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DO PEOPLE STAND BY THEIR COMMITMENTS? EVIDENCE FROM CLASSROOM EXPERIMENTS

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Do people stand by their commitments?

Evidence from classroom experiments

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Abstract –

In this paper we test the fulfillment of commitments in terms of effort made by students under an incentive contract but without strategic interactions. Accordingly it is an experimental contribution to decision theory. The experiments took place in classrooms during class time. Students have to announce a level and realize a level of effort virtually. The two levels of effort can differ and the game is made in such a way that students have interest not the stand by their commitments that to make their two levels of effort different. The results show however that an important percentage of students respect their commitment and that a *freezing* effect can be identified.

Key words: commitment; freezing effect; classroom experiments, level of effort

JEL code: C91, D90

1. Introduction

People do not always feel compelled to stand by their commitments. Besides, this idea is perfectly in line with incomplete contract theory (Grossman and Hart, 1986; Hart and Moore, 1988). However, in daily life and at workplace people often live up to their commitments even if it is rational not to do so. There is a vast principal-agent literature in economics that shows that people may be guided by the observance of social norms, self-reputation or the avoidance of guilt (e.g. Bénabou and Tirole, 2003, 2006, 2011). Other contributions stress the idea that people are not necessarily opportunistic and have a tendency to keep their promises (see, e.g., Ellingsen and Johannesson, 2004).

There is also a related literature in moral philosophy that points out the role of commitment in social interactions[1]. Sen distinguishes the case of commitment from other forms of pro-social behavior such as sympathy that do not imply a shift from self-interest standard economic theory: "Commitment … is concerned with breaking the tight link between individual welfare (with or without sympathy) and the choice of action (e.g. acting to help remove some misery even though one personally does not suffer from it. Sympathy alone does not require any departure from individual-welfare maximization: but commitment does involve rejection of that assumption (Sen, 1982, p. 8).

In a nutshell, commitment (at least *goal-displacing commitment*[2], cf. Pettit, 2005) involves a radical move from the various self-interest forms of utility[3]and this

[1]Sen (2002, pp. 177-178) traces the idea of commitment to Ragnar Frisch but finds it already present in Adam Smith.

[2] *Goal-displacing commitment* is defined by Pettit (2005) as a case which occurs "when the goals of others … [do] no lead me to modify my own goals but rather to displace them. It leads me to take my guidance, not just from my own aims, but also from the goals that I see those others espouse." (Pettit, 2005, p. 18). This radical form of commitment is to be distinguished from *goal-modifying commitment* which "occurs when I recognize the goals of others, see that they will be negatively affected by what I am about to do, and alter my own goals as a result, in particular alter those goals without undergoing the transformation of sentiment that sympathy would involve." (Pettit, 2005, p. 18).

[3]For Sen, there are three figures of the self (besides commitment) ranked according to a decreasing degree of subjectivity (see Davis, 2001, p. 3): *self-centered welfare*, *self-welfare goal*, *self-goal choice*. Self-centered welfare means that "a person's welfare depends only on her own consumption and other features of the richness of her life (without any sympathy or antipathy toward others, and without any procedural concern)." Self-welfare goal means that "a person's only goal is to maximize her own welfare." Finally, self-goal choice implies that "a person's choices must be based entirely on the pursuit of her own goals." (Sen 2002, pp. 33-34).

is related to two mains reasons: 1) commitment violates consequentialist analysis and 2) it is deprived of subjectivity to the benefit of reason (cf. Sen, 2002, p. 334).

For Sen, commitment is linked with the notion of identity since being committed to someone means that one is able to identifying oneself with others in deciding on one's objectives and making one's choice. This implies, according to Sen, that human beings can act not only on preferences which are not "self-interested" but can bind themselves to act on principles for which they have no preference[4]. This relates to the role played by *agent relativity* or *Menschenbild* in Sen's conception of rationality (see Peacock, 2011). More precisely, contrary to sympathy, commitment does not imply that one's welfare is worse off due to concern for others, for instance if the knowledge of torture of others makes you sick. It rather conveys the idea that you think that torture of others is wrong (even though this does not makes you suffer personally) and you are ready to do something to stop it (Sen, 1982, pp. 91-92). In particular, this means that commitment may not be fulfilled by somebody else than yourself, whereas sympathy may be exerted by proxy. To wit, if someone other than yourself does something in order to stop the torture of somebody else, this increases your welfare.

In social psychology Lewin (1947) introduced the idea of *freezing effect* (effect of commitment) after two experienced attempts to make US consumers accept to buy cheap cuts during the Second World War. The first strategy he used was to explain during meetings to US people why it was necessary to buy and how to cook cheap cuts. This strategy completely failed. The second strategy was, after the same types of meeting to ask people to commit publically to eat cheap cuts. This second strategy succeeded. Moriarty (1975) makes slightly different experiments[5] but obtains similar results (see also Joule and Beauvois, 2002). We do obtain similar results but a lower level of freezing effect (see below).

[4] This interpretation of commitment also referred as the counterpreferential view (see Hausman, 2007) has been undermined by Brennan (2007) who considers that Sen's notion of commitment is likely to be interpreted in terms of preferences for reciprocity or inequity aversion as in Fehr and Schmidt (1999).

[5] Two experiments were used, both using a theft context and the manipulated variables were a prior commitment or not of a bystander and the gender of thief. The results showed a dramatic effect of commitment.

Finally, there are also literatures in human resource management and psychology that emphasize the role of *organizational commitment*[6] (Buchanan, 1974) or *affective commitment*[7](Meyer and Allen, 1991) and loyalty in the maintenance of effort and in the avoidance of opportunistic behavior in work organizations (Green, 2008). Akerlof and Kranton (2005) also recognize that instilling in employees "a sense of identity and attachment to an organization is critical to well-functioning enterprises." (Akerlof and Kranton, 2005, p. 11). Brown et al. (2011) provide a survey analysis that suggests that employee commitment and loyalty are positively associated with higher levels of performance not only at the employee level but also at the workplace level.

In this paper we test the fulfillment of commitments in terms of effort made by students under an incentive contract but *without strategic interactions*. Accordingly it is an experimental contribution to decision theory. The experiments took place in classrooms during class time. Two experiments of three steps were run from September 2011 to April 2013 at the University of Picardie -Jules Verne and the University of Nice-Sophia Antipolis. The paper is organized as follows: section 2 presents the experimental design, section 3 the results and section 4 the discussion. Section 5 concludes.

2. Experimental design

The students were dispersed in the classroom and asked not to speak. They were invited to write on three separate sheets of paper their ID student number (see instructions in Appendix A) and instructions were read aloud in order to make sure every student gets the same information. Thereafter they were asked in a first step to write an announced level of effort (L or H) in the upper-left corner of the first sheet of paper and then to write an effective level of effort possibly different from the announced one on the right side. In a second step, they were asked to write an announced level of effort (L or H) in the upper-left corner of a second sheet of paper, then the experimenter announced publicly to all the students the percentage of students that chose H (or L) before students were invited to write the effective level

[6] Buchanan (1974) defines *organizational commitment* as dedicated to the purposes and values of an organization.

[7] *Affective commitment* is defined as "the employee's emotional attachment to, identification with, and involvement in the organization." (Meyer and Allen, 1991, p. 67)

of effort. Finally, in a third step, the students were asked to write an announced level of effort (L or H) and then to tell it aloud before choosing the effective level of effort. The instructions (see appendix A) of each step were read aloud one after the other.

In order to control for order effects, we varied the order of the first and third steps in a second experiment.

For each step, outcome was defined as the difference between the gain corresponding to the announced level of effort (5 for the level H and 2 for the effort L) minus the cost of the effective level of effort (3 for H and 1 for L). The students were remunerated in average grade points (1 Experimental Currency Unit = 0.1 average grade point).

Possible outcomes for each round are computed in the following table:

Level of effort announced	Level of effort realized	outcome
H	H	2
H	L	4
L	H	-1
L	L	1

Figure 1: Possible outcomes

We ran the sessions with 162 students trained in L1, L3, M1 and M2[8] in economics and in mathematics applied to social sciences (81 students ran the first experiment and 81 the second).

3. Results

We tested the gender effect using Mann-Whitney test and found no effect concerning choices (Prob> |z| = 0.78). Moreover, no significant difference was found between the total outcomes for the two experiments: mean for the first, 8.38; 7.43 for the second (Prob> |z| = 0.14).

[8] These levels correspond respectively to two levels of undergraduate and two levels of master degrees.

As for the first experiment (see figure 3a), the differences between the outcomes for the three steps are not significant for the difference between step 1 and step 2 (Prob> |z| = 0.14), for the difference between step 1 and step 3 (Prob> |z| = 0.4733) but it is highly significant for the difference between step 2 and step 3 (Prob> |z| = 0.014).

As for the second experiment, none of the differences is significant except the difference between step 1 and step 3: Prob> |z| = 0.68 for the difference between step 1 and step 2; Prob> |z| = 0.0911 for the difference between step 1 and step 3; and Prob> |z| = 0.0408 for the difference between step 1 and step 3 (see figures 3b).

As for the differences between the outcomes of the two experiments by step, the results are interesting. The Mann-Whitney test shows that outcomes of the first steps are unequal: Prob> |z| = 0.0363 (diff=0.52); outcomes of the second steps are not unequal: Prob> |z| = 0.8168 (diff=0.09); and outcomes of the third steps are not unequal: Prob> |z| = 0.4613 (diff=0.35). Moreover the differences of outcome between the third step of the first experiment and the first step of the second are unequal: Prob> |z| = 0.0021; and the difference of outcome between the first step of the first experiment and the third step of the second are not unequal: Prob> |z| = 0.9121 (see also figure 5).

Students who respect their commitments are respectively 24.69%, 40.74%, 33.34%, 40.74%, 40.74% and 23.45% for the different steps of the two treatments.

Figure 2 shows the percentages of the outcomes for the different steps of the two experiments. Figure 4a gives the comparison between the percentages for the first step of the first experiment and the third step of the second; figure 4b, the comparison between the percentages for the second steps of the two experiments; figure 4c, the comparison between the percentages for the third step of the first experiment and the first step of the second; and figure 4d the comparison between the percentages for the first step of the two experiments.

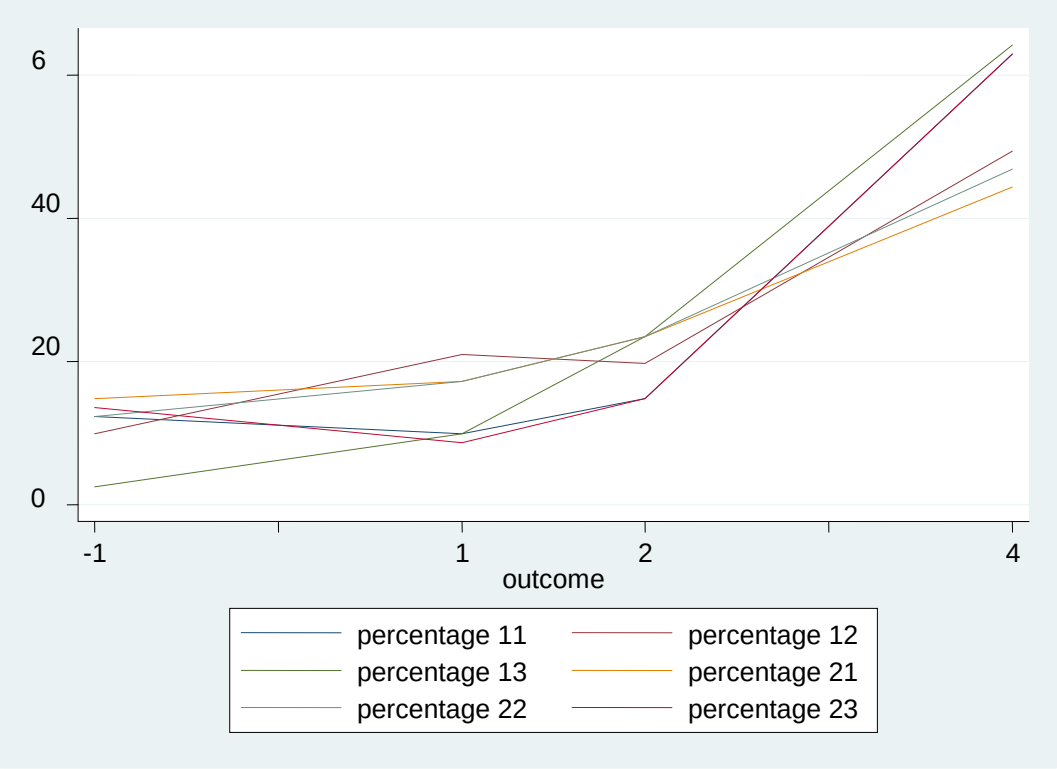
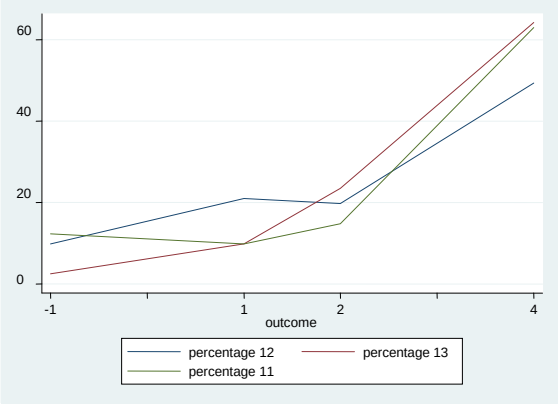


Figure 2: Percentages ij of outcomes by steps j and experiments i



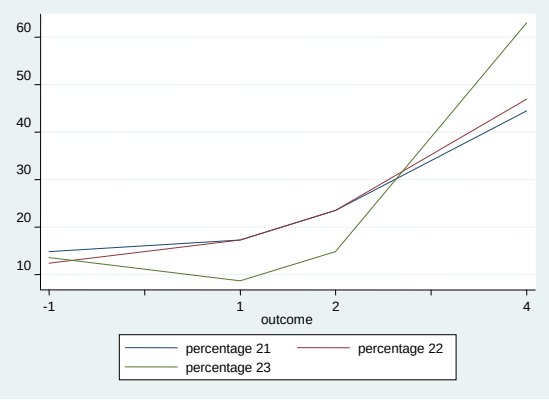


Figure 3a Figure 3b

Figures 3: Percentages of the outcomes of the 3 steps of the two experiments

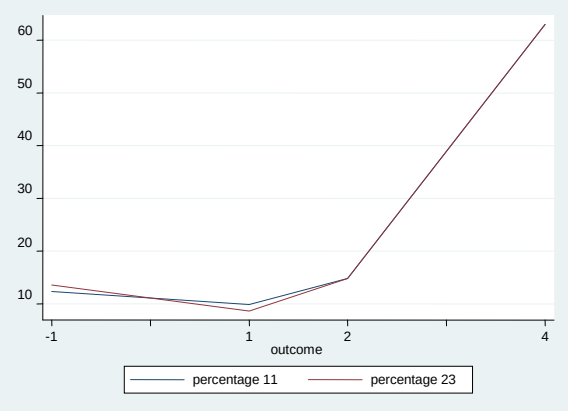


Figure 4a

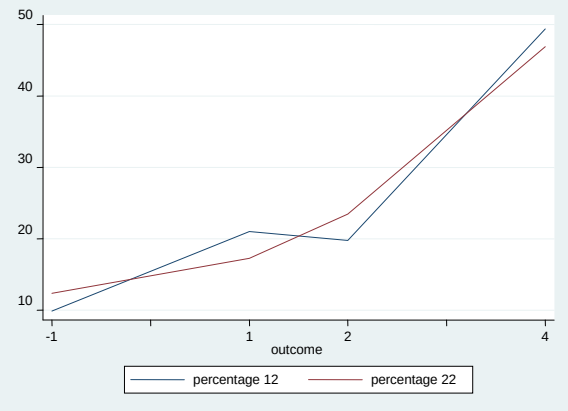


Figure 4b

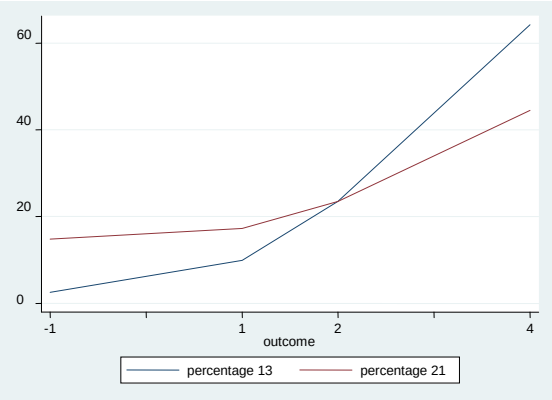


Figure 4c

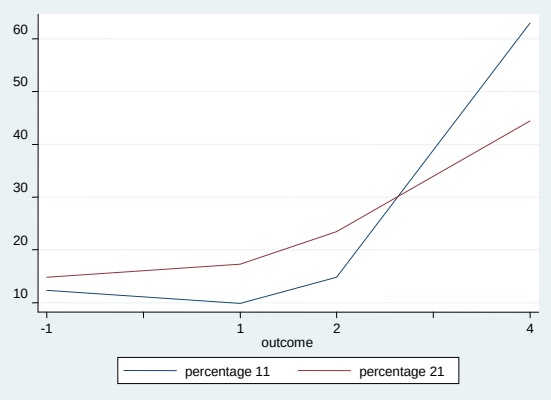


Figure 4d

Figures 4: Percentages of the outcomes ij of the steps (j = 1, 2, 3) of the two experiments (i = 1, 2)

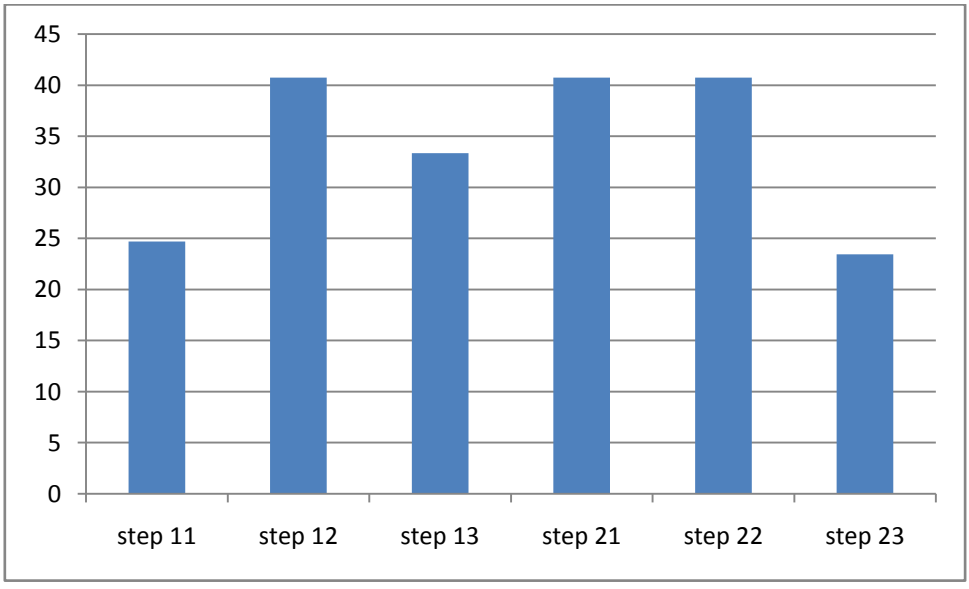


Figure 5: Percentages of students respecting their commitment at the different steps of the two treatments

To sum up, it seems that the fact that students write anonymously their choices of both the announced and the effective levels of effort (first step of the first experiment and third step of the second experiment) is identical between the two experiments (see figure 4a). We reach a similar conclusion when steps 2 (i.e., when students know the percentages of those among them that chose H or L) are compared between the two experiments (see figure 4b). However, when students have first to say aloud their announced level of effort (first step of the second experiment) before writing their effective level of effort, this has an effect as compared with the case where they first write anonymously the announced level of effort (first step of the first experiment), then write the effective level of effort (see figure 4d). Finally, there is also a significant difference between the case where they first announce aloud their level of effort (first step of the second experiment) and the case where they announced aloud their level of effort only at the third step (i.e. in the second experiment; see figure 4c).

If the average outcomes do not changes between the different stages in the same experiment this does not mean that students are not sensitive to the kind of institutions they are concerned with. If we look at the *evolution* of the average outcomes between the different stages of the two experiments, we find an interesting result (see figure 6). The percentages of those who *increase* their outcome from step 1 to step 2 in experiment 1 and 2 are respectively 16.05 and 19.75; the percentages of those who *increase* their outcome from step 2 to step 3 are respectively 32.10 and 22.22. The percentages of those who *decrease* their outcome from step 1 to step 2 in experiment 1 and 2 are respectively 28.40 and 18.52; the percentages of those who *decrease* their outcome from step 2 to step 3 are respectively 11.11 and 12.35. In other words there is no audience effect in the first experiment for the students who *change* their strategies.

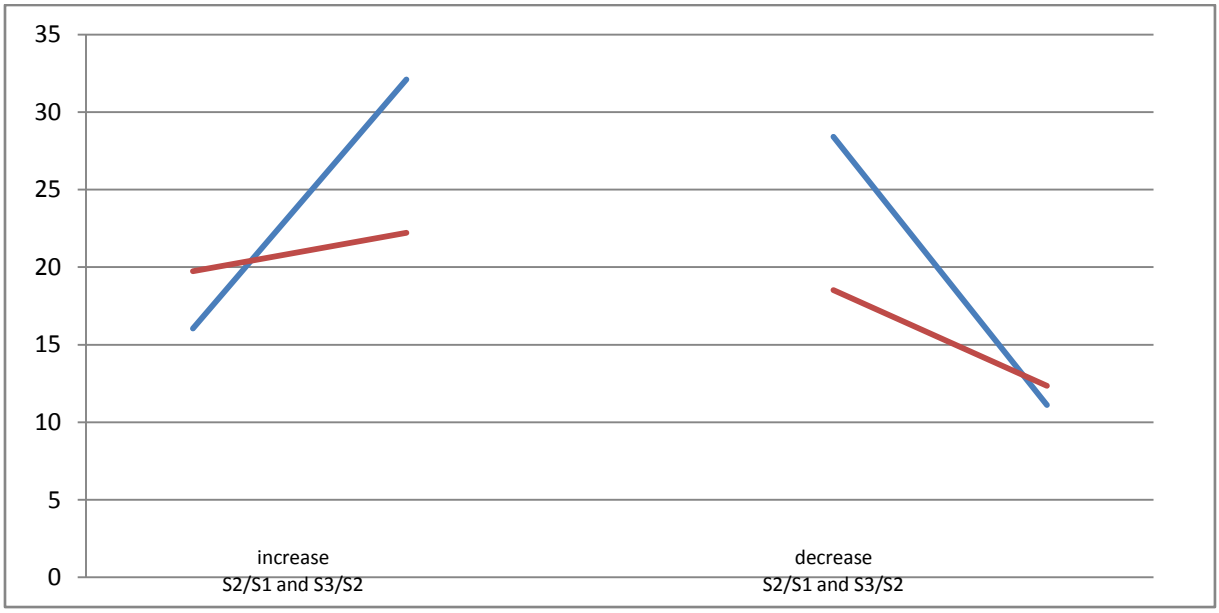


Figure 6: percentages of the students who increase and decrease their outcomes between steps1 and 2 and steps 2 and 3 in the two experiments

Let define a strategy as a group of three successive decisions taken in a given experiment. The number of possible strategies is 64 (4^3). In order to reinforce the 'audience effect' we see in the second experiment, we can see that, if the percentage of students playing the strategy 444 (that is HL each step) is equal for the two experiments (32.10% and 30.86% respectively) the percentage of students playing HL in the first steps in the two experiments are respectively 62.96% and 44.44% (see appendix B.4). Another interesting result is that students play respectively 39.06% (25) and 45.31% (29) of the possible (64) strategies.

4. Discussion

An apparently strange result lies in the LH decision (L is announced and H is realized) that gives an outcome of -1. The rational[9] for this decision could be the following: 'I commit myself to make a low level of effort and I make however the highest one'.

First of all we identify a freezing effect: in average 34% of students do respect their commitments during the experiments. This effect is important but is difficult to compare with Moriarty (1975) inasmuch as students have, in our experiments strong incentive to renege their commitments whereas in Moriarty this incentive is inexistent. His results are that around 100% (100% of males, 90% of females) of the subjects are responsive when they have to

[9] This explanation has been given by students, after the experiments when they have been asked to justify such a choice.

commit themselves[10]. Two differences are important to point: first as we just write we introduce incentives for the students not to stand by their commitments; second there is not externality on others well-being as it is the case in Moriarty (1975). What we test is then, at the first step of the first experiment self-esteem, at the second step we add group conformity, and at the third step social esteem. Self-esteem and group conformity seems together the best leverage to make people standing by their commitment as figure 5 shows. In other words group conformity enhances self-esteem[11].

Second we see an order effect. The students modify their action depending on the order of choices they have to do. In the second experiment, students have first to tell aloud their chosen (announced) level of effort; as compared with the experiment where they have not to do it at the first step students who respect their commitments are significantly more numerous (40.74% and 24.69% respectively). In the same line, when students have first to tell aloud their chosen (announced) level of effort (second experiment), they are more inclined to respect their commitments than when they have to do it at the third step (40.74% and 33.34% respectively). This second effect can be assimilated to a learning effect.

Third the students take similar decisions when they are asked anonymously to chose a couple of levels of effort and in this case they are more inclined to chose the rational decision (respectively 64.20% and 62.96% in the two experiments). This result that is equivalent to the

[10] The commitment was the acceptance by a bystander to look at experimenter's things (a portable radio (first experiment) and a suitcase (second experiment)) during the experimenter walked away for a while.

[11] Students have to choose an action $a \in$ {LH, LL, HH, HL} or equivalently an outcome $o \in$ {-1, 1, 2, 4}. Let define their utility function in the first experiment as:

$$U_i^1 = s(o_{i1}) + \partial_1 E(s|o_{i1}) + v(o_{i2}) - \partial_2 E(v|\left(a_{i2} - \frac{\sum_{j=1(j\neq i)}^{n} a_{j2}}{n}\right)) + S(o_{i3}) + \partial_3 E(S|o_{i3})$$

We define s as the individual i's feeling of self-esteem, v his conformity to others' choice (announced levels of effort) and S his feeling of social esteem and $\partial_{1,2,3}$(the indices 1, 2, 3 indicate the steps of a given experiment (here experiment one)) the weights of v, s and S respectively. a_{i2} is the level of effort announced by individual i. For the second experiment, we can define the corresponding utility function:

$$U_i^2 = S(o_{i3}) + \partial_3 E(S|o_{i3}) + v(o_{i2}) - \partial_2 E(v|\left(a_{i2} - \frac{\sum_{j=1(j\neq i)}^{n} a_{j2}}{n}\right)) + s(o_{i1}) + \partial_1 E(s|o_{i1})$$

Accordingly, everything is as if we test the different terms of the two utility functions separately. As for the first (resp. the third) step of the first experiment (resp. of the second) we test the feeling of self-esteem ($s(o_{i1}) + \partial_1 E(s|o_{i1})$, for the second step of both experiments we appraise the level of conformity ($v(o_{i2}) - \partial_2 E(v|\left(a_{i2} - j=1j\neq inaj2n)$ and finally for the third step (and the first) of the first experiment (and of the second) we test for the feeling of social esteem ($S(o_{i3}) + \partial_3 E(S|o_{i3})$).

reduction of the number of student standing by their commitments is in line with the literature stressing the role of anonymity in experiments (Levitt and List, 2007; Hoffman and al., 1994).

5. Conclusion

In economics individuals are supposed to act opportunistically. This means that if they have a net benefit in reneging their commitments they do it. Some studies in social psychology have shown however that it was not the case and that freezing effect could exist. In management organizational commitment has been identified. In moral philosophy the idea that people might respect their commitment has also been stressed. We ran classroom experiments that show that students have a tendency to stand by their commitment even if they have interest no to do it. We have also identified an order effect as well as a learning effect.

Appendix A

Instruction for the second experiment

A.1. Instructions for step 1

You have accepted to participate to an experiment. You will be remunerated for that by average grade points (one Experimental Currency Unit = 0.1 average grade point). In order to secure anonymity, you will be invited to write you ID number on each sheet of paper you will have to complete.

The experiment consists of three steps, the instructions of which will be given to you one after the other.

In the first step, after having written your ID number in the upper-left corner of the sheet of paper, you will be invited to choose an announced level of effort H or L. Then you will be told the percentage of students which have announced a level H or L. Finally, you will be invited to choose an effective level of effort H or L, which can differ from the announced one.

The total outcome you will get will be equal to the difference between difference between the gain corresponding to the announced level of effort and the cost of the effective level of effort The respective costs and gains for H and for L are summarized in the table below:

Level of effort	Gain	Cost
H	5	3
L	2	1

A.2. Instructions for step 2

In the second step, after having written your ID number in the upper-left corner of the sheet of paper, you will be invited to choose an announced level of effort H or L. Then you will be told the percentage of students which have announced a level H or L. Finally, you will be invited to choose an effective level of effort H or L, which can differ from the announced one.

The total outcome you will get will be equal to the difference between difference between the gain corresponding to the announced level of effort and the cost of the effective level of effort The respective costs and gains for H and for L are summarized in the table below:

Level of effort	Gain	Cost
H	5	3
L	2	1

A.3. Instructions for step 3

In the third step, after having written your ID number in the upper-left corner of the sheet of paper, you will be invited to choose an announced level of effort H or L. Then you will be asked one after the other to tell aloud the level of effort you chose. Finally, you will be invited to choose an effective level of effort H or L, which can differ from the announced one.

The total outcome you will get will be equal to the difference between difference between the gain corresponding to the announced level of effort and the cost of the effective level of effort The respective costs and gains for H and for L are summarized in the table below:

Level of effort	Gain	Cost
H	5	3
L	2	1

Appendix B

B.1. Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
outcome11	81	2.790123	1.772823	-1	4
outcome12	81	2.481481	1.696401	-1	4
outcome13	81	3.111111	1.294218	-1	4
total1	81	8.382716	3.407961	0	12
outcome21	81	2.271605	1.802861	-1	4
outcome22	81	2.395062	1.744126	-1	4
outcome23	81	2.765432	1.811571	-1	4
total2	81	7.432099	3.984151	-3	12

B.2. Percentages of the four possible outcomes by steps and experiments

	-1	1	2	4
Experiment 1				
Step 1	12.35	8.99	14.81	62.96
Step 2	9.88	20.99	19.75	49.38
Step 3	2.47	8.99	23.46	64.20
Experiment 2				
Step 1	14.81	17.28	23.46	44.44
Step 2	12.35	17.28	23.46	46.91
Step 3	13.58	8.64	14.81	62.96

B.3. Differences of outcomes by steps and experiments

	Step 1	Step 2	Step 3	total outcome
experiment 1	2,79	2,48	3,11	8,38
experiment 2	2,27	2,39	2,76	7,43
Differences	0,52	0,09	0,35	0,95
relative diff	19%	3%	11%	11%

	rational	identical	identical H	identical L
experiment 1	32,10	41,98	4,94	4,94
experiment 2	30,86	48,15	11,11	6,17

	increase		decrease	
	step2/step1	step3/step2	step2/step1	step3/step2
experiment 1	16,05	32,10	28,40	11,11
experiment 2	19,75	22,22	18,52	12,35

B.4 the strategies played in the two experiments

first experiment				second experiment			
strategies	frequency	percentage	perc. cum.	strategies	frequency	percentage	perc. cum.
113	1	1.23	1.23	111	3	3.70	3.70

114	1	1.23	2.47	114	2	2.47	6.17
123	3	3.70	6.17	134	1	1.23	7.41
134	2	2.47	8.64	142	1	1.23	8.64
144	3	3.70	12.35	144	5	6.17	14.81
222	4	4.94	17.28	214	2	2.47	17.28
224	1	1.23	18.52	221	1	1.23	18.52
242	1	1.23	19.75	222	4	4.94	23.46
244	2	2.47	22.22	224	2	2.47	25.93
313	1	1.23	23.46	231	1	1.23	27.16
324	3	3.70	27.16	234	2	2.47	29.63
333	4	4.94	32.10	244	2	2.47	32.10
334	2	2.47	34.57	311	1	1.23	33.33
344	2	2.47	37.04	314	1	1.23	34.57
411	2	2.47	39.51	324	1	1.23	35.80
413	1	1.23	40.74	331	1	1.23	37.04
414	2	2.47	43.21	332	2	2.47	39.51
422	1	1.23	44.44	333	8	9.88	49.38
423	1	1.23	45.68	334	1	1.23	50.62
424	4	4.94	50.62	341	1	1.23	51.85
432	2	2.47	53.09	344	3	3.70	55.56
433	2	2.47	55.56	414	1	1.23	56.79
434	4	4.94	60.49	421	1	1.23	58.02
443	6	7.41	67.90	423	2	2.47	60.49
444	26	32.10	100.00	424	3	3.70	64.20
Total	81	100.00		431	1	1.23	65.43
				433	2	2.47	67.90
				441	1	1.23	69.14
				444	25	30.86	100.00
				Total	81	100.00	

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