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MINIMAL GROUP IDENTITY AND GENDER IN ULTIMATUM GAMES

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Abstract

Social identity, or group membership, affects economic outcomes. However, this influence may differ according to the nature of the groups involved. Investigating the weakest group cohesion necessary to influence individual behaviors, we undertook three linked ultimatum game experiments involving a minimal categorization process. Three main results are presented here: (i) Belonging to a minimal group affects behaviors; (ii) Men and women differ systematically in the nature of this influence and (iii) The 'label' given to a minimal group is in itself not neutral.

JEL classification: C91; A12; C99

*Keyword*s: minimal group, ultimatum game, social identity, gender

1. Introduction

1.1. Identity and economics

Akerlof and Kranton (2000, 2004) show that identity, or a person's sense of self, affects many economic outcomes such as poverty, gender discrimination in the labor market, the household division of labor or workers' motivation. Resting on the main insights of social identity theory (Tajfel and Turner, 1986), they propose to insert the person sense of self as an additional argument of individual utility functions. The idea is that traditional utility functions capture our personal characteristics, or the first level of the identity concept. However, several decades of research in social psychology showed that our identity strongly depends on our membership in social categories and groups and that this second level of identity has been rather neglected by economic analyses. Akerlof and Kranton thus incorporate social identity as a motivation for behavior beside the traditional economic motivations. Therefore, belonging to a group yields gains or losses in identity, mainly deriving from behaviors that conform to or departs from the norm of the group in a given situation. For example, following the prescriptions of our own gender category results in asserting our identity as a man or a woman as well as the identity of the men or women we are interacting with, thus generating gains in identity for everyone. However, a man wearing a dress threatens the identity of other men inducing losses in identity for them.

One of the more robust findings of social identity theory is indeed that an action initiated by a member of one's own group or social category (the *ingroup*) is evaluated quite differently from the same action initiated by a member of another group or category (the *outgroup*) (Brewer, 1979). The related gains and losses in identity are therefore different although deriving from the same behavior and maximizing utility induces dissimilar reactions. Ingroup favoritism commonly occurs: we all share the tendency to evaluate our ingroup, its members or their actions more favorably than the outgroup, its members or actions (for a review, see Hewstone et al., 2002).

A lot of experiments illustrate the influence of social identity on behaviors in strategic contexts. For example, in the investment game, Buchan et al. (2006) find that American students exhibit an ingroup bias: they are more willing to trust other American students than students of other nationalities. On the contrary, Chinese students tend to favor the outgroup, and Japanese and Korean students behave in the same way regardless of their partner's nationality (on the same game, see also Carpenter and Camilo Cardenas, 2004). In the same vein, Ruffle and Sosis (2006) observe that kibbutz members cooperate more with members of their own kibbutz than with city residents.

The object of our research is to determine the influence of social identity on behaviors in the ultimatum game[2]. The experiment motivating our research had been conducted by Kramer, Shah and Woerner (1995) (thereafter KSW). In a ultimatum game involving members of two rivals business schools, they find that Responders are more willing to accept an unfair offer made by an ingroup Proposer than the same offer made by someone from the outgroup.

Kahneman et al. (1986) observe similar behavior patterns with groups of students belonging to psychology classes. When they are informed that they are being paired with a student in commerce classes, psychology students make less generous offers and exhibit higher minimum acceptable offers than when they are paired with other psychology students. In the same way, in the experiment of Robert and Carneval (1997), Proposers will more often offer a fair share to a member of their own class than to a member of a different one. Considering gender, Eckel and Grossman (2001) find that women are more generous with men. All of these experiments illustrate the idea that gains or losses in identity are dissimilar (and often superior) in a ultimatum game if the Proposer and the Responder belong to the same social group than if they do not.

1.2. Real vs. Minimal groups

In theory, the absolute value of payoffs in identity may depend on the sense of belonging, or on the degree of identification with the group. If you feel deeply involved in a group or if you have strong ties with your ingroup members, you may more easily categorize situations by defining an "us" and a "them" and have discriminatory behaviors.

Sense of belonging can be experimentally manipulated in several ways. For example, Charness et al. (2005) make the presence of the ingroup salient and shows that this affects behaviors in the Battle of Sexes and the Prisoner's Dilemma games. Solow and Kirkwood (2002), following Brown-Kruse and Hummels (1993), try to create a sense of community in some groups through pre-experiment activities. In the experiment of Kramer et al. (1993), some subjects are asked to list all of the ways in which they are unique or different from the

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[2] In this game, introduced by Güth et al. (1982), two (anonymous) players must divide a given amount (say €20). The Proposer is instructed to make an offer ranging from zero to €20 to the Responder. The latter can either accept or reject this offer. If he accepts the offer, the €20 will be divided accordingly. If he rejects the offer, neither of them will receive anything.

others (low social identification condition), whereas some others have to list all the ways in which they are similar to the others (high social identification condition).

We proceed differently here and operate on the distinction established in social identity theory between real and minimal groups. A real group is a group or a social category existing outside the lab, such as the business schools in the KSW experiment or the classes in Robert and Carneval (1997) or Kahneman et al. (1986). Introduced by Rabbie et al. (1969) and Tajfel, Billig, Bundy and Flament (1971) (thereafter TBBF), the minimal group paradigm rests, on the contrary, on an artificial and arbitrary social categorization created and used only during the experiment. For example, in the experiment of Rabbie et al. subjects are (randomly) assigned to a given group labeled as "blue" or to another group labeled as "green" supposedly "for administrative reasons". In TBBF, subjects are told that people with similar artistic preferences are associated to form two separate groups, although in reality the matching is random. A minimal group is therefore a random assignment of people who share none of the ties or goals of a group; in other words, they share nothing but a name or a label. Nevertheless, this label is enough to induce discriminatory behaviors. One of the fundamental findings of the minimal group paradigm is that the social categorization process in itself, i.e. the simple assignment of people to labels, induces them to act in favor of their ingroup members.

The study presented here originates from the following question: Will we find out that people are behaving in the same way as in the KSW experiment except with minimal groups? In a ultimatum game, do responders react differently to an offer if this offer is made by a Proposer with whom they only share a group label? In other words, we are trying to identify the minimum conditions necessary for social identity to influence strategic behaviors. This research clearly pursues the aim of Charness et al. (2005, p1) to begin "a systematic analysis of how groups affect individual behavior" in order "to provide a theory of how groups influence strategic behavior in economic contexts".

Using the idea of a minimal group in the strategic context of the experimental game theory requires to specify two important points:

(i)   First, TBBF specified a set of criteria required for a group classification to be considered as minimal: (1) no face to face interaction, (2) group membership is completely anonymous; subjects do not know who is a member of which group, (3) no instrumental link between the group categorization and the nature of the task or of the response required to the subjects, (4) no difference across choices in the material payoffs for the chooser and (5) those choices should not be familiar but rather important to the subjects. Introducing minimal groups in an ultimatum game experiment clearly violates the condition (4). The choice of an amount to offer by the Proposer, and the choice of the Responder to either accept or reject it, directly impact on their own respective payoffs. If our experiment is not then a minimal-group experiment, we follow however exactly the same categorization manipulation as TBBF. This will allow us to observe if an artificial and arbitrary group membership induces enough group identification in order to check self-interested individual behaviors.

(ii)   Second, minimal group experiments involve a minor deception of the subjects who believe that they are grouped according to a criterion (for example their artistic preferences) when categorization is in fact random. To our knowledge, the only game experiment using such a minimal categorization is the one of Ball et al. (2001). They allocate high and low status to groups through two procedures that they call "random" and "awarded" status. In fact, status is allocated randomly in

both procedures but the second one is designed in order to suggest to the subjects that the high status is deserved. The deception involved in our experiment seems even slighter given that groups are created through a perfectly symmetrical categorization process and that there is no status difference among them. As in Ball et al., therefore, this minor deception meets American Psychological Association guidelines[3] and is of a degree common in other social science experiment.

We conducted our experiments in the following way: We first replicated the KSW experiment by adding a preliminary stage of minimal group categorization identical to that of TBBF. We did not find the same results as KSW, but observed behaviors that are definitely more complex: members of only one of the two groups are influenced by their social identity and their reactions are at the opposite of KSW observations (they more often rejected unfair offers from the ingroup).

We then conducted experiments involving a real ultimatum game using the decision method (as opposed to the manipulated experiment of KSW) with minimal groups in order to observe behaviors of Responders as well as of Proposers and to compare them according to the presence or the absence of minimal groups. We first found that behaviors of both Proposers and Responders in the experiment with minimal groups significantly differ from behaviors in a standard ultimatum game experiment. Belonging to a minimal social group social thus induces specific behaviors in ultimatums. Next, we observed that this minimal social identity differently affects behaviors according to *the gender* of the participants. Indeed, belonging to a group did not generate a similar identification for men and women. Both sexes in both roles had been affected by their minimal social identity. But, in each case, women and men behaved in a radically opposed way. These results underline the complexity of the links between personal and social identities.

The remainder of the paper is organized as follows: we review the experimental designs of KSW and TBBF before presenting our own experimental designs in Section 2. Our main results are presented and discussed, step by step, in Section 3. We conclude in Section 4.

2. Ultimatum game and Minimal groups

2.1. The KSW experiment: An Ultimatum Game with Real Groups

KSW (1995) sought to analyze the influence of the Proposer group membership on the Responder's behavior in an ultimatum game (noted UG). According to social identity theory, the Responders' most vehement reaction would be towards either:

(i)   An unfair offer made by an outgroup Proposer *("the outgroup derogation hypothesis")*: As outgroup members are typically expected to be less fair than the ingroup members, the fact that they transgress the "fair rule" will generate a more violent reaction.

(ii)   An unfair offer made by a member of the ingroup *("the expectancy violation hypothesis")*: As members of the same group are supposed to share the same values and thus to act cooperatively, Responders might therefore evaluate an unfair offer much more negatively when it comes from the ingroup.

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[3] See http://www.apa.org/ethics/code.html

Participants in the KSW experiment were 110 MBA students belonging to two rival American business schools. They were informed of the rules of the ultimatum game and the amount to be divided was fixed at $25. Although they believed interacting with other persons, experimenters actually predetermined offers in order to manipulate their perceived fairness. Indeed, all the students were assigned to the Responder role and were proposed either an equal split ($12.5), or an unfair offer ($7.5). They were also told whether the offer came from a member of their own business school (ingroup condition) or from a member of the other one (outgroup condition).

Behaviors confirmed the outgroup derogation hypothesis. Indeed, all the fair offers were accepted, regardless of the group membership of the Proposer. In contrast, the reactions to unfair offers were influenced by the Proposer's social identity: whereas 75% of the unfair offers from ingroup members had been accepted, only 43% of those from the outgroup were accepted. Thus, participants more strongly reacted to unfair offers from outgroup members in order to punish their discriminatory behaviors.

Moreover, answers to questionnaires completed during the experiment showed that unfair offers made by the outgroup were systematically judged as "less fair", "more exploitative" and marginally "more selfish" than the same offers made by the ingroup, leading Responders to be "more irritated" and "less happy".

Students of a Business School thus regarded *a priori* those of the other School as being less fair and, when they received an unfair offer from them, they were frequently willing to reject it. As already underlined, a Business school is a real group, which exists apart from the lab. Students could then identify themselves more or less with their ingroup, or could feel concerned by their group membership in a way that was not controlled by the experiment. On the contrary, minimal group experiments yield situations devoid of the trappings of real ingroup membership.

2.2.The TBBF minimal groups experiment

The seminal paper in the minimal group paradigm is TBBF (1971). This study shows that social categorization, i.e. the distinction between an "us" and a "them", or between the ingroup and the outgroup, leads in itself to discriminatory intergroup behaviors.

In the first part, participants (young boys of a same school) were asked to express their aesthetic preference between *"two foreign modern painters, Klee and Kandinsky"* having been shown a pair of slides reproducing paintings by the two men with the respective signatures obscured. Once all of the answers had been collected, an experimenter was seen by the participants to be apparently compiling them.

Participants were then divided in two groups, *"the group preferring Klee"* and *"the group preferring Kandinsky"*. Actually, subjects' assignment to a group was not based on the answers provided but was rather random. Each subject was then isolated, shown various matrices of remunerations and requested to select a pair of rewards that would remunerate two other participants in the experiment: one belonging to their own group and one belonging to the other. Nobody could choose its own reward; each participant was thus paid at the end of the experiment according to choices made by others (condition (4) of the minimal categorization definition).

This experiment brought out three key results: (i) over 72% of the subjects made choices that favored the ingroup and discriminated against the outgroup – even though these groups had been constructed artificially; (ii) these discriminating behaviors were deliberate strategies –

indeed, participants chose significantly more often to maximize the ingroup member's payoff than to maximize the joined gain of the two participants they had been asked to reward; (iii) lastly, participants prefered offering less to the ingroup provided that this choice maximizes the advantage of the ingroup relative to the outgroup. Therefore, not only did subjects discriminate in favor of an ingroup created in a random way, they also sought through their choices to affirm the superiority of their ingroup on the outgroup even if it is costly for the ingroup. As Tajfel et al. (p178) concluded: *"in a situation in which the subjects' own interests were not involved in their decisions, in which alternative strategies were available that would maximize the total benefits to a group of boys who knew each other well, they acted in a way determined by an ad hoc intergroup categorization"*.

2.3. A ultimatum game with minimal groups: experimental design

Ingroup favoritism thus appears to be an ordinary behavioral strategy of most of people (i) in minimal group settings (ii) where material payoffs of the chooser are not involved (TBBF), as well as (iii) when they are members of real groups (iv) in a ultimatum game where their own payoffs are involved (KSW). What should happen if conditions (i) and (iv) are met?
Our experimental design replicates, in a first stage, the first part of the experiment of TBBF. Subjects are separated in two groups, supposedly because of their aesthetic preferences. Then, in a second stage, they are asked to play a UG being informed of their partner's group membership.

Precisely, we proceeded the following way. During all the experiment, subjects were separated by dividers, ensuring that no one was aware of the identity (and the gender) of the rest of their group. Instructions were distributed in envelopes, so that the information contained in each envelope was private. After an aloud reading of the instructions, subjects could ask questions, and after all questions were answered, they were requested to complete a preliminary test of comprehension. Only one participant did not correctly answer the test, and the corresponding data has been dropped from the sample.
In the first part of the experiment, participants were requested to reveal their preference between pictures by two abstract painters, *Gerard Schneider* and *Thibault de Reimpré*. As in TBBF, they saw slides of their work with the signatures concealed and completed a form concerning them. Once the answers had been collected, an experimenter was seen to be apparently verifying them in order to separate those who preferred *Schneider* from those who preferred *de Reimpré*. In fact, we divided randomly the participants into the two groups, *"the group preferring Schneider"* (hereafter the *S group*) and *"the group preferring de Reimpré"* (the *DR group*).
Afterwards, subjects played a UG where the roles of Proposer and Responder had been randomly assigned. Proposers were requested to offer a split of €20, having been informed of their and the Responder's group membership. After receiving the offer, Responders had to either accept or refuse it.[4] At the end of the experiment, the subjects were paid according to their UG's outcome. No show up fee was paid.

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[4] Subjects were each asked to complete 2 questionnaires: Proposers had to complete one questionnaire after they had made their offers (in order to ascertain the degree to which they thought that their offer was likely to be accepted) and another after they had received the answer from the Responder (to guage their reaction) (the latter is given in Appendix A.2.). Responders were each asked to complete a questionnaire before receiving the offer from the Proposer (in order to ascertain their expectations) and another after they had given their response (to guage their reaction).

Overall, we conducted twenty-seven experimental sessions with 226 subjects recruited by announcements during classes:

- In 6 sessions, we replicated during the second part of the experiment the double manipulation of KSW. All the subjects were assigned to the Responder role and received a pre-determinate offer, either €10 (equal split) or €6 (unfair offer). They were informed of the group membership of the assumed Proposer.
- In 21 sessions, during the second part of the experiment, subjects really played a ultimatum game in which the Proposer and Responder roles were allocated randomly. Two parallel sessions allowed us to carry out between-subjects treatments. In the control one, subjects played a standard ultimatum game whereas in the other one, the first stage of minimal categorization was introduced. Finally, 19 sessions were devoted to the complete experimental design described above.

Table 1 summarizes the various sessions and the number of subjects.

Table 1
Summary of experimental designs and number of subjects

	Exp.1: 2×2 design UG with minimal groups	Exp. 2: Real UG Test between-subjects	*Exp. 3: Real UG with minimal groups*
Subjects	48	36	142
Females	24	6	77
Males	24	30	74
Role		18 proposers	71 proposers
	48 responders	18 responders	71 responders

3. Results

3.1. Reactions to expectancy violation

As just noted, six sessions consisted in adding a first stage of minimal social categorization to the 2×2 factorial design of KSW. We recruited 36 subjects, as many men as women, who were all assigned to the role of Responder and were equally divided between the two groups of painting lovers (see table 2).

Table 2
2×2 between-subjects factorial design

Offer from	To a responder	Females	*Males*
DR	DR	6	6
	S	6	6
S	DR	6	6
	S	6	6

We observe that the decision whether to accept or to reject the offer does not depend on the in- or outgroup condition but rather on the group×role interaction considered[5]. S Responders (i.e. Responders belonging to the S group) are more willing to reject offers coming from their ingroup. They refuse four of the six unfair offers and one of the six fair offers from ingroup

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[5] Data analysis and statistic treatments were carried out using SAS and Sphinx Lexica softwares. Probabilities in brackets are those of the t-test when the sample contains less than 30 data and the chi-deux test if its size is over. Results are then weakly significant when *p<0.1* and strongly significant when *p < 0.01*.

members. These behaviors significantly differ from those of the other subjects *(p=0.02)*, especially from those of the other ingroup interaction, between Proposers and Responders both belonging to the DR group *(p<0.01)*. DR Responders reject only one (unfair) offer, coming from the outgroup. Logically, the earnings of S members are the smallest of the sample since their payoffs are equal to zero in six ingroup interactions.

From their answers to questionnaires, we observed that S members expected to be favored by their ingroup Proposers. Their mean expectation for the ingroup offer was €9.54, which is significantly higher than the €7.54 expected from the outgroup *(p=0.02)*. Note that DR members also expected to receive a greater offer from the ingroup than from the outgroup (€8.58 against 7.54). Even if this last difference is not significant, it gives further evidence that to be favored by ingroup members is the implicit norm of behavior.

In short, if DR members do not discriminate between offers from the ingroup and from the outgroup, S members do make a clear distinction and reject the majority of the unfair offers coming from the ingroup. First, note that these two results contrast with the observations of KSW. On the one hand, members of only one group seem to take into account the source of the offer. On the other hand, by rejecting ingroup unfair offers, they rather react to expectancy violation than by outgroup derogation.

Second, given that the size of the sample is small, a pool bias may be possible in our experiment (Ball and Cech, 1996). Nevertheless, our results may be interpreted in two other ways[6]:

(1) The fact that members of only one group are influenced by the minimal categorization could simply indicate that minimal groups not that much affect individual behavior in a UG. If group membership often induces an ingroup favoritism, the ultimatum setting, where players' decisions directly affect their payoffs, stimulates withdrawal on personal identity and self-interested behaviors (a similar interpretation can be found in Robert and Carneval, 1997).

(2) The fact that S members react to expectancy violation whereas DR members do not and also KSW results favor the outgroup derogation hypothesis suggest that the way people react to unfair offers depend on the kind of group they belong to. Moreover, in our experiment, the "group preferring Schneider" and the "group preferring de Reimpré" are symmetrically created during the categorization stage. The only thing distinguishing between them is the name of the painter to which each one refers. This name in itself is probably far from neutral since the name of "Schneider" generates a group identification whereas the name of 'de Reimpré' does not.

Nevertheless, going further in the interpretation requires a replication of the experiment. However, we chose not to repeat exactly the last experimental design and rather to conduct sessions with a real play of the UG in the second part of the protocol. The idea was that, in addition to having a greater number of observations, we would be able to collect information not only on the Responders' behaviors but also on Proposers' offers.

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[6] We exclude that subjects perceived the manipulation of the offer and reacted accordingly. As we noted, dividers separated each subject ensuring that they could neither see nor talk to others and instructions were privately given to each one.

3.2. Real ultimatum game: A first "between-subjects" analysis

We began the sessions with real UG by conducting two preliminary sessions with 36 students. Twelve of them played a standard ultimatum game, those six interactions being used as a control set. The others participated to a UG with minimal categorization. Six ingroup and six outgroup interactions took place, equally distributed between the 2×2 possible group interactions.

Not surprisingly, results of these preliminary sessions meet traditionally observed behaviors in UG experiments. Proposers offer on average €8.03 that is 40.15% of the €20 to be divided. Only three offers are refused by Responders, two of them being lower than €5, and on average, participants win €9.67. Furthermore, as expected, we observe significant differences in participants' behaviors between the standard and the group version of the experiment (see Table 3). First, Proposers offer more, on average, in the standard UG than in the group version ($p<0.05$). Moreover, average offer in ingroup conditions is higher than in outgroup conditions (€7.92 against €6.67). Even if this difference is not statistically significant[7], it fits well with the ingroup bias traditionally observed in social psychology experiments. Always confirming an influence of group membership on participants' behaviors, we also note slight differences in the mean offers made by Proposers assigned to the DR and the S group, as well as in the average amount offered to Responders of the DR and the S group *(p<0.1)*.

Table 3
Overall results of the test sessions

	Number of interactions	Average offer (standard deviation)	*Acceptance rate*
Overall	18	€8.03	83.3%
Standard UG	6	€9.5 (1.76)	100%
Group UG	12	€7.29 (2.14)	75%
Ingroup conditions	6	€7.92 (2.11)	66.7% (2 refusals)
Outgroup conditions	6	€6.67 (2.18)	83.3% (1 refusal)
DR Proposers	6	€7.58 (1.86)	83.3%
S Proposers	6	€7 (2.55)	66.7%
DR Responders	6	€7.42 (2.54)	66.7%
S Responders	6	€7.17 (1.91)	83.3%

3.3. Real ultimatum game: the cross effects of gender and minimal groups

Provided with these initial results, we conducted 19 additional sessions in the course of which 152 university students took part (see table 4).

Table 4
Experimental design and number of subjects

Role	Group	Females	*Males*
Proposer	DR	14	17
	S	23	16
Responder	DR	18	15
	S	22	16

We briefly present our main results about Proposers' offers and focus afterwards on Responders choices. Table 5 gives the main results by interaction and by gender.

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[7] Only the difference between the outgroup condition and the standard one is significant *(p<0.05)*.

3.3.1. The Proposers' offers

The mean offer is €7.88, or 39.4% of the initial amount. Offers do not significantly vary according to the Responders' or the Proposers' group membership neither do they depend on the group×role interaction as we had observed it before. Nevertheless, female Proposers behave significantly differently from male Proposers. Indeed, women more often offer a fair split than men do *(p<0.01)*. They are 59.64% to propose a minimum share of €9.5 to the Responder, whereas only 24.24% of men do it.

We conducted an ANOVA test on the null hypothesis that there was no gender effect on Proposers' mean offers in each group×role interaction. The null hypothesis was rejected at the 95% level of confidence *(p<0.1)*. Men do offer less on average than women do. Moreover, the mean offer of S male Proposers to S Responders was significantly lower than the remainder of the sample (that is lower than the offer of S female Proposers to their ingroup Responders and lower than the offer of the other participants of both sexes in every group×role interaction). This specificity of S male Proposers towards their ingroup partners does not appear in a first-level analysis because S female Proposers behave the exact opposed way: they make more unfair offers to DR Responders than to S Responders (or to the outgroup than to the ingroup).

3.3.2. The Responders' reactions

3.3.2.1. Both genders are sensitive to the Proposer's group membership

Overall, 81.7% of the offers are accepted. The thirteen rejected offers (on seventy-one) are unfair offers and more precisely offers under €8.
As Proposers' offers, at a first-level analysis, the acceptance rate of Responders does not differ according to Proposers group membership or to group×role interaction. However, as Proposers' choices, the decisions of male and female Responders are clearly distinct according to the interaction.

Table 5
Summary statistics by interaction and gender

Interaction		Responder's gender	
		Female*	Male**
DR - DR	Mean offer	€7.33 (2.04)	€8.06 (2.21)
	Real acceptation	100%	77.78%
	Acceptation using SM	33.33%	66.67%
DR - S	Mean offer	€6.9 (1.22)	€9.64 (1.44)
	Real acceptation	80%	85.71%
	Acceptation using SM	30%	85.71%
S-DR	Mean offer	€7.25 (2.84)	€8.67 (1.78)
	Real acceptation	75%	83.33%
	Acceptation using SM	41.67%	66.67%
S-S	Mean offer	€8.75 (2.73)	€6.22 (0.83)
	Real acceptation	91.67%	66.67%
	Acceptation using SM	66.67%	22.22%
Overall	*Average offer*		€7.88
	Acceptation rate		81.7%

* female responders receive more unfair offers from DR Proposers than from S Proposers (p<0.1)
**male responders receive more unfair offers from S Proposers than from DR Proposers (p<0.1)

Do Responders' behaviors favor the expectancy violation or the outgroup derogation hypothesis? Given that all the fair offers are accepted, we focus only on unfair offers. An offer is said to be unfair if it is below €8[8]. Analyzing acceptance decisions of unfair offers according to gender shows that both women and men are sensitive to the group membership of the Proposer.

Globally, women are more willing to reject unfair offers of S than of DR Proposers *(p<0.01)*. The effect of social identity is patent here given that women receive a greater number of unfair offers from DR Proposers *(p=0.067)*. At the exact reverse, men are more willing to reject unfair offers of DR than of S Proposers *(p<0.05)* although they receive a greater number of unfair offers from the latter *(p=0.016)*.

The interaction effects between gender, role and group membership are significant. Receiving an unfair offer, S female Responders are more willing to accept it if it is proposed by the outgroup *(p<0.1)*, whereas DR female Responders accept it more easily if it is proposed by the ingroup *(p=0.0167)*. In other words, only S female members behave following the expectancy violation hypothesis. On the contrary, the behaviors of DR female members more closely correspond to the outgroup derogation hypothesis.

Male behaviors are not less clear-cut. When they belong to the DR group, they do not discriminate among offers according to the Proposer's group membership; they reject as many offers of the ingroup as of the outgroup. However, S male Responders accept significantly more unfair offers of the ingroup than of the outgroup *(p<0.01)*.

In order to test whether the sexes are different in their willingness to accept unfair offers from Proposers belonging to both groups, we ran the following regression. The dependent variable is ACCUNF, equals to 1 if the Responder accepted an unfair offer, 0 otherwise. The explanatory variables are:

PAY   the subject's possible payoff
SEX   equals to 1 if the Responder is a male, 0 if female
PROP_GP   equals to 1 if the Proposer belongs to the DR group, 2 if he belongs to the S group
ECO   equals to 1 if the Responder follows economic studies, 0 otherwise
AGE   the subject's age

Table 6 reports the Logit regression results.

The reported results confirm the observed differences between men and women in their willingness to accept unfair offers according to Proposers' group membership. Individually, neither gender nor Proposer group membership affect Responders' acceptance rate. However, their interaction significantly influences Responders' decision. In other words, the influence of group membership depends on the gender of subjects. The positive coefficient for SEX×PROP_GP indicates that men are more likely than women to accept an unfair offer from a S Proposer than from a DR one.

Table 6
Logit regression results

Independent variables	Coefficient	Standard error	*p-values*
Dependent variable: accunf			
Pay	0.013	0.08	0.87
Sex	-0.38	0.307	0.21
Prop_gp	0.025	0.307	0.93
Sex*Prop_gp	1.022	0.315	0.0012
Eco	0.15	0.299	0.607
Age	-0.13	0.136	0.335
Intercept	2.44	3.15	0.437

N = 71
R^2 = 0.2963
Test of the null hypothesis rejected whatever the indicator may be (e.g. Likelihood ratio: 16.2962, p-value: 0.0122, Score = 15.287, p-value: 0.0181)

3.3.2.2. Hypothetic vs. real choices

Table 5 above contains both real decisions of Responders whether to accept the offer and their hypothetical decisions deduced using the strategy method of Selten (1967). Before receiving the offer, Responders were asked to state their minimum acceptable offer (MAO). The strategy method consists in inferring the Responder's decision by comparing the actual offer with this MAO. This method is often used in UG studies because offers lie most of the time around the equal split; they are then regularly accepted, and consequently, the data sets are not large enough in order to analyze the willingness of the Responders to accept unfair offers (Camerer et Fehr, 2004).

Yet, we observe that using the strategy method, acceptance rates are significantly lower than they are actually and especially for female Responders. If we were using the strategy method, rejects of unfair offers should have been largely overestimated. Blount and Bazerman (1996) also observed such a gap between real and hypothetical behaviors and explained it by the fact that a rating task (like stating MAOs) does not have an exact behavioral equivalent. Consequently, *« It seems plausible that the rated acceptability of an option reflects its probability of being accepted in a take-or-leave-it decision, but this cannot be assumed »* (Blount and Bazerman, 1996, p 229) A subject could truly think that under a certain amount an offer is so unfair that she will reject it. Yet, when she actually receives the unfair offer, the tradeoff between the willingness to punish the Proposer and the opportunity to have a low but positive payoff could lead her to accept it[9].

Knowing the MAOs stated by the subjects is however interesting. We first observe that the gap between real and hypothetical decisions depends on the gender of the Responder *(p<0.1)*. Women more often state MAOs higher than the offers actually accepted than men do. Moreover, MAOs differ according to the group×role interaction for both sexes. They are then precious information that allows us to reconstitute the timing of the game. Before, note that participants of both sexes belonging to the DR group behave regardless of the Proposer's group membership. Only S members exhibited specific behaviors.

    (i)   S female members stated lower MAOs when they were paired with an ingroup Proposer than when they were paired with an outgroup one *(p=0.06)*.

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[9] In the same spirit, Boles and Messick (1990) show that when unfair offers are accompagnied by actual currency (a $1 bill), they are more likely to be accepted than if they are received without any currency attached.

Notwithstanding, they expected to be favored by the ingroup[10]. Well, they actually received a higher offer on average from the ingroup than from the outgroup *(p<0.1)* and especially less unfair offers. However, they rejected more unfair offers from the ingroup than from the outgroup. In other words, when they actually received an unfair offer, they reacted more strongly in ingroup than in outgroup interactions. Their expectations (rather than their MAO) shaped their decision.

(ii) Male S members also reported lower MAOs when they were paired with an ingroup Proposer than with an outgroup one. Then, they were more likely to accept unfair offers from the ingroup, although they expected to be favored by the ingroup. The designs of the offers received by male S Responders and of their reaction were at the exact opposite of women ones. They were actually not favored by the ingroup but by the outgroup. Indeed, DR Proposers made both higher offers in average and less unfair offers than S Proposers did to S male Responders *(p<0.1)*. In spite of this, S male Responders ended by accepting the unfair offers from the ingroup and rejecting more often those coming from the outgroup. Either men are more willing to maximize monetary payoffs than women and this is why they finally accepted the unfair offers coming from the ingroup; or they are actually more indulgent with the ingroup than women are. However, they ex post reported to be "less satisfied" in ingroup than in outgroup interactions *(p<0.5)* and judged S Proposers "less fair" and "less generous" than DR Proposers *(p<0.01)*.

3. Summary and conclusions

In summary, our between-subject treatment show that introducing minimal categorization in UG affects behaviors compared to a standard UG. Moreover, the manipulated as well as the non-manipulated experiments show that membership to minimal groups shapes behaviors of members (of only one group). Such results indicate that groups formed by nothing else than a random assignment of subjects to names affect individual behaviors. The effects of social identity are less straightforward and definitely more complex with minimal than with real groups, but they are palpable.

After the first experiment, we thought of a pooling bias possibility. It seems now that this eventuality should be left out since in all our treatments, behaviors of members of the S group systematically differed from those of the remainder of the sample. However, the question is: why did S group members have been the only ones influenced by their minimal social identity? The only explanation rests on the group's name itself (and not on the belief that categorized people share artistic preferences). In designing further experiments involving minimal categorization, experimenters should very carefully choose the names of the groups[11].

Belonging to the S group did not generate a similar identification for men and women. Both sexes in both roles had been affected by their minimal social identity. But, in each case,

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[10] Pre-offer questionnaires distinguished questions about MAO from questions about expectations of the Responders, as you can see in the Appendix A.3.

11 In our experiment, the question becomes : why did the name of « Schneider » apparently elicit a sense of belonging whereas the name of « de Reimpré » did not? When we presented an earlier draft of this paper at the International Conference *Morality, Norms and Economics* (Lisbon, September 2004), it has been suggested that, in French language, « de Reimpré » is a name belonging to the nobility whereas « Schneider » is not (it is moreover a frequent name in the East of France). Behaviors of members of the S group could thus reflect a reaction to their « low-grade » group label. Nevertheless, it remains that men and women reacted differently to this group label.

women and men behaved in a radically opposed way. Female Proposers favored the ingroup whereas male Proposers favored the outgroup. Female responders reacted to an expectancy violation by rejecting more unfair offers from the ingroup whereas male Responders did not, but exhibit either outgroup derogation or monetary self-interested behaviors.

This gender effect is not innocuous since at the end of the game, payoffs of male and female players (and payments of male and female subjects) were significantly different. Women earned more in ingroup interactions, especially when they were assigned to the Responder role *(p<0.1)*. On the opposite, men earned more in outgroup interactions, especially when they were assigned to the Responder role *(p<0.01)*.

Minimal categorization thus affects differently men and women behaviors. Such a result confirms those studies explicitly designed in order to observe gender differences and extend them in a framework with minimal categorization. For example, Brown-Kruse et Hummels (1993), who tried to create a sense of belonging to some groups through pre-experiment activities, observed that men who took part in those activities contributed more to the public good than those who did not, while there was no such effect for women. Solow and Kirkwood (2002) also fund complex cross-effects of gender and social identity in a public good game. We agree that the effects of gender and social identity (groups being minimal or real) need further investigations. In the current state of experimental research, their interaction is not enough to predict differences in behavior in bargaining games.

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