Social identity and social value orientations☆

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Abstract

This study provides an extension of the social value orientation model and a tool, other-other Decomposed Games, to quantify the influence of social identity on social value orientations. Social identity is induced experimentally using the minimal group paradigm. Subsequently, the weights subjects add to the outcomes of outgroup others relative to ingroup others and to the absolute difference between the outcomes of ingroup and outgroup others are estimated. Results are compared to a control condition in which social identity is not induced. Results show that the average weight subjects add to the outcomes of outgroup others is only about 20% of the weight they add to the outcomes of ingroup others. However, there is also a significant variation among subjects with respect to the level of ingroup bias. Inequality orientation, however, is not influenced by the inducement of social identity.

Keywords: Cooperation, social value orientation, minimal groups, social identity

1. Introduction

The social value orientation literature investigates how actors value certain outcome allocations between *self* and *others* (Griesinger and Livingston, 1977; McClintock, 1972; Schulz and May, 1989). Cooperative orientation, maximizing the sum of the payoffs for self and others; competitive orientation, maximizing the difference between the payoffs for self and others in favor of self; equality orientation, minimizing the inequality between outcomes are some of the social value orientations distinguished in the literature. Numerous methods have been developed to measure social value orientations (e.g., Liebrand and McClintock, 1988; Kuhlman et al., 1992; Van Lange, 1999; Murphy et al., 2011; Aksoy and Weesie, 2012). All of these methods involve some form of Decomposed Games in which subjects are asked to choose a certain outcome allocation between self and others among a menu of possible self-other allocations.

There is a hidden but strong link between the social value orientation literature and the minimal group paradigm. The minimal group paradigm is originally about how actors value outcome allocations between *two others*, e.g., one ingroup and one outgroup (Tajfel et al., 1971; Tajfel, 1970). In other words, as opposed to the social value orientation literature, the minimal group paradigm

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involves other-other allocations instead of self-other allocations. In fact, in minimal group experiments self-other allocations are carefully avoided. This is because in minimal group experiments, subjects' own individual interests should not be at stake to isolate the influence of mere social categorization from any form of realistic conflict (e.g., Sherif et al., 1961). Because of this omission of self from outcome allocation tasks, the tools of the social value orientation literature cannot readily be applied to minimal group settings.

In this paper, I explicitly bridge the social value orientation literature with the minimal group paradigm. I extend the social value orientation model to other-other allocations. Moreover, I also show that the classical self-other Decomposed Games of the social value orientation literature can easily be adapted to other-other allocations, hence to minimal group setting. Using experimental data, I quantify the influence of social identity on social value orientations.

2. Theory: Social Value Orientations in other-other allocations

In the classical social value orientation model, for an outcome allocation for self (x) and other (y), an actor i attaches a w_i weight to the outcome of other such that (McClintock, 1972; Griesinger and Livingston, 1977; Aksoy and Weesie, 2012, 2014):

$$U_i(x, y) \equiv U_i^*(x, y; w_i) = x + w_i y. \tag{1}$$

Let's now assume that there are two types of others, ingroup and outgroup. Let I (O) denote the set of ingroup (outgroup) others. Consider an other-other allocation situation in which the ingroup other gets y^I, the outgroup other gets y^O, and there is no outcome for self, i.e., $x = 0$. In this situation, the social value orientation model in (1) can be written as:

$$U_i(y^I, y^O) \equiv U_i^*(x, y; w_i^I, w_i^O) = w_i^I y^I + w_i^O y^O \tag{2}$$

where w_i^I and w_i^0 are the weights actors attach to the outcomes of ingroup and outgroup others, respectively. Because utility is defined up to positive affine transformations, and assuming that $w_i^I > 0$, equation (2) can be written as:

$$U_i(y^I, y^O) \equiv U_i^*(x, y; \theta_i^O) = y^I + \theta_i^O y^O \quad \text{with} \quad \theta_i^O = \frac{w_i^O}{w_i^I}. \tag{3}$$

Equation (3) is now equivalent to the model in equation (1) where the outcomes for self and other are replaced by the outcomes for ingroup other and outgroup other, respectively. Consequently, the weight actors attach to the outcomes of outgroup others relative to ingroup others can easily be estimated using other-other Decomposed Games just as the social value orientations are estimated with self-other Decomposed Games (e.g., as in Aksoy and Weesie, 2012).

Finally, social value orientation research has shown that some people also consider inequality in outcomes, such as those with equality or maximin orientations (Schulz and May, 1989; Grzelak et al., 1977; Aksoy and Weesie, 2012). These orientations are typically captured by adding another term in equation (1), the absolute inequality between the outcomes for self and other. In the other-other allocation case, an equivalent term will be adding the absolute inequality between the outcomes for ingroup and outgroup others. Thus,[1]

[1]When inequality concerns are introduced, in other-other allocations in which self gets zero it can be argued

$$U_i(y^I, y^O) \equiv U_i^*(x, y; \theta_i^O, \beta_i) = y^I + \theta_i^O y^O - \beta_i |y^I - y^O|. \quad (4)$$

3. Method

3.1. Subjects

186 subjects were recruited with the Online Recruitment System for Economic Experiments (ORSEE; Greiner (2004)). Majority of the subjects were students at the University of Oxford from a variety of different study fields. Subjects were on average 30 years old (S.D.=14) and 58% of them were female.[2]

3.2. Procedure

Subjects participated in one of ten sessions in Hilary Term (February-March) 2014. Subjects in seven sessions were assigned to the experimental group and in the remaining three sessions to the control group. Subjects sat randomly in one of the cubicles in the CESS lab at Nuffield College. Subjects could not see each other or the experimenter during the experiment. The experiment was carried out on computers using z-tree (Fischbacher, 2007).

3.2.1. Experimental group

After general instructions, subjects in the experimental group were shown five pairs of paintings by Wassily Kandinsky and Paul Klee. For each pair, subjects chose the painting they liked more. 50% of subjects in a session were classified as Kandinskys, and the remaining 50% as Klees, based on subjects' relative preferences. Each subject was privately informed about his/her group.

After classification, a collective quiz in which subjects guessed the painters of two paintings (Klee or Kandinsky) was administered. Subjects earned £0.8 if at least 50% of their group correctly guessed the two painters. Subjects earned a further £0.8 if their group correctly answered as many questions as the other group. Quiz results were shown only after the experiment was completed.

After the collective quiz, subjects made decisions in 10 other-other Decomposed Games shown in the appendix. The order of these 10 games was varied in two factors. These 10 games were modified versions of the self-other Decomposed Games used by Aksoy and Weesie (2012).[3] Recipients in these Decomposed Games were a randomly selected ingroup member and a randomly selected outgroup member. At the end of the experiment, one Decomposed Game was selected at random, and two actual other subjects received the tokens based on a subject's decision (20 tokens = £1). Similarly, each subject was a recipient of a randomly selected other subject.

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that actors may take two additional terms into account: the difference between outcomes for ingroup others and self as well as the difference between outgroup others and self. In this case, the model can be written as $U = x + w_i^I y^I + w_i^O y^O - b_i^I |y^I - x| - b_i^O |y^O - x| - \beta_i |y^I - y^O|$. Because in other-other allocations $x = 0$, this alternative formulation can be re-arranged such that $U = y^I + \frac{w_i^O - b_i^O}{w_i^I - b_i^I} y^I - \beta_i |y^I - y^O|$, which is equivalent to the formulation in equation (4) with $\frac{w_i^O - b_i^O}{w_i^I - b_i^I} = \theta_i^O$.

[2]The experiment reported here is embedded in a larger study which included additional unrelated tasks. These additional tasks were administered *after* the procedure described here took place and were analyzed elsewhere.

[3]The modifications aimed to improve the statistical precision to estimate the social value orientation parameters based on the results reported in Aksoy and Weesie (2012) and additional simulations.

3.2.2. Control group

The control group followed the procedure above but without inducing group identity. Subjects stated their preferences in the same 5 painting pairs. However, they were not classified as Klees or Kandinskys. They completed the same guessing quiz but they were rewarded for their individual success: for each correct guess, a subject earned £0.8. Finally, subjects decided in the same 10 other-other Decomposed Games. Different from the experimental group, the two recipients were two other subjects randomly selected from the session, without any reference to any groups.

4. Results

As I showed in the theory section, the tools of the social value orientation literature can be adapted to estimate the parameters in (4). Here, I follow the estimation procedure described in Aksoy and Weesie (2012). In this procedure, the outcomes in an other-other Decomposed Game are transformed into utilities via equation (4). In addition, an additive random utility term ϵ is added to the model to have stochastic behavioral predictions and thus make the model statistically estimable. How much a subject i prefers option A relative to option B is the utility difference in options A and B in a game:

$$U_{AB}(x, y; \theta_i^O, \beta_i) = (y_A^I - y_B^I) + \theta_i^O(y_A^O - y_B^O) - \beta_i(|y_A^I - y_A^O| - |y_B^I - y_B^O|) + (\epsilon_A - \epsilon_B) \quad (5)$$

where y_A^I is the outcome for ingroup other in option A and y_B^O is the outcome for outgroup other in option B in a Decomposed Game. A subject prefers option A in a Decomposed Game when $U_{AB}(\theta_i) > 0$. Following Aksoy and Weesie (2012), (θ^O, β) are treated as bi-normally distributed variates and ϵ is assumed to have an independent normal distribution with zero mean and nonzero variance. This implies a multilevel probit model in which the dependent variable is a subject's preferences in the 10 Decomposed Games and independent variables are the outcome differences given in equation (5). The distribution of (θ^O, β), the variance of $(\epsilon_A - \epsilon_B)$, and the empirical Bayes predictions (posterior means) of θ^O and β per subject are estimated with the Stata program GLLAMM (Rabe-Hesketh et al., 2002).

Table 1 and Figure 1 show the results. When social identity is induced (experimental group), the estimated mean of θ^O is 0.2 which is significantly different from both zero and one. This means that the average weight subjects add to the outcomes of outgroup others is only 20% of the weight they add to the outcomes of ingroup others. The estimated mean of β is 0.39 and significantly different from zero (and one). This means that while subjects add a very small weight to the outcomes of outgroup others relative to ingroup others, they are still concerned with reducing inequality between ingroup and outgroup others. There is also a negative correlation between θ^O and β.

A further important finding is the significant and large variance of θ^O in the experimental group. An estimated variance of 0.337 implies that although on average there is significant ingroup bias, there is also a significant variation among subjects regarding the level of ingroup bias they display. A minority of subjects, in fact, have θ^O values very close to, but never exceeding (see Figure 1), one. These subjects could be described as "multicultural" as they add very similar weights to ingroup and outgroup others' outcomes. On the other hand, quite a few subjects (about 36%) add not only lower but *negative* weights to the outcomes of outgroup others, displaying a very high level of ingroup bias.

Table 1: Social value orientation estimates for the experimental and control groups. θ^O="outgroup cooperative orientation parameter"; β"="equality orientation parameter"; ϵ_A, ϵ_B= evaluation error. For the variances, p-values are derived from the correct boundary tests using the mixture distribution (see Self and Liang, 1987).

	Experimental Group		Control Group	
Parameter	Coeff.	S.E.	Coeff.	S.E.
mean(θ^O)	.200***	.059	1.003***	.154
mean(β)	.389***	.032	.235**	.094
var(θ^O)	.327***	.087	.095	.073
var(β)	.050***	.020	.063	.062
cov(θ^O, β)	.099***	.038	.073	.058
var($\epsilon_A - \epsilon_B$)	.021***	.002	.021***	.005
N(Subject)	146		40	
N(Decision)	1460		400	
log-likelihood	-723.762		-140.875	

***p-2sided<0.001;**p-2sided<0.01

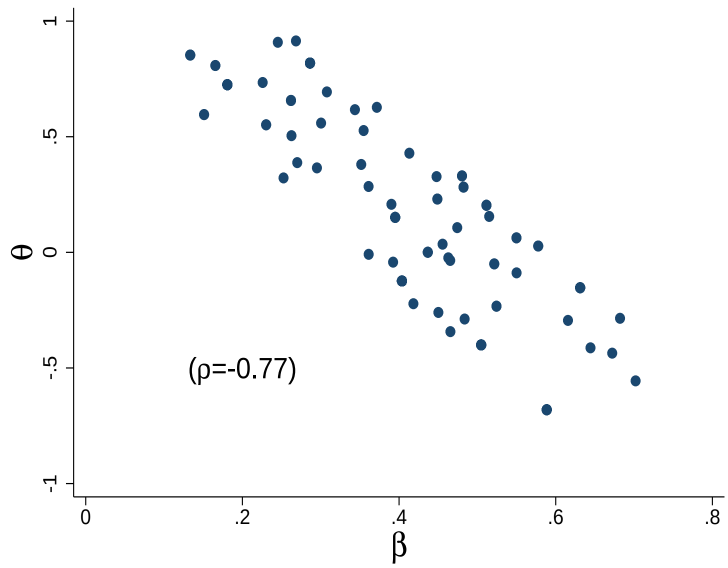
In the control group in which social identity is not induced θ^O is estimated as virtually 1. This shows that without any difference in group identities, equal weights are added to the outcomes of two random others. This finding adds confidence to the estimation method because any value significantly different from 1 would hint a methodological artifact and cast doubt on the validity of the results. Also, the difference between the means of θ^O in the experimental and control groups is highly significant (p-2sided<0.001). In the control group, the estimated variance of θ^O is insignificant and the mean of β is estimated as 0.235. The difference in average βs in the control and experimental groups is not very large and in fact statistically marginally insignificant (p-2sided=0.06). This shows that the inequality orientation is not influenced substantially by identity inducement. Similar to θ, the variance of β in the control group is statistically insignificant. Finally, the variance of the error term ($\epsilon_A - \epsilon_B$) is virtually identical in the experimental and control groups.

5. Conclusions

In this study I bridge the social value orientation literature with the minimal group paradigm. I extend the social value orientation model to other-other allocations, particularly to the case in which the two recipients are an ingroup member and an outgroup member. Moreover, I provide a set of other-other Decomposed Games. Using these games and inducing social identity via minimal groups, I estimate the weights subjects add to the outcomes of outgroup others relative to ingroup others and to the absolute difference between the outcomes of ingroup and outgroup others. I compare these results to a control condition in which social identity is not induced. This method quantifies clearly the effect of group identity on social value orientations.

Results show that, controlled for inequality orientations, the average weight subjects add to the outcomes of outgroup others is only about 20% of the weight they add to the outcomes of ingroup others. However, there is also a significant variation among subjects with respect to the level of ingroup bias. While a substantial number of subjects show high levels of ingroup bias, a

Figure 1: Scatter plot of θ and β in the experimental group.



minority of "multicultural" subjects display virtually no bias. This is a very interesting finding and future research should focus on identifiying subject level characteristics that explain this variation. Inequality concerns, however, are not influenced by social identity of receivers.

I would like to conclude the paper with discussing the potential impact of the method I describe here. The 10 other-other Decomposed Games I introduce can easily be embedded in a survey or an experimental study. Also the social identities of the two recipients in these 10 items can be adjusted depending on researchers' interests. The method I describe here gives a clear quantitative estimate of average ingroup bias. Furthermore, it captures individual differences in the level of ingroup bias. These individual level estimates can be outcome variables themselves. Alternatively, researchers can use these estimates to predict any outcome variable of interest.

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Appendix A. Other-other Decomposed Games

Table A.2: 10 other-other Decomposed Games used in the study. The last three columns include percentages of subjects choosing option B in experimental and control groups and a t-statistics for the difference between the experimental and control groups, respectively (N=146 in the experimental group and N=40 in the control group).

	Option A		Option B		Data		
	(ingroup)	(outgroup)	(ingroup)	(outgroup)	% B choices		difference
game	other gets	other gets	other gets	other gets	Exp.	Control	t-value
1	9	10	11	10	.884	.925	0.747
2	10	9	10	11	.651	.900	3.124**
3	10	9	11	11	.884	.975	1.738+
4	10	10	12	7	.404	.025	-4.794***
5	10	10	15	6	.616	.300	-3.671***
6	10	11	12	10	.849	.775	-1.115
7	10	14	12	8	.575	.025	-6.910***
8	11	9	10	11	.500	.925	5.155***
9	11	10	10	11	.103	.200	1.659+
10	11	11	9	10	.089	.100	0.212

***p-2sided<0.001;**p-2sided<0.01;+p-2sided<0.1