line with Hypothesis 2a, pro-socials invested more in their in-group than pro-selves (M = 3.56, SD = 2.26, and M = 2.73, SD = 2.17, respectively, F [1, 166] =

4.92, p = .028, η_p^2 = .029). Supporting Hypothesis 2b and replicating the results of Experiment 1, pro-socials also invested more in the collective than pro-selves (M = 2.51, SD = 2.48, and M = 1.37, SD = 2.32, respectively, F [1, 166] = 11.21, p = .001, η_p^2 = .063).

A three-way interaction of social value orientation, game structure, and pool was obtained (F [1, 166] = 6.96, p = .009, η_p^2 = .040) and followed up by simple-effects analyses to qualify the effects of social value orientation and competition on each of the pools. Replicating the findings of Experiment 1, and in line with Hypothesis 3a, pro-socials invested more in their in-group in the NSD than in the NSD IPD (F [1, 166] = 9.61, p = .002, η_p^2 = .055). No difference was obtained for pro-selves (F < 1). For a graphical representation, see Figure 2a. Supporting Hypothesis 3b and replicating the findings of Experiment 1, pro-socials invested more in the collective in the NSD IPD compared to the NSD (F [1, 166] = 3.98, p = .048, η_p^2 = .023; see Figure 2b). No effect of game structure was obtained for pro-selves (F < 1, *ns.*). In sum, investment decisions support the hypotheses and replicate the effects of Experiment 1. The presence of intergroup competition decreases parochialism while increasing universal cooperation- especially among pro-socials. Results thus support both GHM and SIA, yet not GST.

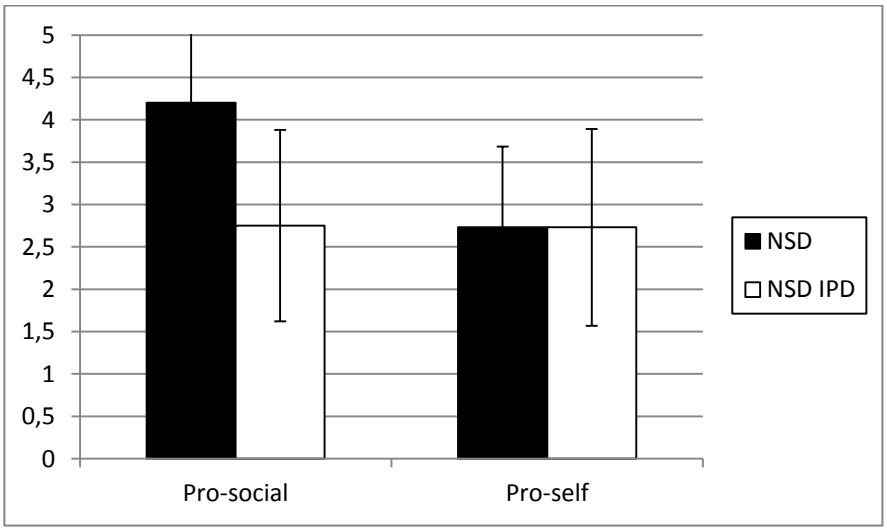

Figure 2a. Investments in the own group pool (Experiment 2)

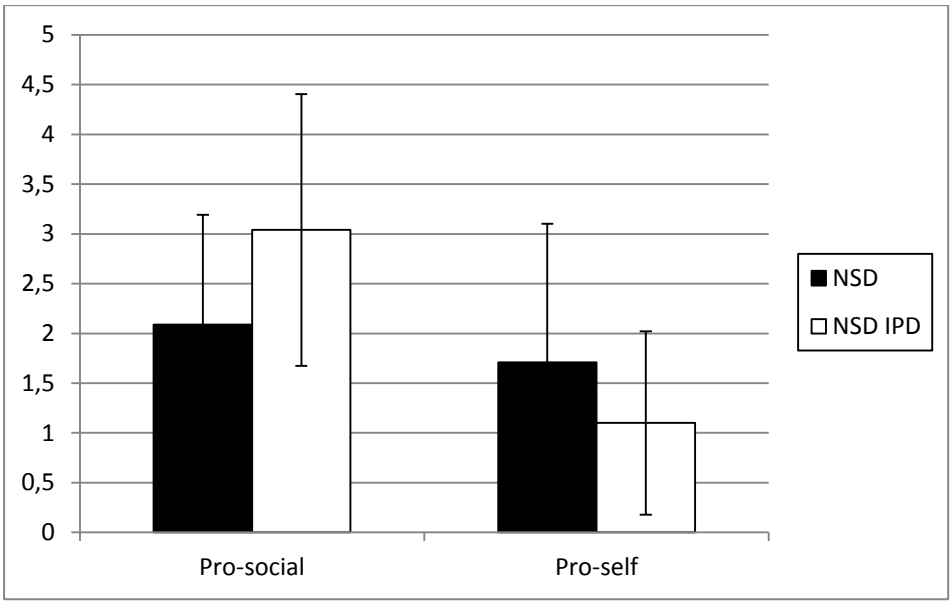

Figure 2b. Investments in the collective pool (Experiment 2)

Finally and of interest for Hypothesis 4, a three-way interaction between social value orientation, game structure, and mental depletion on investments in the collective was found (F [1, 166] = 3. 77, p = .054, η_p^2 = .022). There was no three-way interaction for investments in the in-group (F < 1, *ns*). Simple effects on collective investments revealed significant contrasts depending on mental depletion: The two-way interaction indicated that pro-socials only invested more in the collective in the NSD IPD compared to the NSD when they were not mentally depleted (F]1, 166] = 3.85, p = .051), see Figure 3a. This contrast was much weaker and non-significant after depletion (F [1, 166] < 1, *ns,* supporting Hypothesis 5.

To explore what happened with the resources pro-socials did not invest in the collective after mental depletion, we added investments in self to the design. This yielded a marginal three-way interaction of game structure, social value orientation and mental depletion on investments in the self (F [1, 166] = 3.57, p = .061, η_p^2 = .021). Simple effects on investments in self revealed that pro-selves invested more in themselves than pro-socials in the NSD IPD (F [1, 166] = 14.47, p < .001). However, this effect disappeared after depletion (F [1, 166] = 1.65, p = .20), see Figure 3b. In sum, these results suggest that after mental depletion, pro-socials invested less in the collective. Rather than investing more in their in-group, however, they kept their investments to themselves such that they no longer differed from pro-selves in that respect.

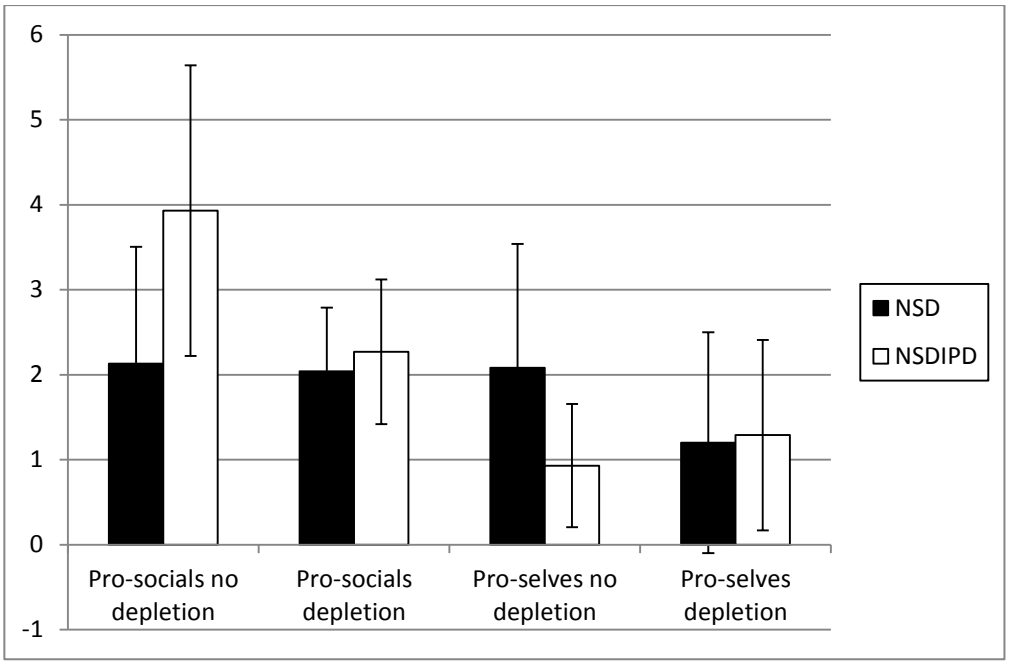

Figure 3a. Investments in the collective pool depending on depletion (Experiment 2)

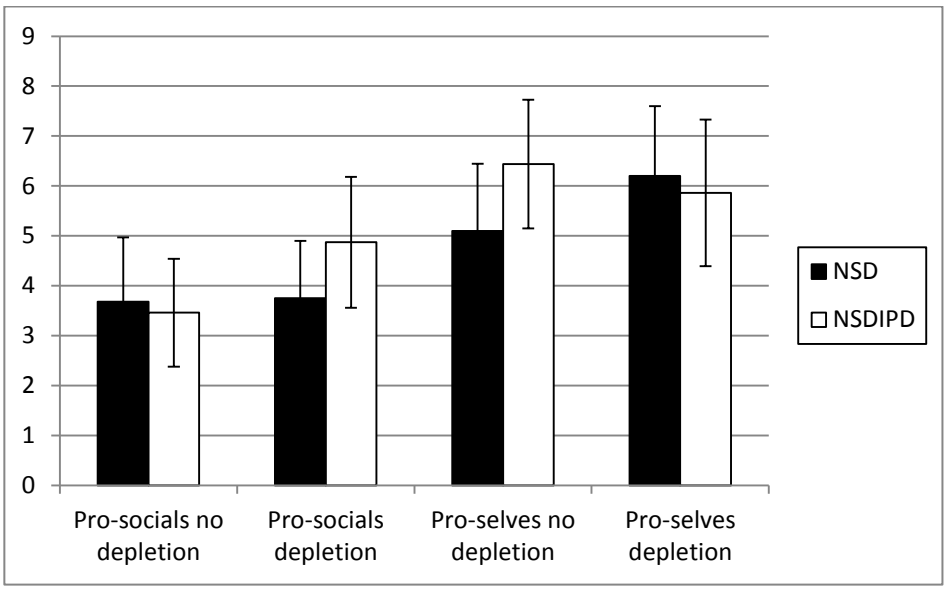

Figure 3b. Investments in self depending on depletion (Experiment 2)

Perceptions

Expectations about in-group members' investments predicted actual investments both in the in-group pool (B = .63, SE = .06, t[172] = 9.91, p < .001, Adj. R^2 = .36) and in the collective pool (B = .73, SE = .09, t[172] = 8.21, p < .001, Adj. R^2 = .28), supporting Hypothesis 4a. A 2 (social value orientation: pro-socials vs. pro-self) x 2 (Task structure: NSD vs. NSD IPD) x 2 (Mental depletion: absent

vs. present) Manova was conducted on the expected investments of in-group and out-group members in both the in-group and the collective pool to test Hypothesis 4b. Expectations regarding in-group members' investments in the in-group did not differ depending on social value orientation (F (1, 166) = 1.42, p = .24). However, expectations about in-group members' investments in the in-group pool were higher for participants playing the NSD (M = 3.94, SD = 1.91) compared to those playing the NSD IPD (M = 3.24, SD = 2.31, F (1, 166) = 3.91, p = .05, η_p^2 = .02). Expectations regarding in-group members' investments in the collective pool again did not differ depending on social value orientation, rejecting Hypothesis 4b. However, they were higher for participants playing the NSD IPD (M = 1.70, SD = 2.08) compared to participants playing the NSD (M = 1.22, SD = 1.44, F (1, 166) = 3.97, p = .05, η_p^2 = .02). Given the lack of direct effects of social value orientation on mediations, no mediation analyses were conducted, rejecting Hypothesis 4c. No differences depending on social value orientation or task structure were found on expectations regarding out-group members' investments. No interactions or effects of mental depletion were found either. In sum, although these findings partially mirror individual investment behavior and replicate the findings of Experiment 1, Hypothesis 4b and 4c are not supported.

Finally, a regression analysis showed identification to predict in-group investments (B = .43, SE = .12, t[172] = 3.66, p < .001, Adj. R^2 = .07.), supporting Hypothesis 5a. A 2 x 2 x 2 Anova revealed an interaction between svo and mental depletion on identification with the in-group (F (1, 166) = 4.59, p = .03, η_p^2 = .03). Simple effects analyses showed that pro-socials identified marginally more with their in-group under depletion compared to no depletion (F (1, 166) = 3.72, p = .055, η_p^2 = .02). No effect of depletion was observed for pro-selves' identification with the in-group (F (1, 166) = 1.23, p = .27). No main effects of svo on identification were obtained ($M_{pro\text{-}social}$ = 3.77, SD = 1.37, $M_{pro\text{-}self}$ = 3.67, SD = 1.43, F (1, 166) = .16, p = .69, η_p^2 = .001). Hypothesis 5b and 5c, which predicted a main effect of social value orientation on identification and a mediation of identification on the effect of social value orientation on in-group investments are not supported. However, as detailed below, the current results are still somewhat supportive of SIA.

Discussion Experiment 2

The results of Experiment 2 generally supported the hypotheses and replicated the findings of Experiment 1. Individuals have a general tendency towards parochial cooperation, and pro-socials are more willing than pro-selves to self-sacrifice and invest in their in-group as well as in the overarching collective. We furthermore replicated the effects of Experiment 1 showing decreased parochialism under competition, and the modulation of this effect by social value orientation. Pro-socials were reluctant to directly benefit their in-group at the cost of the other party; only when this was not harmful to the other group did they invest their resources in their in-group. When there was competition between the parties and in-group investments would come at a cost to the other party, they invested into the overarching collective of both parties combined, showing universal cooperation. Finally, our results indicate that pro-socials' universal cooperation is calculated: When they do not have sufficient cognitive resources available to compute this collectively optimizing strategy, their universal cooperation declines and their identification with their in-group increases. They are no longer able to compute the strategy that benefits both parties. This suggests that although pro-socials are not intuitively universal cooperators, inequality aversion and reluctance to incur a loss on the other group is a primary mechanism that cannot be overridden by mental depletion. We thus conclude that humans and especially pro-socials are parochial cooperators, but not at all costs: They try to come up with a collectively optimal outcome and show harm aversion when parochialism comes at a strong cost to the other group.

The reported experiments indicate that pro-socials do under particular circumstances invest resources in universal cooperation, thereby improving outcomes for both parties. We decided to investigate the outcomes generated by the parties based on individuals' investments. By doing so, we could test whether a higher number of pro-socials indeed predicts higher outcomes on the collective level, reflecting superior functioning. This would be in line with evolutionary work suggesting that groups with more parochial cooperators are more likely to survive and spread (Choi & Bowles, 2007). One could also argue that pro-selves may have the best survival strategy. Their focus on high personal profit without regard for the outcomes of the other parties in the conflict may help them to avoid personal losses. By exploiting their (pro-social) group members' cooperation they could actually be the ones taking the highest profit home. We exploratively tested how the

composition of individual members' social value orientation in the groups would influence the total outcomes generated by the collective of the two groups combined.

Exploratory Analyses: Collective Outcomes

To test how the number of pro-socials affects the efficiency of the collective of the two groups combined, we combined the datasets from Experiment 1 and Experiment 2 and aggregated investments to the collective level of eight persons. In this dataset, participants not classifiable as pro-social or pro-selves were included too, resulting in a total number of 38 collective entities.[3] These collective entities were formed based on entrance order of each participant, however we distinguished between participants who played the NSD and those who played the NSD IPD. Collective entities thus consisted of eight members who all had played the same game.

We investigated how the number of pro-socials as well as the presence of competition influenced total outcomes for the collective entity: This includes combined investments from all in-group members, the combined investments in their in-group by the out-group members, and investments in the collective by members of both groups. Although the sixteen not-classifiable subjects were included in the analyses, the number of pro-socials and pro-selves still strongly correlated negatively (r = -.840, p < .001). It therefore suffices to only look at the predictive value of the number of pro-socials, the focal interest of these additional analyses. To correctly compute outcomes of the collective, the total investments in the in-group pool as well as the other group pool were multiplied by four according to the rules of the game.

A linear regression with the presence of competition and number of pro-socials in the collective as predictors showed two main effects: Collective outcomes were higher when participants played the no competition NSD rather than the strong-competition NSD IPD (B = 50.43, SE = 10.83, t[36] = 4.66, p < .001). More importantly, collective outcomes were higher when there were more pro-socials in the collective, B = 9.58, SE = 3.72, t[36] = 2.57, p = .014, R^2 = .43. Collective efficiency thus increases with the number of pro-socials as well as with a less competitive version of the game.

When including the amount of chips individuals decided to keep to themselves (multiplied by two according to the rules of the games), results did not differ: Higher outcomes were predicted by collective entities playing the NSD (B =

45.80, SE = 6.16, t[36] = 7.44, p < .001) and by a higher number of pro-socials within the collective (B = 5.68, SE = 2.12, t[36] = 2.68, p = .011, R^2 = .63). Thus, even when including the pro-self strategy of keeping money to oneself, combined outcomes for the collective were still predicted by the number of pro-socials.

General Discussion

Parochial cooperation has a potential negative side in intergroup competition, where helping the own group comes at the expense of the competing other party. Theoretical perspectives differ in the extent to which they perceive intergroup competition necessary and sufficient for the occurrence of parochial cooperation. The current experiments show that the presence of intergroup competition actually decreases the occurrence of parochial cooperation when there is a mutually beneficial option available. Particularly pro-social individuals show this behavior: Under intergroup competition, they prefer to take an alternative route towards serving their in-group by investing in the overarching collective of both groups combined. In the second experiment, we further demonstrate that this is a calculated strategy to benefit the own group while avoiding harm to the other group.

Theoretical Implications

These findings firstly suggest that the Group Selection Theory is too stringent. According to our results, intergroup competition is not necessary for parochial cooperation and can even decrease its occurrence, at least when there is an alternative route to benefiting the in-group. Results are more in line with both the Group Heuristics Model and the Social Identity Approach, showing that i) intergroup competition is not necessary to evoke parochial cooperation and ii) expectations' about reciprocity (GHM) and identification (SIA) are related to individuals' investments in the in-group.

Furthermore, the findings of these experiments point to the important effects of social value orientation on cooperation in intergroup conflicts and reconcile two inconsistent research lines. One line of research suggests that pro-socials are overall more cooperative than pro-selves and willing to make costly contributions to as many people as possible (Bogaert et al., 2008; Van Lange, 1999), and one shows that pro-socials have a dark side and are willing to fight for their own group to the point where the other group suffers and inferior outcomes are reached (Aaldering et al., 2013; Abbink et al., 2012; De Dreu et al., 2010).

Current results show that rather than being intuitively driven towards universal cooperation, pro-socials are first and foremost concerned with the wellbeing of their own group. However, when competition increases and serving their in-group comes at a cost to the out-group, pro-socials deliberately look for a more collectively optimal option through which such cost can be avoided. This partially fits with recent work showing that cooperation is intuitive (Rand et al., 2012), but qualifies it by showing that pro-socials' intuitive cooperation does not necessarily extend to all individuals involved. When pro-socials do not have sufficient cognitive resources to look for the option to avoid harm, or if no such option is available, they seem willing to accept harm to the other group as collateral damage (Aaldering et al., 2013; Abbink et al., 2012).

Pro-selves, in contrast, appear to be generally unaffected by the dynamics of the conflict situation and prefer to keep their resources to themselves. Interestingly, results show that pro-selves invested quite some resources in the own group as well. An explanation could be that, given the rules of the games, they expected a higher personal profit by distributing their resources. Indeed, investing in the own group yielded a relatively large return for all group members, assuming that all did invest some of their resources. This is in line with abundant research showing that pro-selves adopt the strategy leading to highest personal benefit (Balliet et al., 2009; Van Lange et al., 2007).

We furthermore showed that higher collective efficiency is realized when the NSD compared to the NSD IPD is played. This is not surprising, given the structure of the games: In the NSD IPD, resources inevitable go lost due to the competitive element where investments in the in-group come at a cost to the out-group. More importantly, however, we show that the number of pro-social individuals within a collective of two groups combined predicts higher outcomes. Apparently, investing resources in the in-group and the collective pays off in the long run in the form of higher overall profits. This conclusion still holds when the amount individuals (especially pro-selves) decide to keep to themselves is added to the collective outcomes. Thus, pro-socials' cooperation is rewarded by high investment outcomes – an indication of good functioning and wellbeing of the two groups together.

In sum, a pro-social mindset pays off in intergroup conflicts and, at least when there is a mutually beneficial alternative available, guards against the potential negative sides of parochialism: Especially pro-social individuals serve the interests of their in-group but not at the expense of the opposing party, which ultimately leads to better functioning of the two parties together and reduced

conflict and associated costs. Finally, our results shed light on the underlying mechanisms of parochial cooperation. According to GHM, expectations of indirect reciprocity guide investments. We obtained strong supported in both studies for the predictive value of expectations about in-group members' investments on own investments. We argued that especially pro-socials, with a natural inclination towards reciprocity, would be driven by their expectations about in-group members' investments in their own investments. We found support for these predictions in Experiment 1, yet only for investments in the collective. Pro-socials did not display more parochial cooperation than pro-selves in general, and in turn did not expect their group members to do so.

According to SIA, identification should underlie parochial cooperation. Our results yield mixed support. Only in Experiment 1 did we find identification to predict parochial cooperation. Although we argued that pro-socials should identify more with their in-group than pro-selves and therefore show more parochialism, our data did not support these predictions. However, we found higher identification among pro-socials compared to pro-selves under mental depletion. When they lacked cognitive resources to compute mutually beneficial outcomes, this apparently increased the salience of their in-group- yet did not lead to more parochialism. Taken together, we find relatively weak support for identification as mechanism underlying parochial cooperation.

Avenues for Future Research

The current experiments provide an important first step in discovering the role of competition and social value orientation on cooperation in intergroup conflict. We developed a new paradigm that allowed for the different cooperation options faced by individuals in intergroup conflicts. By manipulating the presence of competition between the parties we were able to cleanly test whether parochial cooperation would be fueled or reduced by heightened intergroup competition in which case parochial investments would hurt the opposing party, as well as whether these effects are particularly present among pro-social individuals. The replication of the results of Experiment 1 by Experiment 2 adds to the reliability and robustness of the observed effects. These findings however also beget new research questions. For example, we found support that parochialism decreases under intergroup competition, suggesting that individuals will use alternative options to serve their in-group when these are readily available. More research is needed to identify when and why parochialism is triggered by intergroup

competition, and to what extent individuals are willing to inflict harm on another party if this can benefit their in-group. Situations where intergroup conflicts do not easily allow for collectively beneficial options, or where individuals do not have sufficient cognitive resources available to detect such options are easily conceivable. Although the current results suggest that pro-socials would keep their investments to themselves rather than invest in their own group if this would harm the other group, this stands in contrast with previous studies showing that pro-socials are willing to benefit their in-group at the expense of the other party when no collectively beneficial option was available (e.g. Abbink et al., 2012). Possibly, their universal cooperation was a calculated strategy not especially to avoid harm to the other party, but to secure longer term benefits for the own party. After all, investing in the in-group under competition leads to a net waste of resources rather than to gaining more positive outcomes (see also Abbink et al., 2012). More research is needed to provide conclusive evidence regarding the circumstances under which pro-socials are willing to accept harm to the other party as collateral damage if that serves the interests of their own group, and to what extent their universal cooperation is disguised parochialism. Furthermore, research could focus on more benign forms of competition, where parochial cooperation increases chances to gain something for the in-group, rather than incurring a loss on the out-group. If pro-socials are harm-averse but parochial, they may show increased parochialism under such gain-framed competition.

More research could also specifically test predictions of each of the theoretical viewpoints. Our data do not support Group Selection Theory but find some evidence both for the Group Heuristics Model and the Social Identity Approach- at least for pro-social individuals. Future research should more specifically design an experiment to precisely capture the mechanisms underlying parochial cooperation.

Within an intergroup conflict, parochialism is not always the only possible form of cooperation. A collectively beneficial option in a conflict is often available, if only the conflicting parties are willing to explore it. Diplomacy and negotiations are constructive means towards conflict resolution and can lead to agreements accepted by both parties, with peace and prosperity as a result (Rubin, Pruitt, & Kim, 1994). Whereas negotiation research suggests that especially pro-socials are willing to look for such integrative win-win agreements in negotiations (De Dreu, Weingart, & Kwon, 2000, but see Schei, Rognes, & De Dreu, 2008) and organizational conflicts (Nauta et al., 2008), this research has hardly considered

the role of the constituency. In representative negotiations, representatives of groups also face a cooperation dilemma where they are pressured by their constituency to defend their interests, but pressured by the other negotiation party to compromise and reach an agreement (Druckman, 1977). Research into group influences on cooperation in representative negotiations has shown that representatives are likely to follow the group norm as established by their constituency, which may guide them towards suboptimal decisions or even conflict escalation to serve the groups' interests (Aaldering & De Dreu, 2012; Steinel, De Dreu, Ouwehand, & Ramírez-Marín, 2009; Steinel, Van Kleef, Van Knippenberg, Hogg, Homan, & Moffit, 2010). Future research should investigate whether similar factors affect individuals' parochial versus universal cooperation in an intergroup competition. Furthermore, more research should investigate multi-issue negotiations with room for a unilateral (parochial) but also a bilateral (universal) cooperative agreement, thereby varying the amount of competition between the groups, characteristics of the constituency and cognitive restraints on the representatives. Such research would be fruitful in showing the robustness of our findings in a practical negotiation context, as well as refining our conclusions regarding other boundary conditions of pro-socials' parochial cooperation.

Conclusion

Parochial cooperation is a prevalent and evolutionarily adaptive strategy, especially in intergroup competition: Strengthening the own group will secure its position and may help to win the conflict (Bowles, 2008; 2009). However, in doing so it also fuels the conflict, potentially leading to suboptimal outcomes for both parties. The current experiments indicate that the presence of intergroup competition actually decreases parochial cooperation when there is an alternative option available to benefit both parties together. Especially pro-social individuals, who are more willing to self-sacrifice for the benefit of their own group than pro-selves, adopted alternative, mutually beneficial strategies when parochialism was costly to the other party. This collective cooperation is a calculated strategy and declined after cognitive depletion. Accordingly, a larger number of pro-socials within both competing groups increased total outcomes (a proxy of collective well-being). This sends a hopeful message that pro-socials may de-escalate conflict: As long as they have sufficient cognitive resources available they will look for collectively optimal strategies towards conflict resolution.

Notes

[1] We conceptualize parochial cooperation as a behavioral expression of in-group favoritism (or in-group love), the motivation to increase (relative) standing of the in-group (see Brewer, 1999; Yamagishi & Mifune, 2009; De Dreu et al., 2014).

[2] We also included, for exploratory purposes, measures' of individuals motivation to invest in their group and the collective pool (greed, competitiveness towards the other group, concern for fairness, concern for collective and concern to minimize differences). These measures were assessed at the end of each of the experiments. Analyses revealed main effects of social value orientation but no additional insights important for the current conclusions and are further ignored. Materials and results are available from the first author upon request

[3] Not all participants could be used in this analysis because the number of participants in each condition could not be divided by eight. Collectives of eight individuals were computed based on order of entrance, hence the data of the participants entering the lab last were not used in these analyses.