

You Are Not in My Boat: Common Fate and Discrimination Against Outgroup Members

Daniel John Zizzo*

School of Economics, University of East Anglia, Norwich NR4 7TJ, United Kingdom

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Abstract

Sharing a common fate with some people but not others may affect how economic agents behave in economic transactions, quite independently of strategic incentives. We present an experimental test of the effect of perceptions of common fate on the inducement of economic discrimination in bilateral settings. In settings where the bargaining power was all with one subject (the dictator game and a ‘unilateral power game’), about half of the subjects engaged in negative discrimination: insiders were not treated better relative to control sessions, but outsiders were treated worse. Discrimination may be induced by a more conflictual perception of the decision problem.

JEL Classification Codes: C72, C91.

Keywords: discrimination, bargaining, dictator game.

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“It would be difficult to describe the subtle brotherhood of men that was here established on the seas. No one said that it was so. No one mentioned it. But it dwelt in the boat, and each man felt it warm him. They were a captain, an oiler, a cook, and a correspondent, and they were friends, friends in a more curiously iron-bound degree than may be common. The hurt captain, lying against the water-jar in the bow, spoke always in a low voice and calmly, but he could never command a more ready and swiftly obedient crew than the motley three of the dingey. It was more than a mere recognition of what was best for the common safety. There was surely in it a quality that was personal and heartfelt.”

From Stephen Crane, *The Open Boat: A Tale Intended To Be After the Fact. Being the Experience of Four Men Sunk from the Steamer Commodore.*

1. Introduction

This paper presents an experimental test of the effect that *common fate* has on the inducement of economic discrimination in bilateral bargaining. When we say “we are all in the same boat” we mean that, in a particular situation, we share the same predicament: the shipwrecked characters of Crane’s story believe that they shall all die together if their boat sinks or they can’t find land in time; footballers, and their most enthusiastic supporters, share in the success and defeat of their team; teamworkers in a company may know that they will share in the success or failure of their team, with potential direct and indirect implications for each of them individually; to a lesser degree, workers in the same company might feel to share a common fate in the success of their company at the expenses of other companies; and strong national or religious identities (i.e., being a Palestinian or an Israeli, or being a Northern Ireland Catholic or Protestant) may also be associated with feelings of common fate. A large number of bilateral transactions occurs both within groups and between members of different groups sharing some degree of common fate. Perceptions of common fate may have a role to play in team design within organizations and also within an economy and society at large. The objective of this experiment is to try to capture the effect that these perception of common fate have on behavior.

In circumstances where common fate implies that by choosing cooperative actions agents can achieve a mutually superior outcome, it is no surprise that we should expect intra-group cooperation. It is, after all, in the self-interest of each of the characters in Stephen

Crane's boat to row hard and to follow orders by the captain as the most competent seaman onboard. What Crane's text appears to imply, however, is that his characters underwent "more than a recognition" that cooperation is required out of self-interest. They felt "a subtle brotherhood" which had "a quality that was personal and heartfelt". A line of experimental research has combined both the strategic dimension and the purely framing dimension from inducing a common fate, and so, while very important, it has not isolated the pure effect of the framing (as opposed to the strategic) dimension (e.g., Reichmann and Weimann, 2004). Tan and Bolle (2004) did design a public good contribution experiment which isolated the psychological effect of having inter-team comparisons from strategic incentives to contribute more to gain more money. They found higher contribution simply as a result of the possibility of inter-team comparisons. Wit and Wilke (1992) found that a common fate manipulation increased cooperation in later game play of three social dilemma variations, based on the Prisoner's Dilemma, the Chicken, and the Stag-Hunt game. This was a pure framing effect, with no strategic explanation. This experiment lacked proper financial incentives and employed deception, however.

Common fate, even in its pure framing dimension, may have a darker side. There may be cooperation towards ingroup members (people in the group, sharing the common fate), but also negative discrimination towards outgroup members (people outside the group, not sharing the common fate). In one of the conditions of Rabbie and Horwitz (1969), subjects were arbitrarily divided in Greens and Blues; the experimenter announced that a radio would be given to each Green member or to each Blue member depending on the outcome of a roll of a die. This was sufficient to induce an ingroup bias as measured by some questionnaire ratings.

The experiment in this paper considers a coordination game, a Nash demand game, an ultimatum game, a bargaining game with unilateral power by own part ("unilateral power

game”) and a dictator game. We aim to find out whether, due to non-strategic perceptions of common fate, there is discrimination favouring insiders relative to outsiders, and, if so, whether this discrimination is positive (insiders are treated better than they otherwise would) and/or negative (outsiders are treated worse than they otherwise would). We can isolate the nature of the discrimination, i.e. whether it is positive or negative, by running control conditions where no common fate is induced, and so comparing behavior when common fate is induced with behavior when it is not. In addition, by using a new experimental technique based on the elicitation of similarity evaluations between games, we get suggestive evidence about what underlies discriminatory behavior.

From a practical perspective of team design, it clearly matters whether common fate simply implies more cooperation than would otherwise be observed towards some other agents (positive discrimination) or alternatively whether common fate can act ‘aggressively’, by with-holding cooperation towards outsiders (negative discrimination). In the former case, cooperation is increased overall; in the latter, it is reduced.

Section 2 presents the experimental design. Section 3 contains the result. Section 4 has a brief discussion and conclusion.

2. Experimental Design

The experiment was run in seventeen sessions of eight subjects each in Oxford between October 2002 and February 2003, for a total of 112 subjects.² Subjects were mostly, though not exclusively, graduate and undergraduate students. There were three experimental conditions: the common fate color group condition (CF, 4 sessions), the minimal color group condition (MC, 4 sessions) and the no color group condition (N, 5 sessions).

The CF condition will be described first, as the other conditions can be interpreted as controls relative to this one.

² The experimental instructions are at <http://www.uea.ac.uk/~ec601/SnstrForSimbaPaper10.pdf>.

2.1 The Common Fate Condition

At the start of the experiment, subjects were presented with a yellow rectangle and a red rectangle on the computer display and were asked to state on a scale between 0 and 9 what was their preference towards red, as a color, relative to yellow (higher numbers indicated a greater preference for red). The four subjects with the greatest preference for red (yellow) became part of the “Red” (“Yellow”) group (in case of borderline ties, color group assignment was random). This kind of method of inducement of experimental groups was drawn from the experimental psychology literature on minimal group formation, where it is common practice (e.g., Brown, 2000; Yamagishi et al., 1998).⁴

To induce common fate, we opted for the possibility (one chance in six) of a Paradise (i.e., very positive) common fate scenario.⁵ Subjects were told that, in the payment stage, an experimenter would roll two ordinary dice, a Yellow die and a Red die, into a glass cup. If a roll of 1 obtained on the Yellow (Red) die, all Yellow (Red) participants would earn a “lucky jackpot” of 36 pounds in place of any ordinary winnings (nine pounds above the maximum winnings subjects could otherwise earn from the experiment). The common fate manipulation was done in such a way so as not to create any strategic incentive to treat insiders better and treat outsiders worse: what we are interested in is the purely psychological (as opposed to strategic) dimension of inducing common fate.

Subjects then played twenty games (“decision tasks” in the instructions) in between-sessions randomized order. They were randomly assigned either to the role of “first mover”

⁴ The reader may wonder whether the method may induce the discrimination findings that we describe later. It is worth stressing, however, that our focus is on the effect of common fate rather than on those of minimum group inducement. Since we run both a condition with color groups and common fate and a condition with color groups but *without* common fate, it is possible to isolate the effect of common fate as opposed to that of color group inducement.

⁵ Alternatively, we could have mirrored Crane’s novel and provided a Doomsday (i.e., very negative) common fate scenario. For example, subjects could have been endowed with a large amount of money (say, 36 pounds) which they could have then lost with a chance out of six.

(proposer) or to that of “second mover” (receiver) in asymmetric games, and were told that they would retain this role throughout the stage. Subjects did not know which player they were matched with, though they knew their color group, and they knew that they would be matched an equal number of times with ingroup and outgroup members. They were also told that this was the only interactive stage of the experiment. Five games were used: (1) a coordination game (CDG) where subjects earned what they claimed if the sum of their claims was exactly 100 experimental points; (2) a Nash demand game where subjects earned what they claimed if the sum of their claims was no greater than 100 points (NDG); (3) a standard ultimatum game where the proposer made an offer on how to split 100 points, and if the receiver rejected it neither got anything (UG); (4) a unilateral power game where the proposer made an offer on how to split 100 points, and if the receiver rejected it the proposer got 100 points (UPG); (5) a standard dictator game where the proposer made a binding offer on how to split the 100 points (DG).

Subjects played each game twice with ingroup members and twice with outgroup members. At the start of the stage they filled a short questionnaire with the only purpose of making sure they understood the instructions. Their answers were checked by experimenters, and, if any was incorrect or missing, the relevant points were explained individually.

If a receiver got to a round with an asymmetric game before the proposer for that round had made her choice, he had to wait until a choice had been made; he would then see the proposal and, in the UG and UPG, make his choice. With this exception, no feedback was provided on what other subjects had decided and on the outcome of each round.

Subjects were then asked to answer a battery of questions on how similar the scenario described on the top label of the computer display was to another, placed in the bottom label of the screen. The text for each scenario corresponded to that of one of the five games from Stage 1, with just an additional sentence specifying the coplayer’s color group.⁶ So there were ten possible scenarios overall, and $10!/(10! - 8!) = 90$ possible permutations. Each

⁶ For asymmetric games, subjects who had been proposers (receivers) in stage 1 always viewed scenarios in the presentation for proposers (receivers) they had been acquainted with in stage 1.

permutation was shown once in between-subjects randomized order. Subjects received no feedback on the outcome of their choices during the stage. Since all permutations were used, information was gathered not just on how game x was similar to y , but also on how game y was similar to game x . The understanding of this task by the subjects was checked by the means of an initial questionnaire.

When everyone was done, the experimenter rolled a yellow die and a red die in transparent plastic cups, and announced the outcome of the roll. If the yellow (red) die resulted in a 1, all yellow (red) subjects were paid 36 pounds. If not, they were paid a participation fee of 3 pounds, plus an “action payment” (based on the choices in games) and a “similarity payment” (based on the similarity questionnaire). The action payment was based on a randomly chosen round; points earned in that round were converted into pounds at the rate of 0.06 U.K. pounds per point (so the action payment was up to 6 pounds). The similarity payment was based on a between-subjects randomly chosen round. If subjects got the similarity evaluation exactly right, they earned 18 pounds; for every point by which the guess was incorrect, the amount earned decreased by 7 pounds (if the evaluation was wrong by 3 points or more, the similarity payment was zero). Since no feedback was provided during the stage, the determination of the “correct” similarity answer was an issue that had to be practically addressed to ensure financial motivation and determine payments, but not one with serious bearing on the experiment. Lack of feedback was required since any choice of “correct” similarity values was bound to be somewhat arbitrary, and a potential source of distortions in the experiment.⁸

2.2 The Control Conditions

MC Condition. The minimal color group condition was identical to the CF condition in all but one key feature: color-grouping was *not* related to payments, and so there was no

⁸ Games were placed on a line and assigned z values equal to 0, 2, 6, 9 and 9 for the CDG, NDG, UG, UPG and DG, respectively. The “correct” similarity value was then determined as $(9 - dz)$, where dz is the distance between the z values corresponding to the two games being compared. Whether game x was compared to y , or y compared to x , made no difference to the “correct” similarity value, nor did the coplayer’s color group.

common fate inducement. Thus, payments were always determined on the basis of the participation fee, the action payment and the similarity payment.

N Condition. In the no color-group condition subjects were not classified into groups. There was no mention of color groups on the computer display or the instructions throughout the experiment, including in the presentation of scenarios in stage 2. In a variant of this condition (*NI*, 3 sessions), this simply meant that each permutation was presented twice to the subjects; in another variant (*N2*, 2 sessions), “your coparticipant belongs to the red (yellow) group” was replaced in each scenario by a piece of irrelevant information, “it is an odd (even) day of the week”.⁹

The experiment lasted up to 1 hour and 45 minutes in the CF condition and between 1 hour and 1 hour and a half in the MC and N conditions (slightly less in the N condition than in the MC condition). Mean experimental payments were 18.80, 10.64 and 11.95 U.K. pounds in the CF, MC and N condition, respectively.

3. Experimental Results

3.1 Discrimination in Offers

The histograms of amounts unclaimed in each game are illustrated in Figure 1.

(Insert Figure 1 about here).

For simplicity we refer to “amounts unclaimed” as “offers”, even in relation to the CDG and NDG. Subjects easily coordinated at 50 in the coordination game, and mostly did so also in the NDG, although there is an upper tail of proposers demanding more. In the UG, 50 was the mode but the mean offer was lower, in conformity with standard findings. The UPG and DG distributions of offers were bimodal, with a concentration around 0 and a smaller concentration around 50. All differences among distributions are significant using Epps-Singleton nonparametric tests (at $P < 0.05$ or better). Subjects seem to have adapted their behavior according to the game at hand.

⁹ This was to verify whether subjects treated differently a statement about color groups and one about irrelevant information: we found no support for these claims (details can be found in Zizzo, 2003).

Is there any evidence of discrimination in the CF and MC conditions relative to the N condition, and in the CF condition relative to the MC condition? Table 1 contains the mean offers by game, condition and, where relevant, coplayer's group. There is no statistically significant evidence of discriminatory behavior in the CDG, NDG and UG: insiders and outsiders in the CF condition and in the MC conditions were treated similarly to receivers in the N condition.

(Insert Table 1 about here).

In relation to the UPG and the DG, there is still no significant difference in comparing the MC condition to the N condition mean offers. However, proposers offered significantly less to receivers in the UPG and in the DG if the receivers were outsiders than if they were insiders. In both the UPG and the DG mean offers dropped by about one third when an outsider was involved (from about 20-24% to about 13-15%), a significant difference (Wilcoxon test $Z = 2.237$, $P < 0.05$ for the UPG; $Z = 2670$, $P < 0.01$ for the DG). A simpler way of presenting this result is by noting that, of the twelve out of 20 subjects in the CF condition who in the UPG behaved differently on average with outsiders, eleven did so by discriminating against outsiders; correspondingly, each and every one of the 9 subjects who behaved differently with outsiders in the DG did so by discriminating against them.

Was discrimination the result of color group inducement rather than common fate? The answer is negative, since, as already noted, it was not observed in the MC condition: simply creating different groups on the basis of color preferences had no impact on subjects' behavior. As illustrated by Table 1, only in moving from the MC to the CF condition did a difference appear in relation to UPG and DG.

Was discrimination positive or negative? Table 1 allows us to answer this question by comparing mean offers to insiders and outsiders in the CF condition to mean offers in the MC and N conditions. In the UPG the mean offer to insiders in the MC condition was only about 3% above that to receivers in the N condition (23.7% against 20.8%); the difference is not

statistically significant. It was still lower in the DG (20% against 18.6%). And mean offers to insiders in the CF condition were never above the mean values in the MC condition. There is no evidence of positive discrimination: insiders were not treated better than they would had if common fate had not been at work.

Mean offers to outsiders in the CF condition were just 14.7 in the UPG and 12.675 in the DG, against mean offers of 22.639 and 22.278, respectively, in the control conditions. The hypothesis that mean offers to outsiders are lower in the CF condition than in the other conditions is supported by the evidence (for the UPG, Wilcoxon $Z = 1.742$, $P < 0.05$; for the DG, Wilcoxon $Z = 2.294$, $P < 0.05$). While insiders were given no favors, outsiders were discriminated against.

(Insert Table 2 about here).

Table 2 completes the picture by presenting mean acceptance rates by receivers in the two games in which they had a choice to accept offers, namely the UG and the UPG. Acceptance rates were higher in the UG (86.6% overall) than in the UPG (65.6%), a statistically significant difference (Wilcoxon $Z = 5.775$, $P < 0.001$). Those in the UG did not change according to the identity of proposers or the experimental condition, hovering between 85 and 90%. Mean acceptance rates were also roughly the same in the UPG for the MC and N condition, and when playing with CF condition insiders (in the 65 to 72% range). These results are not surprising, since they mirror the corresponding results of non significance for proposers. Along the same lines, in the UPG we might predict a lower acceptance rate in the CF condition when offers were made by outsiders than when they were made by insiders (as we found discrimination with proposers): this prediction has some support, as the acceptance rate went down to 55% (Wilcoxon $Z = 1.387$, $P < 0.1$). In a sense this is not surprising since mean offers receivers got from outsiders were often lower than from insiders in the CF condition; in another sense, it is surprising to the extent that in the UPG offer rejection actually meant that the proposer got out with the whole of the pie.

3.2 Similarity and Behavior

It is useful to check, first of all, whether similarity evaluations are correlated with behavior. We verify whether games that are perceived as more similar are also games where people are more likely to behave in a similar way. For acceptance rates, the only available comparison is between UG and UPG, and the mean difference in acceptance rates between the two games was not significantly related to the average similarity rating between the two games, albeit the correlation coefficient is correctly signed (Spearman $\rho = -0.106$, *n.s.*). For proposers, Figure 2 illustrates how more similar games are also games where on average the difference between offers in the two games is smaller (Spearman $\rho = -0.406$, $P < 0.001$).

(Insert Figure 2 about here).

This result is interesting in showing that similarity evaluations can meaningfully be used to predict behavior. It is consistent with similarity-based or related accounts of decision making (e.g., Gilboa and Schmeidler, 2001; Markman and Moreau, 2001), although of course correlation is no proof of causation.

Experimental research by Rosch and others (e.g., Rosch, 1973; Rosch and Mervis, 1975) has shown, however, that similarity relations need not satisfy symmetry: e.g., Americans may think Taiwan more similar to China than China is to Taiwan (Tversky, 1977). Assume that there are two items to compare, X and Y. This research shows that, the more an item X is considered salient in a given setting, the more Y is considered similar to X *relative* to how similar X is considered similar to Y (e.g., Lakoff, 1987). We exploited this fact to evaluate how close a game is assimilated to a zero-sum context calling for conflict or to a coordination game calling for cooperation.

Label $S(X \rightarrow)$ how similar game X is considered on average relative to all other games, and $S(X \leftarrow)$ how similar all games other than X are considered on average relative to game X. The more salient X is, the greater we would expect the value of $S(X \leftarrow)$ relative to the value of $S(X \rightarrow)$: in other words, we would expect that the other games tend to be assimilated to X more than X is assimilated on average to the other games. It is then natural to build, for each game X, a salience index $dS(X)$ defined as the difference between $S(X \rightarrow)$ and $S(X \leftarrow)$: $dS(X) = S(X \rightarrow) - S(X \leftarrow)$. The higher $dS(X)$ is, the less salient game X is, since the subject is relatively more likely to assimilate game X to other games than vice versa.

Define $dA(X)$ as the difference, in relation to game X (UG or UPG, the only two games where receivers have an acceptance choice), between the acceptance rate when a receiver plays against an insider proposer and the acceptance rate when a receiver plays against an outsider proposer. Define $dO(X)$ as the difference, in relation to game X , between mean offers when the proposer plays against an insider receiver and the mean offer when she plays against an outsider receiver. Table 3 displays Spearman correlations between $dS(X)$ and $dA(X)$ and between $dS(X)$ and $dO(X)$.

(Insert Table 3 about here).

We find that, in the CF condition where common fate is elicited, ultimatum game receivers are less likely to discriminate against outsiders the more they see the game as a zero-sum setup such as the dictator game, i.e. the higher $dS(DG)$ is. Proposers in the ultimatum game also discriminate more against outsiders in the dictator game. There is a positive correlation of $dS(UPG)$ with $dO(UG)$ and $dO(DG)$, and a negative correlation of $dS(UG)$ with $dO(UG)$ and (albeit not significantly) $dO(DG)$: ultimatum game and dictator game proposers are more likely to discriminate against outsiders the more they assimilate the game to the other zero-sum setup, i.e. the unilateral power game. The pattern of correlations appears mostly different in the minimal color group condition, where, as we noted, no discrimination was observed on average.

4. Discussion and Conclusions

We tried to isolate the effect of the purely psychological (framing) dimension of common fate on the inducement of discrimination, by creating ingroup common fate but doing so without any strategic incentives to favor insiders or disfavor outsiders.

Do perceptions of common fate matter on their own? Our findings are mixed. They did not matter in our coordination game, in the Nash demand game and in the ultimatum game. However, when the bargaining power was all with proposers, about half of them engaged in

¹² This result cannot have been due to the possibility of materially harming proposers (who would get the whole of the pie as the result of their rejection); if taken at its face value, it might be interpreted as a form of expressive or emotional reaction, or of social punishment (i.e., as an expression of disapproval: e.g., Orr, 2001).

negative discrimination against outsiders by making lower offers. The pattern was quite systematic, meaning that whenever there was discriminatory behavior this was almost always in a direction unfavourable to outsiders. In the unilateral power game there is suggestive evidence that receivers reacted by accepting offers less.¹²

It was not simply the fact of creating groups that produced the discrimination, as in the minimal control group condition there was no evidence of discrimination. This is *not* to deny, of course, that minimal color grouping may not affect behavior in some cases: for example, in Hargreaves-Heap and Varoufakis' (2002) experiment, color group assignment worked as a salience device to select which equilibrium to play in a Chicken game.

Strikingly, and contrarily to Stephen Crane's story, common fate did not lead to more benevolent behavior: it was not the case that ingroup members were treated particularly well, but rather that, when holding all the bargaining power, proposers felt entitled to treat outsiders worse than they would have done in the absence of the common fate manipulation. Although the preliminary nature of this study suggests caution in drawing policy implications, our results should act as a warning that inducing perceptions of common fate may not always be a good idea: not only may it not necessarily increase intra-group cooperation, but, in some cases,¹³ it might actually increase inter-group conflict.¹⁴ 'You are *not* in my boat' may then be a better representation of what is going on in the mind of team members than 'we are all in the same boat'.

Our novel technique based on similarity evaluations suggests that discrimination may have been induced by perceiving the situation more as a zero-sum game, and therefore as a situation calling for conflict towards outgroup members. Put it more simply, according to this conjecture, discrimination is induced because discriminators see the world more in black and

¹³ We are making no claim that this is always true, of course: further research is needed to determine the extent to which it is so.

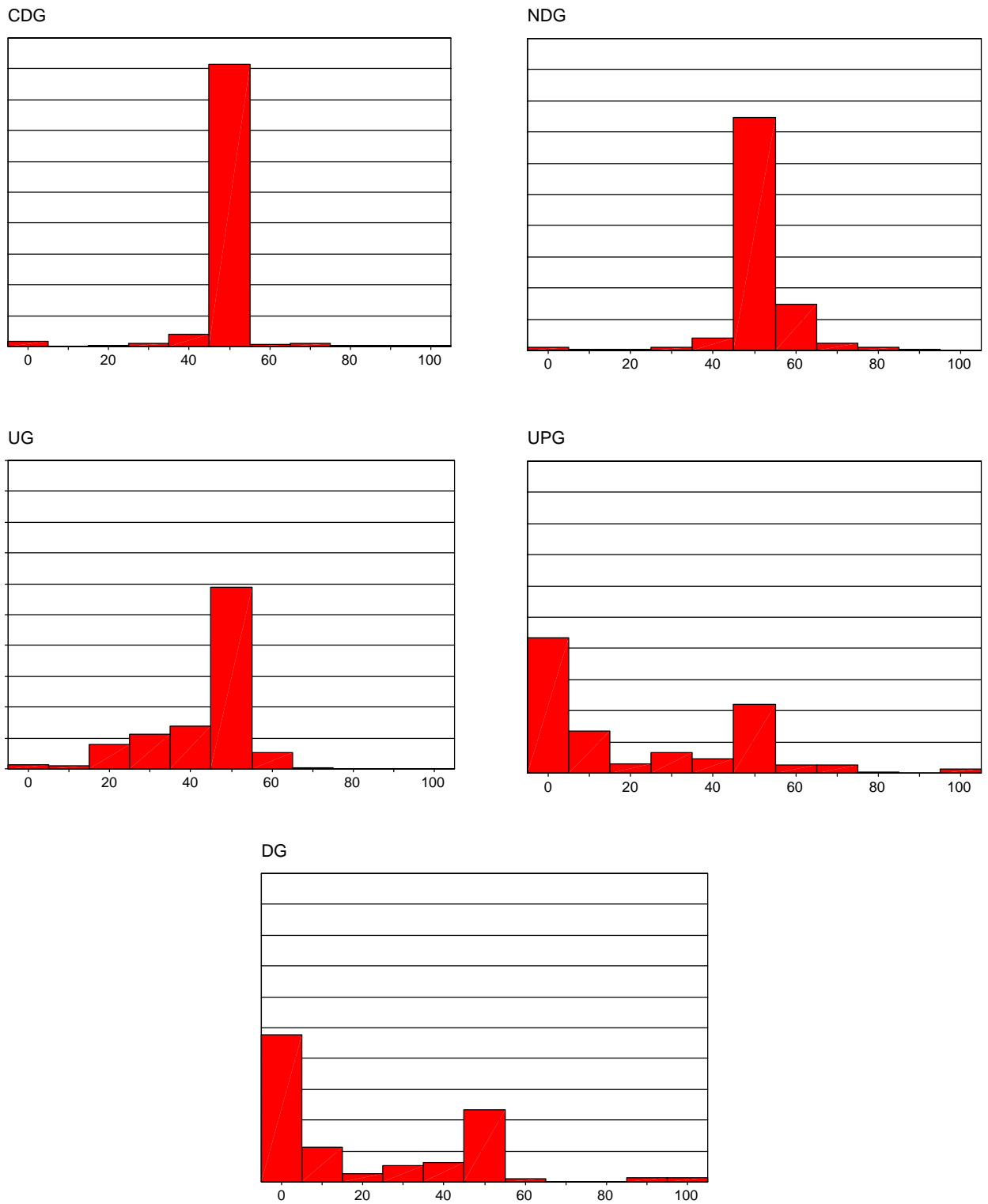
¹⁴ At a presentation of this paper to an audience that included managers and human resources consultants, I was told the story of an English company where the manager started writing performances of different teams on a public board (without any change in pay or promotion structure). Initially productivity increased, but then it declined quite badly, apparently as the result of inter-team conflict.

white: paraphrasing George W. Bush in the wake of September 11, they see their coplayers as either with them or against them, leading to discrimination against outgroup members.

References

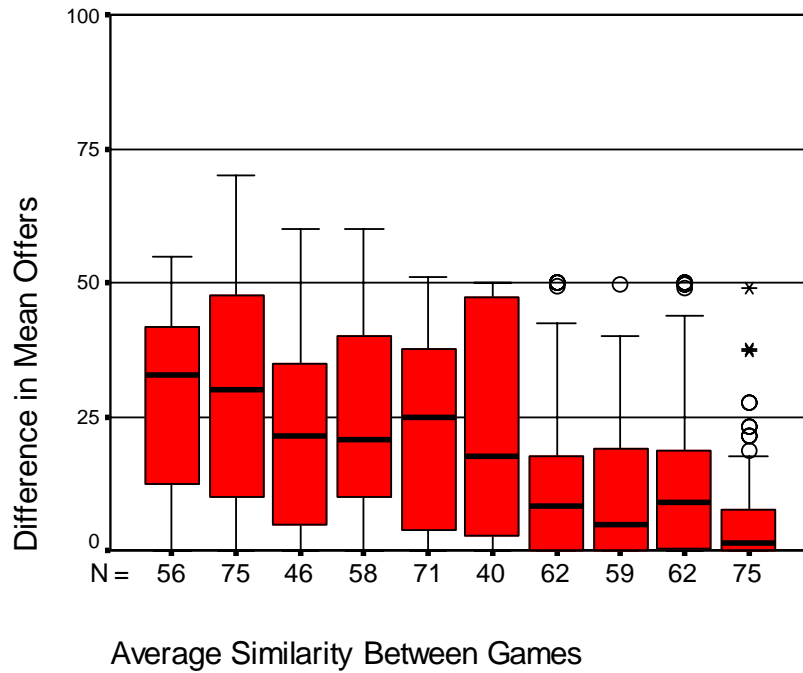
- Brown, Rupert (2000). *Group Processes*. Blackwell, Oxford.
- Gilboa, Itzhak and David Schmeidler (2001). *A Theory of Case-Based Decisions*. Cambridge University Press, Cambridge.
- Hargreaves-Heap, Shaun and Yanis Varoufakis (2002). "Some Experimental Evidence on the Evolution of Discrimination, Co-operation and Perceptions of Fairness." *Economic Journal*, 112, 679-703.
- Lakoff, George (1987). *Women, Fire, Dangerous Things: What Categories Reveal About the Mind*. University of Chicago Press, Chicago.
- Markman, Arthur B. and C. Page Moreau (2001). Analogy and analogical comparison in choice. In: Derrde Gentner, Keith J. Holyoak and Boicho Kokinov (Eds.), *The Analogical Mind: Perspectives from Cognitive Science*, MIT Press, Cambridge, MA, pp. 363-399.
- Orr, Shepley W. (2001). "The Economics of Shame in Work Groups: How Mutual Monitoring Can Decrease Cooperation in Teams." *Kyklos*, 54, 49-66.
- Rabbie, Japp M. and Murray Horwitz (1969). "Arousal of Ingroup-Outgroup Bias by a Chance Win or Loss." *Journal of Personality and Social Psychology*, 13, 269-277.
- Riechmann, Thomas and Joachim Weimann (2004). "Competition as a Coordination Device." University of Magdeburg Discussion Paper.
- Rosch, Elinor (1973). "Natural Categories." *Cognitive Psychology*, 4, 328-350.
- Rosch, Elinor and Carolyn Mervis (1975). "Family Resemblances: Studies in the Internal Structure of Categories." *Cognitive Psychology*, 7, 573-605.
- Tan, Jonathan H.W. and Friedel Bolle (2004). "Team Competition and the Public Goods Game." European University Viadrina Discussion Paper n. 218.
- Tversky, Amos (1977). "Features of Similarity." *Psychological Review*, 84, 327-352.
- Wit, Arjaan P. and Henk A. M. Wilke (1992). "The Effect of Social Categorization on Cooperation in Three Types of Social Dilemmas." *Journal of Economic Psychology*, 13, 135-151.
- Yamagishi, Toshio, Karen S. Cook and Motoki Watabe (1998). "Uncertainty, Trust, and Commitment Formation in the United States and Japan." *American Journal of Sociology*, 104, 165-194.
- Zizzo, Daniel J., 2003. You Are Not in My Boat: Common Fate and Similarity Attractors in Bargaining Settings. Oxford University Department of Economics Discussion Paper n. 167.

FIGURE 1. HISTOGRAM OF MEAN OFFERS (AMOUNTS UNCLAIMED) BY GAME.



CDG: Coordination Game. NDG: Nash Demand Game. UG: Ultimatum Game. UPG: Unilateral Power Game. DG: Dictator Game.

FIGURE 2. BOXPLOT OF SIMILARITY AND DIFFERENCES IN MEAN OFFERS BETWEEN GAME.



The box represents the interquartile range which contains half of values (the line across is the median). The whiskers extend from the box to the highest/lowest values, excluding outliers.

TABLE 1.
MEAN OFFERS (AMOUNTS UNCLAIMED).

Condition	Coplayer's group	CDG	NDG	UG	UPG	DG
CF	Outsider	50.6	50.85	43.125	14.7	12.675
	Insider	48.6	51.288	43.25	23.725	19.975
MC	Outsider	49.688	50.766	42.969	26.063	24.656
	Insider	48.297	50.75	43.594	23.844	29.156
N	No grouping	48.513	50.469	42.638	20.788	18.575

CF: common fate color group condition; MC: minimal color group condition; N: color group condition. CDG: Coordination Game. NDG: Nash Demand Game. UG: Ultimatum Game. UPG: Unilateral Power Game. DG: Dictator Game.

TABLE 2.
MEAN ACCEPTANCE RATES.

Condition	Coplayer's group	UG	UPG
CF	Outsider	0.85	0.55
	Insider	0.9	0.675
MC	Outsider	0.875	0.719
	Insider	0.875	0.719
N	No grouping	0.85	0.65

CF: common fate color group condition; MC: minimal color group condition; N: color group condition. UG: Ultimatum Game. UPG: Unilateral Power Game.

TABLE 3.
SALIENCE OF GAMES AND INGROUP-OUTGROUP DISCRIMINATION.

CF	<i>dS</i> (CDG)	<i>dS</i> (NDG)	<i>dS</i> (UG)	<i>dS</i> (UPG)	<i>dS</i> (DG)
<i>dA</i> (UG)	-0.05	-0.086	0.187	0.148	-0.407*
<i>dA</i> (UPG)	0.002	0.2	0.262	-0.234	0.098
<i>dO</i> (UG)	0.037	0.022	-0.608***	0.516**	-0.316
<i>dO</i> (UPG)	-0.085	0.19	-0.029	0.03	0.535***
<i>dO</i> (DG)	0.11	-0.165	-0.278	0.339*	-0.118

MC	<i>dS</i> (CDG)	<i>dS</i> (NDG)	<i>dS</i> (UG)	<i>dS</i> (UPG)	<i>dS</i> (DG)
<i>dA</i> (UG)	-0.18	-0.273	0.001	0.075	0.018
<i>dA</i> (UPG)	-0.014	0.001	-0.098	-0.032	0.267
<i>dO</i> (UG)	-0.274	0.062	0.22	0.129	-0.229
<i>dO</i> (UPG)	-0.118	-0.223	-0.162	0.318	-0.439**
<i>dO</i> (DG)	0.056	-0.096	-0.016	0.47**	-0.424*

* $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$. CF: common fate color group condition; MC: minimal color group condition. CDG: Coordination Game. NDG: Nash Demand Game. UG: Ultimatum Game. UPG: Unilateral Power Game. DG: Dictator Game. $dA(X)$: mean acceptance rate when playing with insiders minus mean acceptance rate when playing with outsiders, in relation to game X. $dO(X)$: mean offer when playing with insiders minus mean offer when playing with outsiders, in relation to game X. $dS(X) = S(X \rightarrow) - S(X \leftarrow)$, i.e. the difference between mean similarity of game X to all other games and mean similarity of all other games to game X.