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EXPERIMENTAL ECONOMICS

The Boss is Nervous Today: Effects of Leaders' Mood on Workers' Performance

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"The economist must wait for the development of a science of social psychology to supplement his own methods of analysis"

Robinson (1937, p.172)

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I. INTRODUCTION

This work aims at investigating the effects of the elicitation of leaders' mood on workers' performance. Recently, researchers were interested in the behavioral effects of mood on economic decisions: Andrade and Ho (2007) and Petit (2009) found that in an ultimatum game a bad mood increases the possibility to reject an unfair offer. Generally, in the past few years economists have recognized the role of emotions, like fear, anger, envy, etc., to understanding of human economic behavior; the studies of the Nobel Prize laureate Daniel Kahneman had a fundamental role in the implementing process of the psychological insights in economic theory.

However, few research on the mood effects on economic behavior has been run and, as far as I know none has explored whether an individual's mood could affect economic decisions of another individual.

To understand whether a relevant causal link exists I conducted an experiment in which subjects played in pair; they had different roles: leaders and workers. In the main treatment leaders were asked to elicited their mood which was communicated to workers; after receiving this information, workers were asked to carry out some tasks: they chose how many mathematical questions out of ten try to answers and they wrote the solutions on their paper. Per each correct answer leaders received one pound. Finally, leaders could decide if and how to reward their co-participants.

In order to control the effect of the mood elicitation I ran a baseline treatment in which mood was not asked and another control treatment in which mood was elicited but not transmitted to the co-player. Results are not exactly what I expected but I believe that the outcome surely depends on the experimental design and the procedure that I applied.

The structure of this work is as follows: Section II reviews some theoretical papers and some experimental evidence on the influence of emotions in decision making-process; Section III outlines the research questions and describes the experimental design and procedure. Section IV reports the results of the experiment and a concluding section, Section V, summarizes and discusses my main results.

II. EMOTIONS AND ECONOMIC THEORY

In 1789 the philosopher Jeremy Bentham first proposed a "Pannomion", a complete utilitarian code of law: he did not only propose many legal and social reforms but also exposed an underlying moral principle on which they should be based, known as "the greatest happiness principle" or the principle of utility. He wrote in the *Principle of Morals and Legislation*[1]: "*Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne. They govern us in all we do, in all we say, in all we think*". *Utilitarism* was born; Bentham viewed utility as the net sum of positive over negative emotions and he dedicated a substantial part of his work to a discussion of the determinants and nature of emotions.

When neoclassical economists later constructed their new approach to economics upon the foundation of utility, the predominant view of human behavior and motivation was that of *Homo Economicus*, a rational and self-interested individual with no moral value. Their economic model, used for explaining and predicting economic behavior in private and public sector, typically minimizes or totally ignored the influence of emotions on people's decision-making process. With surprise, academic world forgot that, going back at least to Aristotele, economic discipline was born as an offshoot of ethics and that even the "father" of the self-interest motive, Adam Smith, was a professor of philosophy interested in *Moral Sentiments*[2].

However, although it seems that the most sold textbooks of economics declare the only existence of a parsimonious consumer, gradually we have experienced a growing empirical evidence of a behavior deviating from the classical theoretical predictions: "[…]*many people deviate from purely self-interested behavior in a reciprocal manner* (Fehr and Gachter, 2000)". Indeed, a new strand of research in economics, known as Behavioral Economics, aims at incorporating robust psychological insights into economics, thus creating

[1] Bentham, 1789.

[2] His work, *The Theory of Moral Sentiments,* provided the ethical, philosophical, psychological and methodological basis of his later works including *The Wealth of Nations* (1776).

a model of *Homo Sapiens*[3] which does not act in a total rational way as Homo Economicus does. The concept of *Bounded Rationality* became more popular between economists especially after the studies of Nobel Prize laureates Herbert Simon[4] and Daniel Kahneman[5]. The presence of other regarding motives during a decision-making process like fairness, reciprocity and trust have challenged economists, in particular experimental economists, in the last decades.

Moreover, in the past few years some studies showed a revival of interest in emotions[6] and have established that they may be an important key to understanding of human economic behavior. Jon Elster[7] pointed out that emotions can help us to explain behavior for which good explanations seems to be lacking. After he had expounded what emotions are, the most common criteria of classification, his features to define emotions and the possibility to choose to have (or not) an emotion, he finally focused the attention on how they might affect economic behavior. He realized that one of the first answers came from neurobiological studies: Damasio (1994) and LeDoux (1996) argued that "*emotional responses enhance our capacity to make good decisions, not by guiding us to the best possible decision, but by ensuring that we make some decisions in situations where procrastination is likely to be disastrous* (Elster, 1998)". According to Elster, those types of responses make individuals irrational rather than rational: instead to follow a simple mechanical decision rule, individuals use more elaborate procedures with higher opportunity costs[8]. The Cost-Benefit Model of Emotion, which concerns on the interaction between emotions and interest, is indeed interesting: emotion is considered a cost or a benefit that entered in the utility function as well as the satisfaction derived from material rewards. Other researchers faced the question of choice that arises when the agent has to weigh emotional satisfaction against other satisfactions: Graham Loomes and Robert Sugden[9], for example, in their economic analysis of regret assumed that agents weigh satisfaction from actual outcomes and emotions generated

[3] Frans van Winden, 2007.
[4] Herbert Alexander Simon received the Nobel Memorial Prize in Economics in 1978 for his pioneering research into the decision-making process within economic organization.
[5] Daniel Kahneman is a Nobel Prize laureate in Economics (2002) "…for his work on the psychology of human judgement and reasoning".
[6] Lewin, 1996; Rabin, 1998; Camerer, 2003; W. Bentley MacLeod, 1996; Hermalin and Isen, 2000.
[7] Elster, 1998.
[8] On the same line Richard Thaler (1980) that argued that "*neglect of opportunity costs […] is a frequent source of cognitive irrationality*".
[9] Loomes and Sugden, 1982.

by counterfactual beliefs. In modeling envy, Hirshleifer assumed that the agent is willing to invest resources in making the rival worse off up to the point where he derives more utility from making himself better off[10].

Still, none of these analyses rely on emotions which are experienced at the time of decision-making: for example, regret and disappointment in Loomes and Sugden's model are expected to be experienced in the future. This is the George Loewenstein's critique who pointed out[11] the different types of emotions which economists and psychologists are interested in: the former have turned their attention to anticipated emotions while the latter have mainly analyzed *immediate emotions*, those that are experienced at the time of decision-making[12].

Supported by a large psychological literature on the relationship between emotions, behavior and decision-making (Isen, 2000; Izard *et al.*, 1984; Frijda 1986; Lazarus 1991; Ortony *et al*. 1988), and by a growing experimental evidence, it is very likely that economists will turn out to consider and to implement immediate emotions (e.g. anger, fear) in their models since their influence on human behavior are highly systematic and somehow predictable.

A relatively early experimental paper is Pillutla and Murnigham (1996): responders in an ultimatum game experiment were asked, after each of a series of offers, the question "How do you feel?"; answers were rated for expressions of anger and the rejection of offers was found to be related to this measure. Bosman and van Winden (2002) introduced the power-to-take game to investigate the importance of emotions for negative reciprocity in a situation of appropriation. In several experiments they asked subjects to self-report on their feelings using a list of different emotions (van Winden, 2001; Bosman and van Winden, 2002). Reuben and van Winden (2005, 2007) analyzed the interaction of emotions and fairness norms, and the role of affect on negative reciprocity: in a three-player power-to-take game with a proposer matched with two responders, they found that when responders knew each other they were more likely to punish the proposer and to coordinate their punishment than

[10] Hirshleifer, 1987.
[11] Loewenstein, 2000.
[12] Such emotions belong, according to Loewenstein, to a wider range of *visceral factors* (Loewenstein, 1996), which affects behavior in directions that are different from that dictated by a weighing of the long-term costs and benefits of various actions.

two strangers did. Ben-Shakhar, Bornstein, Hopfensitz and van Winden (2007) were also interested in reciprocity and emotions: they utilized a bargaining game[13] and a psychological self-report to measure the effect of emotions on negotiation; Hopfensitz and van Winden (2006) and Bosman and van Winden (2008) investigated on emotions involved in situation of dynamic choice, risk and uncertainty[14]: anticipated and experienced emotions appeared to influence decision-making and the awareness of a global risk reduced the amount invested in the risky option.

There are few studies that have focused on a single emotion per time: Zizzo (2003, 2004, 2008) devoted a substantial part of his research to the evaluation of the rationality of anger; he argued that anger is an emotion which arises from significant cognitive processing and which is likely to determine a behavioral response directed against the object of anger. His claim on the rationality of anger took into account neurobehavioral and psychological evidence: "*the medial and possibly other prefrontal cortex regions play an important role in anger processing, whereas the amygdale does not* (Zizzo, 2003)". From his point of view, anger cannot be qualified as rational in any case but it will depend on the economic setting. A related work is Bolle, Tan and Zizzo (review by Zizzo, 2009) that analyzes the impact of effects of elicited valuation of anger on behavior in vendettas: they found out that anger and envy guided agents to steal from their rivals systematically until they have the possibility.

Another field not explored enough so far concerns the effects of mood on economic behavior; mood is sometimes wrongly used as a synonymous of emotion: "*mood lasts longer than emotions and […] can be precipitated by an emotion: feeling unfairly rejected for a job promotion may lead to an episode of anger and […] that it may become an angry mood* (Zizzo, 2006)". The psychological literature on mood effects is quite large (Forgas and Vargas, 2000; Bower, 1981, 1991; Forgas, 1989, 1990, 1992; Mayer *et al*. 1992) while there is not much work in economics which has investigated how mood can affect economic decisions. Andrade and Ho (2007), Petit (2009) and Masters (CREED-CeDEx-CBESS Meeting, 2009) utilized one of the mood induction techniques, a video clip, to induce a bad or a good mood in participants of their experiments in order to evaluate the impact of mood on judgment and decision making.

[13] Other researchers utilized the ultimatum game in order to examine the human punishing behavior and the emotion expressions after the rejection of an unfair offer (Xiao and Houser, 2007).
[14] A related paper is Maffioletti and Santoni, 2007.

As far as the author knows, no experimental work has been conducted to find out whether an individual's mood can affect the behavior of other individuals: generally, it has been explored the effect of individual's own mood on his personal decisions but what about the link between, for example, the principals' mood and agents' behavior? This work will try to investigate on that link; the idea came from Patterson, Warr and West[15] who believe that behavior is a function both of a person's characteristics and the nature of his or her environment; in this sense environmental features in work setting can be a factor or a possible predictor of organizational performance. Supported by Brief and Weiss's article[16] which enumerates the role of leaders as an exogenous factor in the production of mood and emotions in the workplace, I decided to apply an experimental method wishing to answer to the following question: does principal's mood affect agent's performance? In the following section I will describe more specifically the hypotheses I would like to test and the experimental design.

[15] Patterson et al., 2004.
[16] Brief and Weiss, 2002.

III. RESEARCH QUESTIONS AND EXPERIMENTAL DESIGN

a. Research Questions

In designing my experiment I had one purpose in mind: I wanted to see whether, and to what extent, leaders' mood affect workers' performance; actually, I also considered in my analysis the effect of leaders' mood on their own decisions.

I did not know whether workers are more likely to put more effort when they are aware of their leaders' mood (good mood or bad mood) as well as I did not know whether leaders are more likely to reward their workers when they are in a good or in a bad mood. Generally, I cannot be sure of which patterns held.

However, while I do expect leaders to be more willing to reward workers when they are in a good mood, I prefer to not assume any direction about workers' behavior.
Generally, I can formulate the following hypotheses to test:

***Hp 1*: Leaders' Mood does not affect Workers' Performance**

against

***Hp 1b*: Leaders' Mood does affect Workers' Performance**

and

***Hp 2*: Leaders' Mood does affect Their Offer Decisions**

against

***Hp 2b*: Leaders' Mood does not affect Their Offer Decisions**

b. Experimental Design and Procedure

The experiment was conducted at the University of East Anglia from the 23rd to the 25th June 2009. In total 77 subjects took part to the experiment[17], almost all were students; they

[17] On average 24 per treatment; some observations were dropped because people did not show-up and I could not get an even number of participants per session.

received a show-up fee of 3 pounds and an additional amount of money depending on their luck and/or skills; on average, subjects received 8 pounds.

The experiment, which consists of three treatments, is designed around the desire to understand the effect of mood elicitation on workers' performance: in treatment C, the main treatment, mood is elicited and transmitted to the co-participant; in treatment B mood is elicited but not transmitted to anyone; in treatment A, the baseline, mood is not elicited.

Emotion Elicitation		
Not ask for it	**Ask for it and No Transmission**	**Ask for it and Transmission to co-player**
Treat. A	Treat. B	Treat. C

Three sessions have been run per each treatment; I deliberatively alternated the sessions during the day in order to avoid underlying time-of-day effects. Two rounds were conducted in each session; participants were in the same room, with a partition dividing them. The experiment was paper and pencil and communication was handled manually via paper "Communication Forms". Sessions lasted approximately 45 minutes.

Subjects played in pair; they were randomly divided into groups: one group was referred to as participant A (the Leaders) and the other as participant B (the Workers). On the arrival in the lab, they were randomly allocated an ID and asked to sign the consent form. The instruction were read at the beginning of the session aloud; participants had their copy of the instruction that could consult at any moment. The instruction were followed by some questions of understanding. Before to start the experiment, participants spent 10 minutes for the practice round.

In treatment C workers were asked to wait at the beginning of the round: leaders were asked to answer to a question on their mood and to write their answer down. There were three facial expressions for mood elicitation that Eckel and Wilson (1999) have largely experimented in their research: a smiley face for a good mood, a normal expression for a normal mood and a sad expression for a bad mood.

Once leaders have provided their answers the experimenter wrote them down on the Communication Form and communicated them to their co-participants (to workers). Then, leaders were asked to wait while workers were busy to deal with the effort task. I employed

a task previously used in Niederle and Vesterlund (2007) and then in Oswald, Proto and Sgroi (2009) and Eriksson, Poulsen and Villeval (2009): subjects needed to sum algebraically a sequence of five 2-digit numbers and to write the results down. There were 5 questions of this type. Other 5 questions required to sum the numbers one in a table constituted only by numbers zero and one. This effort task was implemented by Abeler (CREED-CeDEx-CBESS Meeting, 2009).

Once workers decided how many questions to answer and calculated the solution, the experimenter checked the number of correct answers and communicated them to the co-participants. The latter, leaders, received one pound per each correct answer given by the workers matched with them.

Finally, leaders made a decision: how to split, if they wish, the amount of money received.

In the literature of the principal-agent theory this game between worker and leader is framed as Bonus Contract: leader is free to reward worker for his effort. The choice of this type of contract was straightforward since it seemed to me direct and easy to understand.

Treatment B is very similar to treatment C in the procedure but the experimenter did not communicated the answers on mood to participants "*Workers*"; in treatment A the elicitation of mood was not asked at all.

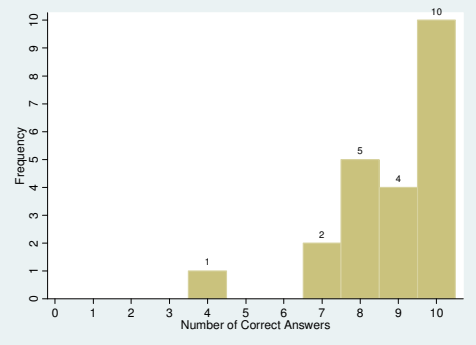
For all the experimental material see appendix A.

IV. EXPERIMENTAL RESULTS

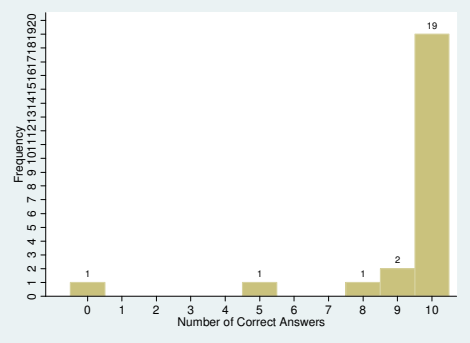
a. Univariate Analysis

Workers' Performance

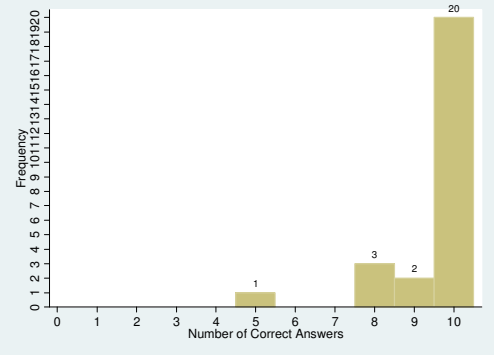
In treatment B and C a high number of participants whose role was "*Worker*" answered correctly to all the 10 questions (19 out of 24 and 20 out of 26 respectively) as we can observe from the graphs of the frequencies:



Graph 1. *Frequencies N. Correct Answers Treat A*



Graph 2. *Frequencies N. Correct Answers Treat B*

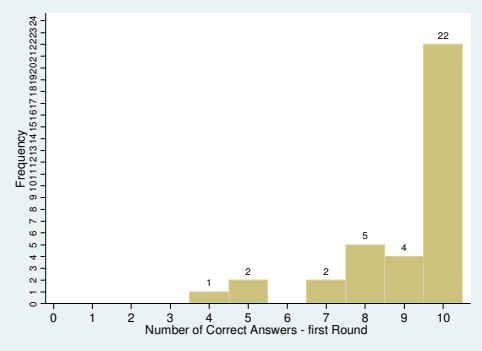


Graph 3. *Frequencies N. Correct Answers Treat C*

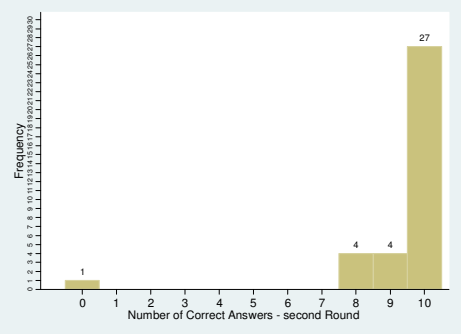
Generally, subjects answered correctly to more questions in the second round than in the first one; the 75% of the participants answered correctly to all the questions in the second

round while in the first round only 61% answered correctly to all the questions; the 13.89% answered correctly to not less than 8 questions in the second round while the same proportion answered correctly to not less 7 questions[18] in the first round.

Graphs 4 and 5 show the frequency distributions of the number of correct answers in the first round and in the second round:



***Graph 4**. Frequencies N. Correct Answers - first round*



***Graph 5**. Frequencies N. Correct Answers – second round*

Subjects answered correctly to more questions in the second round of each treatment too: if I consider the target of ten correct answers I can count 6 out 10 in the second round compared to 4 out of 10 in the first round of treatment A; 10 out 12 in the second round compared to 9 out 12 in the first round of treatment B and 11 out of 13 in the second round compared to 9 out 13 in the first round of treatment C[19].

On average participants in Treatment C answered correctly to 9.5 questions; in treatment B to 9.2 and in treatment A to 8.81; moreover, the mean of treatment C is associated to the lowest variance (Std. Dev. = 1.14):

***Tab. 1**. Descriptive statistics of the variable "Number of Correct Answers"*

Num. CorrectAnswers	Obs	Mean	Std.Dev	Min	Max
Treat A	22	8.818182	1.500361	4	10
Treat B	24	9.208333	2.245366	0	10
Treat C	26	**9.5**	**1.140175**	5	10

[18] Tables 3 and 4 in appendix B.

[19] Graphs from 1 to 6 of frequency distribution in appendix B.

In order to check whether the mean of treatment A differs significantly from the mean of treatment B and C I can run the **Wilcoxon-Mann-Whitney Test (or Mann-Whitney U Test[20])**: the mean of treatment A differs significantly from the mean of treatment C (p-value = 0.028) and from the mean of treatment B (p-value = 0.029) while the mean of treatment B is not statistically different from the mean of treatment C (p-value = 0.893).

However, it should be more correct to consider the ratio between the correct answers and the attempted questions in order to evaluate the real effort of *Workers*.
We can observe from the following table that only 4 participants decided to attempt less than 10 questions:

Tab. 2. *Descriptive statistics of the variable "Number of Attempted Questions"*

Number of attempted questions	Freq.	Percent	Cum.
0	1	1.39	1.39
5	3	4.17	5.56
10	68	**94.44**	100.00
Total	72	100.00	

[20] This **non-parametric statistic** is used to test whether two independent groups have been drawn from the same population. The null hypothesis is that 2 groups of observations, say A and B, have the same distribution.
In this case, we are going to test the following hypotheses:

H_0A: Treatment C and Treatment A have the same distribution
against
H_1A: Treatment C and Treatment A have not the same distribution

and

H_0B: Treatment C and Treatment B have the same distribution
against
H_1B: Treatment C and Treatment B have not the same distribution

and

H_0C: Treatment A and Treatment B have the same distribution
against
H_1C: Treatment A and Treatment B have not the same distribution

If H_0 is true, we would expect the average ranks in each of the two groups to be about equal. If the sum of the ranks for one group is very large (or very small) then we may have reason to suspect that the samples were not drawn from the same population.
This test is suitable for two independent samples, no matter the number of the sample.

The 94.44% of *Workers* decided to attempt all the 10 questions.

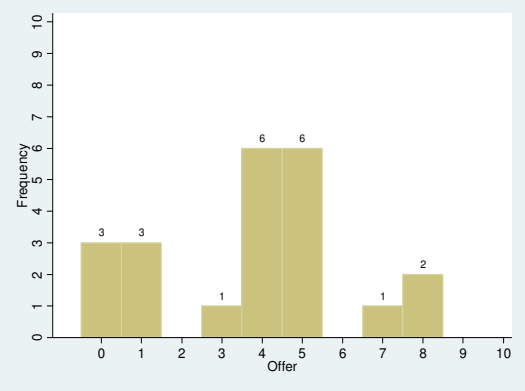
On average *Workers* answered correctly to the 93% of the attempted questions[21]; in particular, *Workers* of Treatment C answered correctly to the 96% of the attempted questions, the higher percentage compared to the other 2 treatments[22]. The percentage is statistically significant: the p-values of the Wilcoxon-Mann-Whitney Test between treatment A and C and between treatment A and B are less than 0.01, while there is no significant difference between the ratio of treatment C and B.

Leaders' Offer

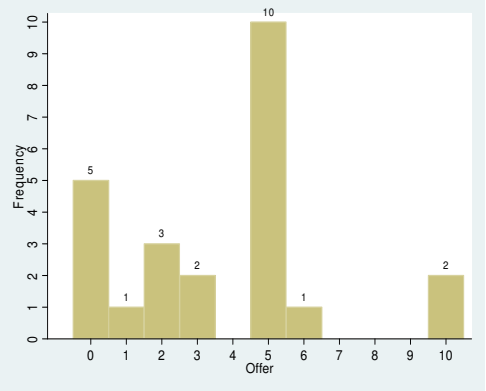
Generally, the 34.72% of participants whose role was "*Leaders"* offered 5, the 15.28% offered 3 and 13.89% gave 0; only 10 offers out of 72 were higher than 5 and only 3 times 10 was given to the co-participant. After 5, 3 and 0, four was the most frequent offer: 9.72% (*Tab. 3* Appendix B).

In treatment A offers 4 and 5 had the same frequency (27.27%), the highest one; zero and one were the second most frequent offers of the treatment (13.64%). None offer was higher than 8. In treatment B 10 times was offered 5 (41.67%); the offer zero was given slightly more often than in treatment A (20.83%) and twice was given ten (8.33%). In treatment C again the most frequent offer was 5 (34.62%) while 3 was the second most frequent offer (30.77%); four times out 26 an offer greater that 5 was made (15.38%) and only once the offer 10, the maximum offer, occurred (Graphs 6, 7 and 8).

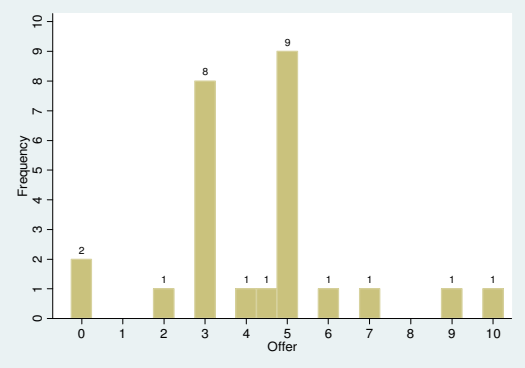
[21] Tab. 1 appendix B.
[22] Tab. 2 appendix B.



Graph 6. *Frequencies Offer Treat A*



Graph 7. *Frequencies Offer Treat B*



Graph 8. *Frequencies Offer Treat C*

On average, offers on Treatment C were higher (4.28) while in Treatment B and A the offer was on average 3.7; treatment C has the smallest variance between offers (2.23) while in treatment B offers seem to vary more than in other treatments (2.85). However, difference in offer decision is not statistically significant between treatments[23].

The minimum offer in all the three treatments is zero while 10 was the maximum offer in treatment B and C and 8 in treatment A, as table 4 shows:

[23] I ran the Wilcoxon-Mann-Whitney Test between treatment A and B, between treatment A and C and between treatment B and C: p-value is always > 0.1.

***Tab. 3**. Descriptive statistics of the variable "Offer"*

Offer	Obs	Mean	Std.Dev	Min	Max
Treat A	22	**3.772727**	2.408948	0	8
Treat B	24	**3.708333**	2.851074	0	10
Treat C	26	**4.288462**	2.236842	0	10

It may be more interesting to discuss offers in relation to the number of correct answers: I am interested to see how leaders decided to split the amount of money received[24]. 25 out 72 half of the amount received was given back; 8 out of 72 more than half of the received amount was offered and 10 out 72 zero was offered whatever the amount of money received. All the numbers of correct answers with the correspondent offers are in the following table:

***Tab. 4.** Number of Correct Answers and Offers*

	Number of Correct Answers							
Offer	0	4	5	7	8	9	10	**Total**
0	1	1	1	0	4	1	2	**10**
1	0	0	1	1	1	1	0	4
2	0	0	0	0	0	0	4	4
3	0	0	0	0	2	0	9	**11**
4	0	0	0	1	1	2	3	7
4.5	0	0	0	0	0	1	0	1
5	0	0	0	0	0	2	23	**25**
6	0	0	0	0	0	0	2	2
7	0	0	0	0	0	0	2	2
8	0	0	0	0	1	0	1	2
9	0	0	0	0	0	1	0	1
10	0	0	0	0	0	0	3	**3**
Total	1	1	2	2	9	8	49	**72**

In treatment C the mean of the ratio between the offer and the number of correct answers is the highest one (0.42), compared to those of treatment A (0.40) and B (0.37), with the lowest variance meaning that in treatment C generally subjects were more willing to give a bigger amount of money compared to treatment A and B. However, there is no statistically

[24] Per each correct answer given by workers leaders received 1 pound.

significant difference between treatments as suggests the Wilcoxon-Mann-Whitney Test (p-value > 0.1[25]).

***Tab. 5**. Descriptive statistics of the variable "Offer/ Number of Correct Answers", per treatment*

Offer/N. CorrectAnswers	Obs	Mean	Std.Dev	Min	Max
Treat A	22	0.4071364	0.2602825	0	1
Treat B	24	0.3773333	0.2829968	0	1
Treat C	26	**0.4228462**	**0.2459443**	0	1

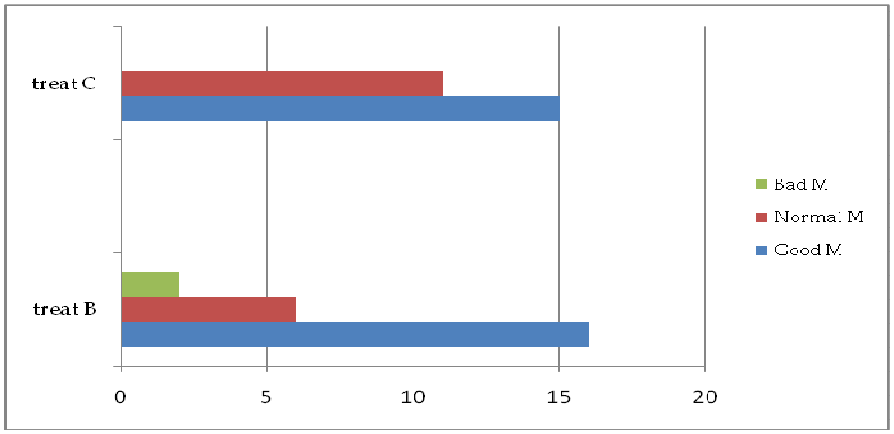
Leaders' Mood

I remind that, according to the experimental design, subject whose role was "*Leaders*" were not asked for their mood in treatment A but they were in treatment B and C; moreover, leaders' mood was communicated to their co-participants only in treatment C. I remind also that subjects could choose between three types of faces in order to elicit their current mood: an smiley face for a good mood, a face with a normal expression for a normal mood and a face with a sad expression for a bad mood.

In Treatment B the 66.67% of participants stated that they were happy, the 25% of them were neither in a good mood or in a bad mood; only the 8.33% of them declared to be in a bad mood. In treatment C the 57.69% of subjects were in a good mood while the rest of them, the 42.31%, was in a normal mood; none of them was in a bad mood.

[25] As for the previous variables I ran the Wilcoxon-Mann-Whitney Test between treatment A and B, between treatment A and C and between treatment B and C: in all the cases p-value is > 0.1.

***Graph. 9**. Leaders' Mood*



It might be not surprising that subjects sometimes declared to be in a different mood over rounds: in treatment B, 2 subjects out of 6 elicited a different mood over the experiment, while in treatment C 3 subjects out of 6 ticked a different facial expression over time. On average, subjects ' mood was 1.41 (where 1 is a good mood, 2 a normal mood and 3 a bad mood) in treatment B as well as in treatment C; however, treatment B is characterized by a higher variance (0.65 compared to 0.50 in treatment C).

Table 6 shows the experimental observations organized by mood: mood not elicited, good mood, normal mood and bad mood. The observations are divided by treatment per column: treatment A (TA), treatment B (TB) and treatment C (TC), and by the values of some variables (number of attempted questions, number of correct answers, offer) per row.

Values of TA are only in the first column; for a good mood a high number of questions was attempted and a high number of correct answers was given. Similar consideration for a normal mood and a bad mood.

The variable offer seems to take different value whatever the mood is.

***Table 6**. Experimental observations*

		Mood															
		mood not elicited				good mood				normal mood				bad mood			
		TA	TB	TC	All	TA	TB	TC	All	TA	TB	TC	All	TA	TB	TC	All
Number of Attempted Questions	0						1		1								
	5	1			1		1	1	2								
	10	21			21		14	14	28		6	11	17		2		2
Number of Correct Answers	0						1		1								
	4	1			1												
	5						1	1	2								
	7	2			2												
	8	5			5		1	1	2			2	2				
	9	4			4		1	1	2			1	1		1		1
	10	10			10		12	12	24		6	8	14		1		1
Offer	0	3			3		3	1	4		1	1	2		1		1
	1	3			3		1		1								
	2						2		2		1	1	2				
	3	1			1			4	4		2	4	6				
	4	6			6			1	1								
	4,5							1	1								
	5	6			6		9	6	15			3	3		1		1
	6							1	1		1		1				
	7	1			1			1	1								
	8	2			2												
	9											1	1				
	10						1		1		1	1	2				

A bivariate evaluation between mood and offer decision can be carried out analyzing the Spearman's correlation coefficient[26]: the coefficient is negative (-0.0027), suggesting a negative relationship between the variable but it is not statistically significant (p-value = 0.9822). The same test can be run between mood and the number of attempted question and

[26] The Spearman correlation coefficient is a non-parametric coefficient of correlation which perform better than the sample correlation coefficient, for example, when outliers are present. I believe that this is the case since during the session some subjects communicated to the experimenter that they had taken the wrong decision in the previous round and that they were willing to behave differently in the future.

between mood and the number of correct answers: both coefficients (0.06 and 0.28 respectively) are small and positive (there is a positive relation between variables); however, the former coefficient is not statistically significant (p-value = 0.6012). On the contrary, coefficient between mood and number of correct answer presents a p-value less than 0.05: this variable is not correlated to mood variable as instead the others are. Table 6 shows all the coefficient values with the number of observations and the level of significance:

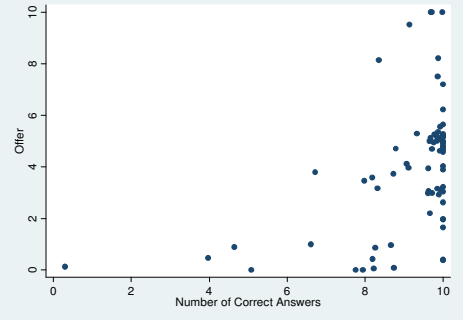
Tab. 7. *Spearman's correlation coefficient*

	Mood	**Number of attempted questions**	**Number of correct answers**	**Offer**
Mood	1.0000 72			
Number of attempted questions	**0.0626** 72 0.6012	1.0000 72		
Number of correct answers	**0.2800** 72 0.0172	**0.4808** 72 0.0000	1.0000 72	
Offer	**-0.0027** 72 0.9822	**0.3503** 72 0.0026	**0.4770** 72 0.0000	1.0000 72

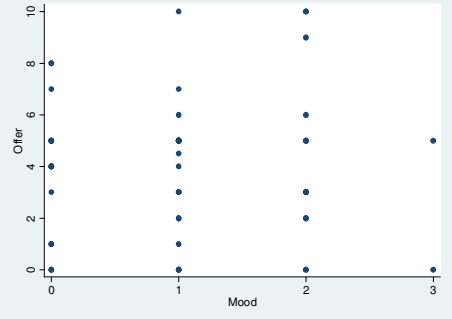
Finally, I plot the Number of Correct Answers against Offer (Graph 10): the observations are all under or on the 45 degree line due to the fact that offer could not be higher than the Number of Correct Answers. I can observe the presence of an outlier (value zero) and a positive linear dependence between offer and the number of correct answers: it does maybe not surprise that higher the number of correct answers is higher the offer is. Graph 11 shows the relationship between offer and mood: offer variable is constrained between 0 and 10; mood variable can take value 0 (mood not elicited), 1 (good mood), 2 (normal mood) and 3 (bad mood). It seems that whatever leaders' mood is they can make a high offer or a low one.

The graphs 12 and 13 show the data with "Number of Correct Answers" as dependent variable: I can observe a high values of the variable with respect to any type of mood; moreover, values of the dependent variable are high too whatever the offer of the previous round is.

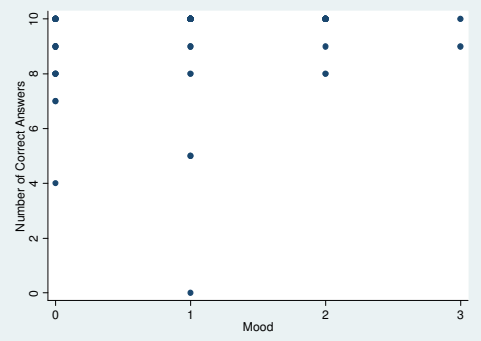
Graph 10. *Scatter Offer against Number of Correct Answers*



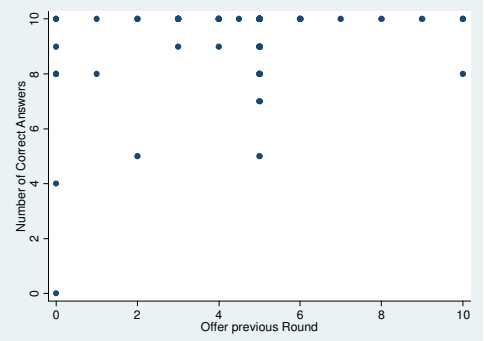
Graph 11. *Scatter Offer against Mood*



Graph 12. *Scatter Number of Correct Answers against Mood*



Graph 13. *Scatter Number of Correct Answers against Offer previous Round*



From the data analysis conducted so far I can withdraw some conclusion but it is necessary a multivariate analysis in order to find out whether subjects are affected by mood when they are asked to make their decisions.

b. Multivariate Analysis

Due to the limited range (0 -10) of the variables "Number of Correct Answers" and "Offer" that I am going to study, I employ two-sided censored Tobit regression with a random

components error term (with subjects as the random components)[27]. The Model that I am going to use is the Random Effect Tobit Model[28].

Workers' Performance

In order to study the workers' performance and to investigate whether it is affected by leaders' mood I consider the Number of Correct Answers as the dependent variable. The following table shows the results of the regression:

Tab. 8. Panel regression 1

Number of Obs	**72**
Number of groups	**36**
Obs per Group	**Min = 2** **Avg = 2.0** **Max = 2**
Wald test chi2(9)	**246.97**
Prob>chi2	**0.000**
Log Likelihood	**-62.052227**
Obs Summary	**1 left-censored obs** **22 uncensored obs** **59 right-censored obs**

[27] The random effects model adjusts the standard errors of the estimates to account for repeated observations across the same subjects.

[28] The Tobit Model supposes that there is a latent variable, y*, that linearly depends on a vector of explanatory variables, X; the latent variable is continuous and its range may be constrained. I wish to estimate the following model:

$$y^*_{it} = x'_{it}\beta + \alpha_i + \varepsilon_{it}$$

where
i = 1, …, 36 pairs of subjects
t = 1,2 rounds

and where

$$y_{it} = y^*_{it} \quad \text{if } y^*_{it} > 0$$

$$y_{it} = 0 \quad \text{if } y^*_{it} \leq 0$$

In this model y* is the latent variable, X the matrix of the explanatory variables, and α_i and ε_{it} i.i.d. are normally distributed.

N. Correct Answers	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Offer prev. Round	**0.4222201**	0.0726404	5.81	**0.000**	0.2798474	0.5645927
N. Correct Answers prev. Round	**-1.056416**	0.092935	-11.37	**0.000**	-1.238565	-0.8742662
Round	-0.1828727	0.2851823	-0.64	0.521	-0.7418197	0.3760744
M2	-20.99601	4439.615	-0.00	0.996	-8722.482	8680.49
M4	-21.3163	4439.615	-0.00	0.996	-8722.802	8680.169
T2	22.07421	4439.615	0.00	0.996	-8679.411	8723.56
T3	3.793573	0.4846708	7.83	**0.000**	2.843636	4.74351
M2T3	20.58984	4439.615	0.00	0.996	-8680.896	8722.075
Gender	-0.8068579	0.3701307	-2.18	**0.029**	-1.532301	-0.0814151
School of Economics	5.31153	0.5805586	9.15	**0.000**	4.173656	6.449404
Graduate	7.057268	0.5925445	11.91	**0.000**	5.895902	8.218633
const	12.21126	0.9994435	12.22	0.000	10.25239	14.17013
Sigma_u	3.585286	0.2896824	12.38	0.000	3.017519	4.153053
Sigma_e	0.599308	0.0961271	6.23	0.000	0.4109024	0.7877136
rho	0.9728178	0.0084309			0.9515732	0.9856485

I regress the dependent variable on mood dummies – M2 (good mood) and M4 (bad mood) – and on treatment dummies – T2 (treatment B) and T3 (treatment C). I exclude M3, normal mood and T1, the baseline treatment in order to avoid the dummies trap and to comment the results in comparison with them.

Good mood or bad mood do not affect the dependent variable (p-value 0.996 for both dummies): neither a good mood or a bad mood is less likely (negative coefficients) than a normal mood to influence the number of correct answers. While the coefficient of treatment 2 dummy is not statistically significant, the coefficient of treatment 3 dummy is strongly significant (p-value = 0.000); the magnitude of the coefficient suggests that subjects are almost four times more likely to answer correctly to the questions in treatment 3 compared to the baseline treatment.

The coefficient of the variable "round" (-0.1829) is not statistically significant (p-value = 0.521): the number of correct answers does not change in a relevant way over time.

The dependent variable strongly depends on the offer of previous round[29] (p-value = 0.000): subjects are more likely to answer correctly when the offer of previous round is higher. The coefficient of offer of previous round is 0.422, that means that subjects are more willing to answer correctly to "almost" one more question each time that offer increases of 2, *ceteris paribus*. The use of the explanatory variable "offer previous round" causes in this regression an endogeneity issue: the offer of previous round is a function of the dependent variable "number of correct answers": subjects are more willing to try to answer correctly to the questions when offer of previous round was high, but the offer may be high when subjects have answered correctly to the questions and so on. To avoid this problem I introduce in the model the explanatory variable "number of correct answers of previous round" such that I run a lagged regression on the dependent variable; the coefficient (-1.056) is negative and strongly significant (p-value = 0.000): per each correct answer in the previous round subjects are less likely to give a correct answer in the current round, *ceteris paribus*. The use of the autoregressive variable, which is significant, allowed us to state in favor of the causal link between the offer of the previous round and the number of correct answers of the current round.

In order to study the effect of the mood elicitation I introduce in the regression some interaction terms: M2T3 (effect of the elicitation and transmission of the good mood) and M4T3 (effect of the elicitation and transmission of the bad mood). Other two interaction terms are necessary for the comparison: M2T2, elicitation of a good mood but not transmitted and M4T2, elicitation of the bad mood but not transmitted. Only M2T3 appears in the regression since the M2T2, M4T2 and M4T3 terms are dropped because of collinearity. Even though different regressions have been run with some interaction terms to try to avoid the problem (only with M2T2 and M4T2, only with M2T3 and M4T3, only with M2T2 and M2T3, only with M4T2 and M4T3) M2T2, M4T2 and M4T3 terms are dropped. An explanation of the collinearity issue might be that none declared to be in a bad mood in treatment 3.

By the way, even though the sign of the interaction term M2T3 in the regression might be expected – when subjects know that their leaders are in good mood they are more likely to

[29] For round 2 offer of the previous round is equal to the offer of round 1, whereas for round 1 offer of the previous round is equal to offer of the practice round: I decided to keep those observations because pairs were fixed since the practice round and thus the offer values created in workers some expectation.

answer correctly to the questions – the coefficient is not statistically significant, thus leaving place to other considerations.

Finally, I can discuss the coefficients of some explanatory variables such as gender, School attended and graduate: male are less likely to answer correctly to the questions than female; there is strong evidence (p-value = 0.000) that graduate students and students attending the School of Economics are more likely to answer correctly to the questions.

The *Between variance*, σ^2_u , is greater than the *within variance*, σ^2_ε: 3.585286 and 0.599308 respectively. This means that difference between pairs is more significant than the difference across time.

I remind that in this panel regression the number of pair is 36 and time consists of 2 rounds – round 1 and 2. Hence, we have 72 observations.

The Wald test (= 246.97 which follows a Chi-square with 9 degree of freedom) is strongly significant (p-value = 0.000): overall coefficients of this regression are significant, the model is a good one to explain the dependent variable.

A final consideration on the censored observation of Tobit regression I ran. There is one left-censored observation and 49 right-censored observations: only one subject answered correctly to none question and 49 participants, the big majority, answered correctly to all the questions. The rest of the participant (22 uncensored observations) answered correctly to a number of questions between 0 and 10.

Leaders' Offer

Offer is now the dependent variable of the panel regression showed in table 8. There is a strong evidence that offer depends on the number of correct answers (p-value = 0.002): higher the number of correct answers is higher (more than 60%) the offer will be, *ceteris paribus*. The sign of the variable "round" suggests that offer is lower in the second round but the coefficient is not statistically significant (p-value = 0.237). M2 and M4 are mood dummies; as in the previous regression, I did not introduce M3 (normal mood) to avoid the dummy trap. It seems that subjects in a good mood are more likely to offer more than subjects in a normal mood and on the contrary subjects in a bad mood are less likely to reward their co-

participants than subjects in a normal mood. However, the coefficients of mood dummies are not statistically significant as well as the coefficients of treatment dummies T2 and T3.

Likewise the regression on the number of correct answers, in this regression I use some interaction terms between the mood dummies and treatment dummies to analyze the effects of the elicitation of mood; however, like the previous regression some of them (M2T3, M4T2 and M4T3) are dropped because of collinearity[30]. The coefficient of the interaction term in the regression, M2T2 – effect of a good mood elicited but not transmitted – is not significant (p-value = 0.789). Subjects' good mood, elicited even though not transmitted does not affect the offer decision as well as other explanatory variables (graduate, School of Economics and gender).

The *Between variance*, σ^2_u, is greater than the *within variance*, σ^2_e: 2.334407 and 1.105042 respectively. This means that difference between pairs is more significant than the difference across time.

Tab 9. Panel regression 2

Offer	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Ca	**0.6546836**	0.2141978	3.06	**0.002**	0.2348637	1.074504
Round	-0.3526104	0.2983102	-1.18	0.237	-0.9372877	0.2320669
M2	0.3799511	0.8731105	0.44	0.663	-1.331314	2.091216
M4	-1.269619	2.803038	-0.45	0.651	-6.763472	4.224234
T2	-0.1397684	1.447236	-0.10	0.923	-2.976298	2.696761
T3	0.1265946	1.169135	0.11	0.914	-2.164869	2.418058
M2T2	-0.4227415	1.582437	-0.27	0.789	-3.524261	2.678778
Gradbs	-1.262243	1.425608	-0.89	0.376	-4.056383	1.531897
Ecobs	1.126813	1.256828	0.90	0.370	-1.336524	3.59015
Genderbs	0.1837613	0.9094938	0.20	0.840	-1.598814	1.966336
const	-0.9495325	2.343713	-0.41	0.685	-5.543126	3.64406
Sigma_u	2.334407	0.3611563	6.46	0.000	1.626553	3.04226
Sigma_e	1.105042	0.1481913	7.46	0.000	.8145924	1.395492
Rho	0.8169396	0.0646441			.6649391	0.9164444

[30] Because, for example, none in treatment 3 declared to be in a bad mood.

Number of Obs	**72**
Number of groups	**36**
Obs per Group	**Min = 2** **Avg = 2.0** **Max = 2**
Wald test chi2(10)	**12.61**
Prob>chi2	**0.2464**
Log Likelihood	**-134.57061**
Obs Summary	**10 left-censored obs** **59 uncensored obs** **3 right-censored obs**

Equally to the previous regression, the number of pair is 36 and time consists of 2 rounds – round 1 and 2. Hence, we have 72 observations.

The p-value of the Wald test (= 12.61 which follows a Chi-square with 10 degree of freedom) is less than 0.05 (= 0.2464): it seems that the model is not the most appropriate to explain the dependent variable.

About the censored observation: there are 10 left-censored observation and 3 right-censored observations: ten subjects decided to offer nothing to their co-participants and only 3 offered 10, the maximum amount of money that they could receive. The rest of the participant (59 uncensored observations) made an offer between 0 and 10.

V. DISCUSSION

The univariate and multivariate analysis of the previous section has tested the null hypotheses of the experiment and allows me to get the following results:

Result 1. Leaders' Mood does not affect Workers' Performance

Result 2: Leaders' Mood does not affect Their Offer Decisions

As you can see from graph 12 the number of correct answers is independent from mood; moreover, the coefficients of mood dummies and the coefficient of the interaction term in the panel regression 1 are not statistically significant: **leaders' mood does not affect workers' performance.**

I notice from the graphs of the frequency distribution of the variable "Number of Correct Answers" (graphs 1-3) that workers answered correctly to more questions in treatment C and B respect to the baseline treatment; moreover, the difference in mean between treatment A and treatment C and between treatment A and treatment B is actually significant (as the Wilcoxon-Mann-Whitney Test suggests). However, the difference in mean between treatment C and treatment B is not statistically significant: in treatment B workers did not know their leaders' mood (mood was elicited but not transmitted) and so, from the point of view of workers treatment B and C are similar[31]. If the elicitation of mood have influenced workers' effort I would have expected significant difference between treatment C and A and between treatment C and B too. Since there is not between the latter couple of treatments I can conclude that the elicitation of the leaders' mood does not affect workers' effort. Maybe the difference between treatment A and treatment C and between treatment A and treatment B is due to other factors instead of mood: from the panel regression 1 I found that the number of correct answers strongly depends on the offer of previous round. The endogeneity problem which occurred with this variable, that is the fact that the number of correct answers depends on the offer of previous round and then offer depends on the number of correct answers and

[31] Treatment B is necessary to disentangle the effects of mood elicitation.

so on, was dealt with the use of a lagged number of correct answers in the regression: the strong significance of the coefficient of that variable gives evidence about the causal link between the workers' effort and the leaders' decisions to reward them.

From this consideration I can accept the first null hypothesis of my experiment, Leaders' Mood does not affect Workers' Performance, contrary to what somehow I wished to get.

I can attribute the outcome of this experiment to some factors: basically, the design of the effort task was not accurate and not tested before to run the experiment. The 5 mathematical questions were of the following type:

$$12 + 34 + 56 + 19 + 21$$

Subjects were asked to sum these numbers without calculator and to write the results down. This effort task was first used by Niederle and Vesterlund (2007) and then it was adopted by other researchers (Oswald, Proto and Sgroi, 2009; Eriksson, Poulsen and Villeval, forthcoming); differently from them, I decided to not use a time constraint since I thought that it was more complex in a paper and pencil experiment[32]. Actually, I could slightly change the procedure of the experiment and distribute the paper to workers at the exact moment in which they were allowed to start and collect all of them together. On the contrary, in this experiment, subjects were allowed to use all the time necessary: they took a long time to check their answers and hence the 68% answered correctly to all the questions.

This happened also for the other set of 5 questions of the effort task for which subjects were asked to sum the ones in a table constituted of a series of zero and one. I chose this type of questions, used by Abeler (CREED-CeDEx-CBESS Meeting, 2009), instead of the GMAT-MATH questions used by Oswald, Proto and Sgroi because I wished to avoid any possible compound effect of skill and effort. However, the decision to leave plenty of time to subject to answers to extremely easy questions compromised the possibility to measure the real effort of a task.

Moreover, the 94.44% decided to attempt all the questions. Maybe workers, whatever the information on their co-participants' mood was, felt somehow "obliged" to participate actively to the experiment: they may have thought "Since I am here and I must wait for others, why do not try to answer?". For this reason I think that a computerized version of this

[32] A computerized version allows to visualize screens of the computer at a specific time.

experiment could bring different results: if a participant is matched with his or her partner by computer, his game is independent from other participants' decisions; then, he or she could decide to save his/her own time and to skip some questions. Moreover, I think that it would be better to not inform in advance participants about the number of rounds that they are going to play: a repeated version avoid the risk to take some types of decision just because you are aware that it is going to be your last move[33].

A point that deserves some consideration concerns the average elicited mood; the big majority of subjects declared to be happy. This bias is maybe due to the fact that most of them were foreign students on the point to leave and to come back home. Moreover, the experiment was run in June when the final examinations are already taken and so any student is surely more relaxed. We also would agree about the fact that people usually accept to take part to an experiment if they are not very busy. For all this reasons I believe that the use of a mood induction technique[34] is actually more effective if the experimenter wishes to study the effect of the elicitation of all the main types of mood.

A referee observed that the elicitation of mood could not reflect the real one and that subjects could play strategically, thinking that eliciting a good (or a bad) mood their co-participant could put more effort with the consequence of a higher return to them. In this case, treatment B of this experiment is useful to disentangle that effect: leaders' mood is elicited but not transmitted to workers. Moreover, even the case in which leaders played strategically does not represent a problem: the main aim of this experiment is to investigate on the mood effect on workers' performance and not on the real elicitation of leaders' mood.

[33] Some workers decided to attempt all the questions in the second round even though they previously received a low offer just because they wanted to check at least another time whether their co-participant will behave fairly; on the other side, some leaders decided to give a lower offer in the second round because they knew that their co-participant did not have the opportunity of a revengeful behavior. Those intention have been communicated to the experimenter during the experiment.

[34] Psychologists developed a range of laboratory methods for inducing temporary mood states, e.g. self-statement, music, film, facial expression, game and social feedback, etc., in order to study the relation between emotions and cognition; the use of mood induction techniques is very successful: some of them – music, autobiographical recall, solitary recollection, film – induce the required mood in more than 75% of cases (Martin, 1990 p.680).

Both results obtained from univariate and multivariate analysis confirm the evidence that the second null hypothesis of this experiment will be rejected: in fact, **leaders' mood does not affect their offer decisions.** There is no significant difference between offers of the three treatment which are going to depend only on the number of correct answers: higher the latter is more likely leaders are to reward workers. The Wald test of the panel regression 2 suggests that actually the explanatory variables used in the regression, mood – treatments – interaction terms – etc., do not explain very well the behavior of the dependent variable; in other words, leaders decided to reward their co-participants on the basis of self-interest or fairness consideration instead to be influenced by their own mood.

I have run another regression in which one of the dependent variable is the ratio between number of correct answers and the number of attempted questions: even though the coefficient of the ratio is statistically significant (p-value = 0.015), offer does not depend on that explanatory variable simply because leaders were not aware of the number of attempted answers but just of the correct ones.

Finally, I have run some panel regression per session: the results are similar to those of panel regression 1, with the number of correct answers as dependent variable, and to those of panel regression 2, with offer as dependent variable: in both regressions per session coefficients of mood dummies and of the interaction terms were never significant, thus confirming the results from the regressions run per subject.

An important comment on the practice round has to be done. The practice round gives the possibility to participants to understand better their tasks and thus avoiding that they could play randomly. I decided to run the practice round with very easy questions[35] basically aiming at the clarification of the procedure of the experiment. However, I think that it would have been better to match participants differently from round 1 and 2 since workers completed their tasks in the first round with a sort of expectation on the future offer. Expectation that might have a role in the second round too. Otherwise, I could run the practice round without telling to workers about the offer made, or I could re-match

[35] Example: 2 + 2.

participants at the beginning of each round, thus incurring in a non-independence observations issue.
A claim on the possibility to built a reputation using the same pair over time can be made but I believe that this is not the case since I ran only 2 rounds.

Finally, I would like to add that in my opinion this experiment could be improved by using a double blind procedure in order to minimize any possible distortion of subject behavior due to experimenter observation; this game, in fact, was paper and pencil, and communication has been made by the experimenter: subjects may be concerned about being judged as greedy or vengeful by the experimenter.

VI. CONLUSION AND FUTURE RESEARCH

Economics was considered for a long time by philosophers as an offshoot of ethics but the mathematical assumptions of the economic models and the concept of rationality and self-interest claimed by the new classical economists gave to this discipline an appearance of a more precise science able to predict the economic behavior of agents. This "new dress" found the favor of many academics over time, shading the role of emotions in economic decision-making process.

However, recently economists are slowly considering the psychological findings and trying to implement their model according to the new experimental evidence.

My dissertation tries to summarize and to outline some of the main points of the related literature and adopts an experimental method in order to investigate on a topic so far not explored: the possible link between the leaders' mood and workers' performance.
The experiment consists of three treatments: the main treatment in which mood is elicited and transmitted to the co-participant, the baseline in which mood is not elicited and another control treatment in which mood is elicited but not transmitted to the co-participant. Subjects play in pair: leaders and workers. The latter are asked to complete an effort tasks and the former are asked to play a bonus contract to reward, if they wish, their co-participant.

The hypotheses that I wanted to test derive straightforward from the following question: does mood affect economic decisions?

I analyzed workers' performance and leaders' offer but the results I obtained are actually different from what I expected: mood seems not to influence economic behavior; however, some consideration have been made about the procedure of the experiment that can be improved in order to run a cleaner experiment on mood effect.

The literature on mood effect on workers' performance is not very large but many papers can be found on the workers' incentives and on types of principal-agent contracts[36]: their finding can be used to implement a better experiment which could explore the importance of the role of the effect of leaders' mood in different work setting. For example, Hannan, Kagel and Moser (2002) were interested in workers' effort in firms with different productivity levels: it would be interesting to see if effort levels in that setting could depend on emotions factors like fear, anxiety, etc.

[36] Fehr, Klein and Schmidt, 2007; Fehr and Schmidt, 2007; Abeler et al., 2009.

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APPENDIX A

Instruction Treatment A – participant A

YOU ARE PARTICIPANT A

Welcome to this experiment. Many thanks for attending today.

A

This experiment concerns how people make decisions.

You will be asked to carry out some tasks and you will be paid both a show-up fee of 3 pounds and an amount up to an additional 10 pounds depending on a combination of luck and/or your skills.

Your role in this experiment has been determined randomly and you will be randomly matched with another participant in this room. You will never be told with whom you have been paired and your performance/decisions will remain strictly anonymous.

There are 2 types of participant: **PARTICIPANT A** and **PARTICIPANT B**.
You can find on the top of the page which type of participant you are.
Please do not reveal this information to other people during the experiment.

The experiment consists of 2 rounds. Each round is divided in two stages: STAGE 1 and STAGE 2.
Remember that each Participant A is randomly matched with a Participant B.

ROUND 1

STAGE 1

Participant B will be asked to answer to a set of 10 mathematics questions. (It is her/his decision how many questions she/he wishes to answer). Once they finish they will raise their hand: the experimenter will write down on their paper the solutions and will count the correct answers.
For every correct answer her/his co-participant – Participant A **(YOU)** – will get 1 Pound.

The following table shows the connection between the number of correct answers of Participant B and the corresponding return to Participant A (**YOU**):

Number of Correct Answers of Participant B	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Corresponding Return (in Pounds) to Participant A (YOU)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

At this stage Participant A **(YOU)** is kindly asked to wait.
STAGE 2

At this stage the experimenter will communicate the number of correct answers of Participant B to Participant A anonymously and hence the corresponding return in pounds to Participant A (**YOU**).
Then Participant A **(YOU)** will be asked to decide how many pounds of them (if any) to keep and how many (if any) to give to Participant B. They will write down their decision on their sheet of paper. Once they finish they will raise their hand and the experimenter will record their decisions and communicate them to Participants B.

Afterwards, ROUND 2 can start and you will be asked to do the above tasks again, STAGES 1 to 2.

Once Round 2 is over you will be asked to wait quietly: the experimenter will proceed to the payment.

PAYMENT

Only one round will be paid for real.
A standard six sided dice will be rolled: if an odd number will appear, Round 1 will be paid; if an even number will appear, Round 2 will be paid.

Please remember that all participants will also be paid a show-up fee of 3 pounds.

Please do not communicate with other people during the experiment.
Feel free to raise your hand at any time if you have any questions.

Participant A

ROUND 1

1. **PLEASE WAIT:** your co-participant is answering to the mathematics questions that you can see below. **The experimenter will tell you the number of correct answers of your co-participant and your corresponding return.**

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	21 + 23 + 45 + 67 + 88 =			□ Yes □ No
2)	34 + 14 + 44 + 67 + 19 =			□ Yes □ No
3)	51 + 65 + 21 + 13 + 33 =			□ Yes □ No
4)	82 – 13 + 49 + 72 – 15 =			□ Yes □ No
5)	19 + 45 – 21 + 48 + 25 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 1 0 0 1 1 0 0 0 0 0 0 0 1 __			□ Yes □ No
2)	1 1 1 1 1 1 0 1 0 1 1 1 1 1 0 0 0 0 0 1 0 0 0 0 1 0 1 1 1 1 0 1 1 1 1 0 0 1 1 1 0 1 0 1 1 1 0 0 1 1 0 1 0 1 0 1 1 1 1 1 __			□ Yes □ No
3)	1 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 1 0 0 0 0 1 1 1 0 1 1 1 1 0 1 0 0 0 0 1 1 0 0 0 1 1 1 1 1 1 0 __			□ Yes □ No
4)	1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 0 0 0 1 0 1 0 1 1 1 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 1 __			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 1 0 1 1 1 0 1 0 1 0 1 0 1 0 0 0 0 0 1 0 0 0 1 0 1 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 1 0 1 0 0 0 0 1 1			□ Yes, □ No

Your co-participant has answered correctly to _____ out of 10 questions.

Your corresponding return is _____

2. **NOW PLEASE MAKE YOUR DECISION:** how much do you want to give to your co-participant (if any)?

I GIVE _____ POUND(S) TO MY CO-PARTICIPANT

Participant A

ROUND 2

1. **PLEASE WAIT:** your co-participant is answering to the mathematics questions that you can see below. **The experimenter will tell you the number of correct answers of your co-participant and your corresponding return.**

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	34 + 22 + 15 + 82 + 2 =			□ Yes □ No
2)	11 + 54 + 27 + 81 + 3 =			□ Yes □ No
3)	31 + 61 + 33 + 25 + 16 =			□ Yes □ No
4)	90 – 12 + 33 + 55 – 15 =			□ Yes □ No
5)	15 + 66 – 20 + 38 + 21 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	1 1 0 1 1 0 1 1 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 0 1 0 0 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 0 1 __			□ Yes □ No
2)	1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 0 0 1 0 1 0 0 0 1 0 0 1 0 0 __			□ Yes □ No
3)	1 0 1 0 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 __			□ Yes □ No
4)	1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 __			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 __			□ Yes, □ No

Your co-participant has answered correctly to _____ out of 10 questions.

Your corresponding return is _____

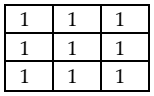
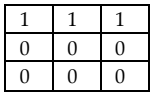
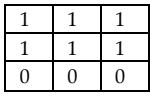
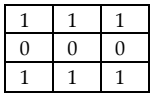
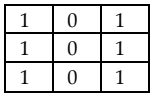
2. **NOW PLEASE MAKE YOUR DECISION:** how much do you want to give to your co-participant (if any)?

I GIVE _____ POUND(S) TO MY CO-PARTICIPANT

Participant A

PRACTICE ROUND

1. **PLEASE WAIT:** your co-participant is answering to the mathematics questions that you can see below. **The experimenter will tell you the number of correct answers of your co-participant and your corresponding return.**

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	2 + 2 =			□ Yes □ No
2)	3 + 3 =			□ Yes □ No
3)	4 + 4 =			□ Yes □ No
4)	5 – 2 =			□ Yes □ No
5)	6 – 3 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)				□ Yes □ No
2)				□ Yes □ No
3)				□ Yes □ No
4)				□ Yes, □ No
5)				□ Yes, □ No

Your co-participant has answered correctly to _____ out of 10 questions.

Your corresponding return is _____

2. **NOW PLEASE MAKE YOUR DECISION:** how much do you want to give to your co-participant (if any)?

I GIVE _____ POUND(S) TO MY CO-PARTICIPANT

Instruction Treatment A – participant B

YOU ARE PARTICIPANT B

Welcome to this experiment. Many thanks for attending today.

B

This experiment concerns how people make decisions.

You will be asked to carry out some tasks and you will be paid both a show-up fee of 3 pounds and an amount up to an additional 10 pounds depending on a combination of luck and/or your skills.

Your role in this experiment has been determined randomly and you will be randomly matched with another participant in this room. You will never be told with whom you have been paired and your performance/decisions will remain strictly anonymous.

There are 2 types of participant: **PARTICIPANT A** and **PARTICIPANT B**.
You can find on the top of the page which type of participant you are.
Please do not reveal this information to other people during the experiment.

The experiment consists of 2 rounds. Each round is divided in two stages: STAGE 1 and STAGE 2.
Remember that each Participant A is randomly matched with a Participant B.

ROUND 1

STAGE 1

Participant B **(YOU)** will be asked to answer to a set of 10 mathematics questions. (It is her/his decision how many questions she/he wishes to answer). Once they finish they will raise their hand: the experimenter will write down on their paper the solutions and will count the correct answers.
For every correct answer her/his co-participant – Participant A – will get 1 Pound.

The following table shows the connection between the number of correct answers of Participant B and the corresponding return to Participant A:

Number of Correct Answers of Participant B (YOU)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Corresponding Return (in Pounds) to Participant A	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

At this stage Participant A is kindly asked to wait.

STAGE 2

At this stage the experimenter will communicate the number of correct answers of Participant B **(YOURS)** to Participant A anonymously and hence the corresponding return in pounds to Participant A.
Then Participant A will be asked to decide how many pounds of them (if any) to keep and how many (if any) to give to Participant B. They will write down their decision on their sheet of paper. Once they finish they will raise their hand and the experimenter will record their decisions and communicate them to Participants B.

Afterwards, ROUND 2 can start and you will be asked to do the above tasks again, STAGES 1 to 2.

Once Round 2 is over you will be asked to wait quietly: the experimenter will proceed to the payment.

PAYMENT

Only one round will be paid for real.
A standard six sided dice will be rolled: if an odd number will appear, Round 1 will be paid; if an even number will appear, Round 2 will be paid.

Please remember that all participants will also be paid a show-up fee of 3 pounds.

Please do not communicate with other people during the experiment.
Feel free to raise your hand at any time if you have any questions.

Participant B

ROUND 1

1. **Please ANSWER TO THE FOLLOWING QUESTIONS. You are free to decide how many questions you want to answer.**
   <u>You are not allowed to use any calculator</u>. Please use the blank paper on your desk if you need. If you need more please raise your hand. Once you finish please raise your hand; the experimenter will tell you the correct answers and will count the number of your correct answers.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	21 + 23 + 45 + 67 + 88 =			□ Yes □ No
2)	34 + 14 + 44 + 67 + 19 =			□ Yes □ No
3)	51 + 65 + 21 + 13 + 33 =			□ Yes □ No
4)	82 – 13 + 49 + 72 – 15 =			□ Yes □ No
5)	19 + 45 – 21 + 48 + 25 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 1 0 0 1 1 0 0 0 0 0 0 0 1 __			□ Yes □ No
2)	1 1 1 1 1 1 0 1 0 1 1 1 1 1 0 0 0 0 0 1 0 0 0 0 1 0 1 1 1 1 0 1 1 1 1 0 0 1 1 1 0 1 0 1 1 1 0 0 1 1 0 1 0 1 0 1 1 1 1 1 __			□ Yes □ No
3)	1 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 1 0 0 0 0 1 1 1 0 1 1 1 1 0 1 0 0 0 0 1 1 0 0 0 1 1 1 1 1 1 0 __			□ Yes □ No
4)	1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 0 0 0 1 0 1 0 1 1 1 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 1			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 1 0 1 1 1 0 1 0 1 0 1 0 1 0 0 0 0 0 1 0 0 0 1 0 1 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 1 0 1 0 0 0 0 1 1			□ Yes, □ No

Your correct answer(s) is/are _____ out of 10 questions.

The corresponding return of your co-participant is _____ Pound(s)

2. **NOW PLEASE WAIT. You co-participant is making her/his decision.**
   She/he is deciding how much (if any) she/he wants to give to you.

YOU ARE GIVEN _____ POUND(S)

Participant B

ROUND 2

1. **Now please ANSWER TO THE FOLLOWING QUESTIONS. You are free to decide how many questions you want to answer.**
   <u>You are not allowed to use any calculator</u>. Please use the blank paper on your desk if you need. If you need more please raise your hand. Once you finish please raise your hand; the experimenter will tell you the correct answers and will count the number of your correct answers.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	34 + 22 + 15 + 82 + 2 =			□ Yes □ No
2)	11 + 54 + 27 + 81 + 3 =			□ Yes □ No
3)	31 + 61 + 33 + 25 + 16 =			□ Yes □ No
4)	90 – 12 + 33 + 55 – 15 =			□ Yes □ No
5)	15 + 66 – 20 + 38 + 21 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	1 1 0 1 1 0 1 1 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 0 1 0 0 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 0 1 __			□ Yes □ No
2)	1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 0 0 1 0 1 0 0 0 1 0 0 1 0 0 __			□ Yes □ No
3)	1 0 1 0 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 __			□ Yes □ No
4)	1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0			□ Yes, □ No

Your correct answer(s) is/are _____ out of 10 questions.

The corresponding return of your co-participant is _____ Pound(s)

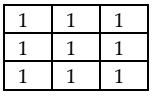
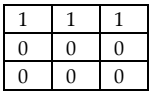
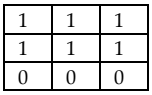
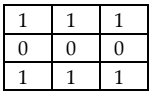
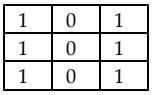
2. NOW PLEASE WAIT. You co-participant is making her/his decision.
She/he is deciding how much (if any) she/he wants to give to you.

YOU ARE GIVEN _____ POUND(S)

Participant B

PRACTICE ROUND

1. **Now please ANSWER TO THE FOLLOWING QUESTIONS. You are free to decide how many questions you want to answer.**
   <u>You are not allowed to use any calculator</u>. Please use the blank paper on your desk if you need. If you need more please raise your hand. Once you finish please raise your hand; the experimenter will tell you the correct answers and will count the number of your correct answers.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	2 + 2 =			□ Yes □ No
2)	3 + 3 =			□ Yes □ No
3)	4 + 4 =			□ Yes □ No
4)	5 – 2 =			□ Yes □ No
5)	6 – 3 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	 __			□ Yes □ No
2)	 __			□ Yes □ No
3)	 __			□ Yes □ No
4)	 __			□ Yes, □ No
5)	 __			□ Yes, □ No

Your correct answer(s) is/are _____ out of 10 questions.

The corresponding return of your co-participant is _____ Pound(s)

2. **NOW PLEASE WAIT. You co-participant is making her/his decision.**
   She/he is deciding how much (if any) she/he wants to give to you.

YOU ARE GIVEN _____ POUND(S)

Instruction Treatment C – participant A

YOU ARE PARTICIPANT A

Welcome to this experiment. Many thanks for attending today.

This experiment concerns how people make decisions.

You will be asked to carry out some tasks and you will be paid both a show-up fee of 3 pounds and an amount up to an additional 10 pounds depending on a combination of luck and/or your skills.

Your role in this experiment has been determined randomly and you will be randomly matched with another participant in this room. You will never be told with whom you have been paired and your performance/decisions will remain strictly anonymous.

There are 2 types of participant: **PARTICIPANT A** and **PARTICIPANT B**.
You can find on the top of the page which type of participant you are.
Please do not reveal this information to other people during the experiment.

The experiment consists of 2 rounds. Each round is divided in three stages: STAGE 1, STAGE 2 and STAGE 3.
Remember that each Participant A is randomly matched with a Participant B.

ROUND 1

STAGE 1

Participant A **(YOU)** makes the first move: she/he will be asked to answer one question and to write down her/his answer on a sheet of paper that she/he will be given. When they will finish they will be asked to raise their hand: the experimenter will record the answers anonymously on a sheet of paper.
Participant B is kindly asked to wait.

STAGE 2

At this stage Participant B, after receiving some initial information, will be asked to answer to a set of 10 mathematics questions. (It is her/his decision how many questions she/he wishes to answer). Once they finish they will raise their hand: the experimenter will write down on their paper the solutions and will count the correct answers.
For every correct answer her/his co-participant – Participant A **(YOU)** – will get 1 Pound.
The following table shows the connection between the number of correct answers of Participant B and the corresponding return to Participant A (**YOU**):

Number of Correct Answers of Participant B	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Corresponding Return (in Pounds) to Participant A (YOU)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

At this stage Participant A **(YOU)** is kindly asked to wait.

STAGE 3

At this stage the experimenter will communicate the number of correct answers of Participant B to Participant A anonymously and hence the corresponding return in pounds to Participant A (**YOU**).
Then Participant A **(YOU)** will be asked to decide how many pounds of them (if any) to keep and how many (if any) to give to Participant B. They will write down their decision on their sheet of paper. Once they finish they will raise their hand and the experimenter will record their decisions and communicate them to Participants B.

Afterwards, ROUND 2 can start and you will be asked to do the above tasks again, STAGES 1 to 3.

Once Round 2 is over you will be asked to wait quietly: the experimenter will proceed to the payment.

PAYMENT

Only one round will be paid for real.
A standard six sided dice: if an odd number will appear, Round 1 will be paid; if an even number will appear, Round 2 will be paid.

Please remember that all participants will also be paid a show-up fee of 3 pounds.

Please do not communicate with other people during the experiment.
Feel free to raise your hand at any time if you have any questions.

Participant A

ROUND 1

3. **Please tick the box that matches your current mood:**

	**I AM IN A GOOD MOOD**	□
	**I AM NEITHER IN A GOOD MOOD OR IN A BAD MOOD**	□
	**I AM IN A BAD MOOD**	□

4. **NOW PLEASE RAISE YOUR HAND:** the experimenter will come, record your answer and communicate it to your co-participant.

5. **NOW PLEASE WAIT:** your co-participant is answering to the mathematics questions that you can see below.
   The experimenter will tell you the number of correct answers of your co-participant and your corresponding return.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	21 + 23 + 45 + 67 + 88 =			□ Yes □ No
2)	34 + 14 + 44 + 67 + 19 =			□ Yes □ No
3)	51 + 65 + 21 + 13 + 33 =			□ Yes □ No
4)	82 – 13 + 49 + 72 – 15 =			□ Yes □ No
5)	19 + 45 – 21 + 48 + 25 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 1 0 0 1 1 0 0 0 0 0 0 0 1 __			□ Yes □ No
2)	1 1 1 1 1 1 0 1 0 1 1 1 1 1 0 0 0 0 0 1 0 0 0 0 1 0 1 1 1 1 0 1 1 1 1 0 0 1 1 1 0 1 0 1 1 1 0 0 1 1 0 1 0 1 0 1 1 1 1 1 __			□ Yes □ No
3)	1 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 1 0 0 0 0 1 1 1 0 1 1 1 1 0 1 0 0 0 0 1 1 0 0 0 1 1 1 1 1 1 0 __			□ Yes □ No
4)	1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 0 0 0 1 0 1 0 1 1 1 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 1 __			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 1 0 1 1 1 0 1 0 1 0 1 0 1 0 0 0 0 0 1 0 0 0 1 0 1 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 1 0 1 0 0 0 0 1 1 __			□ Yes, □ No

Your co-participant has answered correctly to _____ out of 10 questions.

Your corresponding return is _____

6. **NOW PLEASE MAKE YOUR DECISION:** how much do you want to give to your co-participant (if any)?

I GIVE _____ POUND(S) TO MY CO-PARTICIPANT

Participant A

ROUND 2

1. **Please tick the box that matches your current mood:**

	**I AM IN A GOOD MOOD**	□
	**I AM NEITHER IN A GOOD MOOD OR IN A BAD MOOD**	□
	**I AM IN A BAD MOOD**	□

2. **NOW PLEASE RAISE YOUR HAND:** the experimenter will come, record your answer and communicate it to your co-participant.

3. **<u>NOW PLEASE WAIT</u>:** your co-participant is answering to the mathematics questions that you can see below.
   The experimenter will tell you the number of correct answers of your co-participant and your corresponding return.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	34 + 22 + 15 + 82 + 2 =			□ Yes □ No
2)	11 + 54 + 27 + 81 + 3 =			□ Yes □ No
3)	31 + 61 + 33 + 25 + 16 =			□ Yes □ No
4)	90 – 12 + 33 + 55 – 15 =			□ Yes □ No
5)	15 + 66 – 20 + 38 + 21 =			□ Yes □ No
	Please sum up the ones present in the following charts:			

1)	1 1 0 1 1 0 1 1 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 0 1 0 0 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 0 1 __			□ Yes □ No
2)	1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 0 0 1 0 1 0 0 0 1 0 0 1 0 0 __			□ Yes □ No
3)	1 0 1 0 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 __			□ Yes □ No
4)	1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 __			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 __			□ Yes, □ No

Your co-participant has answered correctly to _____ out of 10 questions.

Your corresponding return is _____

4. **NOW PLEASE MAKE YOUR DECISION:** how much do you want to give to your co-participant (if any)?

I GIVE _____ POUND(S) TO MY CO-PARTICIPANT

Participant A

PRACTICE ROUND

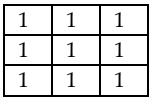
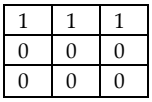
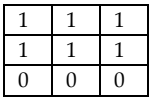
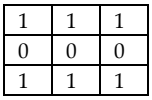
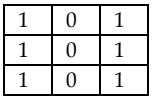
3. **Please tick the box that matches your current mood:**

	**I AM IN A GOOD MOOD**	□
	**I AM NEITHER IN A GOOD MOOD OR IN A BAD MOOD**	□
	**I AM IN A BAD MOOD**	□

4. **NOW PLEASE RAISE YOUR HAND:** the experimenter will come, record your answer and communicate it to your co-participant.

5. **<u>NOW PLEASE WAIT</u>:** your co-participant is answering to the mathematics questions that you can see below.
The experimenter will tell you the number of correct answers of your co-participant and your corresponding return.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	2 + 2 =			□ Yes □ No
2)	3 + 3 =			□ Yes □ No
3)	4 + 4 =			□ Yes □ No
4)	5 – 2 =			□ Yes □ No
5)	6 – 3 =			□ Yes □ No
	Please sum up the ones present in the following charts:			

1)				□ Yes □ No
2)				□ Yes □ No
3)				□ Yes □ No
4)				□ Yes, □ No
5)				□ Yes, □ No

Your co-participant has answered correctly to _____ out of 10 questions.

Your corresponding return is _____

6. NOW PLEASE MAKE YOUR DECISION: how much do you want to give to your co-participant (if any)?

I GIVE _____ POUND(S) TO MY CO-PARTICIPANT

Instruction Treatment C – participant B

YOU ARE PARTICIPANT B

Welcome to this experiment. Many thanks for attending today.

This experiment concerns how people make decisions.

You will be asked to carry out some tasks and you will be paid both a show-up fee of 3 pounds and an amount up to an additional 10 pounds depending on a combination of luck and/or your skills.

Your role in this experiment has been determined randomly and you will be randomly matched with another participant in this room. You will never be told with whom you have been paired and your performance/decisions will remain strictly anonymous.

There are 2 types of participant: **PARTICIPANT A** and **PARTICIPANT B**.
You can find on the top of the page which type of participant you are.
Please do not reveal this information to other people during the experiment.

The experiment consists of 2 rounds. Each round is divided in three stages: STAGE 1, STAGE 2 and STAGE 3.
Remember that each Participant A is randomly matched with a Participant B.

ROUND 1

STAGE 1

Participant A makes the first move: she/he will be asked to answer one question and to write down her/his answer on a sheet of paper that she/he will be given. When they will finish they will be asked to raise their hand: the experimenter will record the answers anonymously on a sheet of paper.
Participant B **(YOU)** is kindly asked to wait.

STAGE 2

At this stage Participant B **(YOU)**, after receiving some initial information, will be asked to answer to a set of 10 mathematics questions. (It is her/his decision how many questions she/he wishes to answer). Once they finish they will raise their hand: the experimenter will write down on their paper the solutions and will count the correct answers.
For every correct answer her/his co-participant – Participant A – will get 1 Pound.
The following table shows the connection between the number of correct answers of Participant B and the corresponding return to Participant A:

Number of Correct Answers of Participant B (YOU)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Corresponding Return (in Pounds) to Participant A	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

At this stage Participant A is kindly asked to wait.

STAGE 3

At this stage the experimenter will communicate the number of correct answers of Participant B **(YOURS)** to Participant A anonymously and hence the corresponding return in pounds to Participant A.
Then Participant A will be asked to decide how many pounds of them (if any) to keep and how many (if any) to give to Participant B. They will write down their decision on their sheet of paper. Once they finish they will raise their hand and the experimenter will record their decisions and communicate them to Participants B.

Afterwards, ROUND 2 can start and you will be asked to do the above tasks again, STAGES 1 to 3.

Once Round 2 is over you will be asked to wait quietly: the experimenter will proceed to the payment.

PAYMENT

Only one round will be paid for real.
A standard six sided dice: if an odd number will appear, Round 1 will be paid; if an even number will appear, Round 2 will be paid.

Please remember that all participants will also be paid a show-up fee of 3 pounds.

Please do not communicate with other people during the experiment.
Feel free to raise your hand at any time if you have any questions.

Participant B

ROUND 1

1. **Please wait. Your co-participant is answering to a question.**
   The experimenter will tell you her/his answer.

   Your co-participant has the following mood:

	**I AM IN A GOOD MOOD**	□
	**I AM NEITHER IN A GOOD MOOD OR IN A BAD MOOD**	□
	**I AM IN A BAD MOOD**	□

2. **Now please ANSWER TO THE FOLLOWING QUESTIONS. You are free to decide how many questions you want to answer.**
   <u>You are not allowed to use any calculator</u>. Please use the blank paper on your desk if you need. If you need more please raise your hand.
   Once you finish please raise your hand; the experimenter will tell you the correct answers and will count the number of your correct answers.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	21 + 23 + 45 + 67 + 88 =			□ Yes □ No
2)	34 + 14 + 44 + 67 + 19 =			□ Yes □ No
3)	51 + 65 + 21 + 13 + 33 =			□ Yes □ No
4)	82 – 13 + 49 + 72 – 15 =			□ Yes □ No
5)	19 + 45 – 21 + 48 + 25 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 1 0 0 1 0 0 1 1 0 0 0 0 0 0 0 1 __			□ Yes □ No
2)	1 1 1 1 1 1 0 1 0 1 1 1 1 1 0 0 0 0 0 1 0 0 0 0 1 0 1 1 1 1 0 1 1 1 1 0 0 1 1 1 0 1 0 1 1 1 0 0 1 1 0 1 0 1 0 1 1 1 1 1 __			□ Yes □ No
3)	1 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 1 1 1 1 0 1 0 0 0 0 1 1 1 0 1 1 1 1 0 1 0 0 0 0 1 1 0 0 0 1 1 1 1 1 1 0 __			□ Yes □ No
4)	1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 0 0 0 0 1 0 1 0 1 1 1 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 1 __			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 1 0 1 1 1 0 1 0 1 0 1 0 1 0 0 0 0 0 1 0 0 0 1 0 1 0 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 1 0 1 0 0 0 0 1 1 __			□ Yes, □ No

Your correct answer(s) is/are _____ out of 10 questions.

The corresponding return of your co-participant is _____ Pound(s)

3. **NOW PLEASE WAIT. You co-participant is making her/his decision.**
   She/he is deciding how much (if any) she/he wants to give to you.

YOU ARE GIVEN _____ POUND(S)

Participant B

ROUND 2

3. **Please wait. Your co-participant is answering to a question.**
   The experimenter will tell you her/his answer.

   Your co-participant has the following mood:

	**I AM IN A GOOD MOOD**	□
	**I AM NEITHER IN A GOOD MOOD OR IN A BAD MOOD**	□
	**I AM IN A BAD MOOD**	□

4. **Now please ANSWER TO THE FOLLOWING QUESTIONS. You are free to decide how many questions you want to answer.**
   <u>You are not allowed to use any calculator</u>. Please use the blank paper on your desk if you need. If you need more please raise your hand.
   Once you finish please raise your hand; the experimenter will tell you the correct answers and will count the number of your correct answers.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	34 + 22 + 15 + 82 + 2 =			□ Yes □ No
2)	11 + 54 + 27 + 81 + 3 =			□ Yes □ No
3)	31 + 61 + 33 + 25 + 16 =			□ Yes □ No
4)	90 – 12 + 33 + 55 – 15 =			□ Yes □ No
5)	15 + 66 – 20 + 38 + 21 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	1 1 0 1 1 0 1 1 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 0 1 0 0 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 0 1 —			□ Yes □ No
2)	1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 0 0 1 0 1 0 0 0 1 0 0 1 0 0 —			□ Yes □ No
3)	1 0 1 0 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 —			□ Yes □ No
4)	1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 —			□ Yes, □ No
5)	1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 —			□ Yes, □ No

Your correct answer(s) is/are _____ out of 10 questions.

The corresponding return of your co-participant is _____ Pound(s)

5. **NOW PLEASE WAIT. You co-participant is making her/his decision.**
She/he is deciding how much (if any) she/he wants to give to you.

YOU ARE GIVEN _____ POUND(S)

Participant B

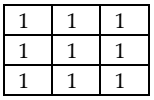
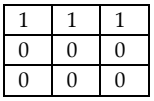
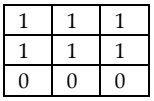
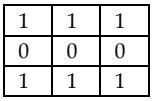
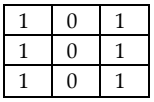
PRACTICE ROUND

3. **Please wait. Your co-participant is answering to a question.**
   The experimenter will tell you her/his answer.

   Your co-participant has the following mood:

	**I AM IN A GOOD MOOD**	□
	**I AM NEITHER IN A GOOD MOOD OR IN A BAD MOOD**	□
	**I AM IN A BAD MOOD**	□

4. **Now please ANSWER TO THE FOLLOWING QUESTIONS. You are free to decide how many questions you want to answer.**
   <u>You are not allowed to use any calculator</u>. Please use the blank paper on your desk if you need. If you need more please raise your hand.
   Once you finish please raise your hand; the experimenter will tell you the correct answers and will count the number of your correct answers.

	Please sum up the following number and write your solution	Your solution is:	The Correct Answer is	Is your answer correct?
1)	2 + 2 =			□ Yes □ No
2)	3 + 3 =			□ Yes □ No
3)	4 + 4 =			□ Yes □ No
4)	5 – 2 =			□ Yes □ No
5)	6 – 3 =			□ Yes □ No
	Please sum up the ones present in the following charts:			
1)	 __			□ Yes □ No
2)	 __			□ Yes □ No
3)	 __			□ Yes □ No
4)	 __			□ Yes, □ No
5)	 __			□ Yes, □ No

Your correct answer(s) is/are _____ out of 10 questions.

The corresponding return of your co-participant is _____ Pound(s)

5. NOW PLEASE WAIT. You co-participant is making her/his decision.
She/he is deciding how much (if any) she/he wants to give to you.

YOU ARE GIVEN _____ POUND(S)

COMMUNICATION FORM

Pair	Leaders' Mood	Number of Correct Answers	Offer
1	G N B		
2	G N B		
3	G N B		
4	G N B		
5	G N B		
6	G N B		

G = good mood
N = normal mood
B = bad mood

APPENDIX B.

Tab. 1. Descriptive statistics for the ratio "Number of Correct Answers/ Number of Attempted Questions"

N. Correct A. / N. Attempted Questions	Obs	Mean	Std.Dev	Min	Max
	72	**0.9375**	0.1418564	0	1

Tab. 2 Descriptive statistics for the ratio "Number of Correct Answers/ Number of Attempted Questions", per treatment

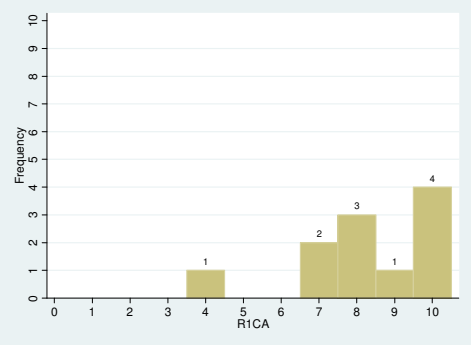
N. Correct A. / N. Attempted Questions	Obs	Mean	Std.Dev	Min	Max
Treat A	22	0.8954545	0.1132939	0.7	1
Treat B	24	0.9416667	0.2062431	0	1
Treat C	26	**0.9692308**	0.0679366	0.8	1

Tab. 3 Frequencies of Number of Correct Answers of Round 1

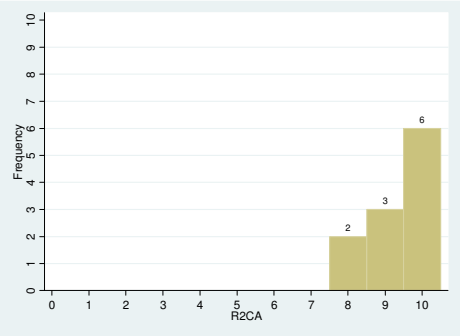
Number of Correct Answers of Round 1	Freq.	Percent	Cum.
4	1	2.78	2.78
5	2	5.56	8.33
7	2	5.56	13.89
8	5	13.89	27.78
9	4	11.11	38.89
10	22	1.11	100.00
Total	**36**	**100.00**	

Tab. 4 Frequencies of Number of Correct Answers of Round 2

Number of Correct Answers of Round 2	Freq.	Percent	Cum.
0	1	2.78	2.78
8	4	11.11	13.89
9	4	11.11	25.00
10	27	75.00	100.00
Total	**36**	**100.00**	

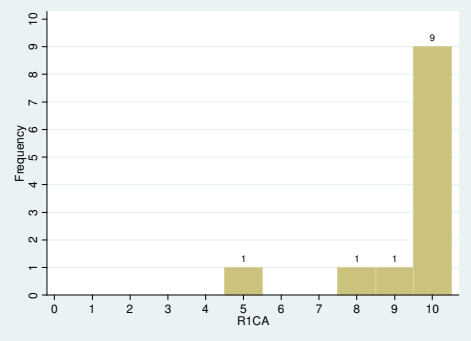


Graph 1. Number of Correct Answers – first round treat A

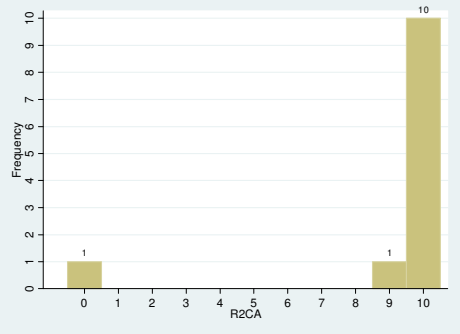


Graph 2. Number of Correct Answers – second round treat A

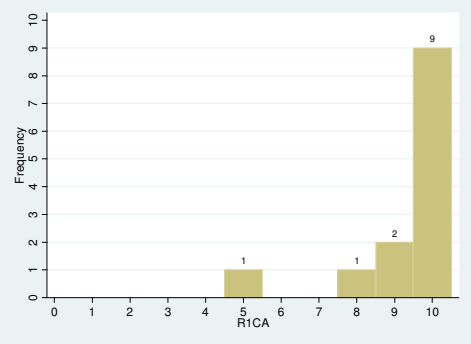
Treat 2



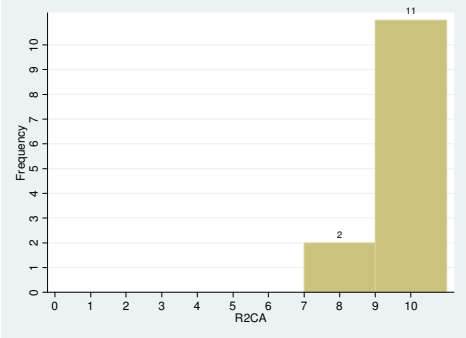
Graph 3. Number of Correct Answers – first round treat B



Graph 4. Number of Correct Answers – second round treat B



Graph 5. Number of Correct Answers – first round treat C



Graph 6. Number of Correct Answers – second round treat C

Tab. 5. *Offer Frequencies*

Offer	Frequency	Percent	Cum. Percent
0	**10**	**13.89**	13.89
1	4	5.56	19.44
2	4	5.56	25.00
3	**11**	**15.28**	40.28
4	7	9.72	50.00
4.5	1	1.39	51.39
5	**25**	**34.72**	86.11
6	2	2.78	88.89
7	2	2.78	91.67
8	2	2.78	94.44
9	1	1.39	95.83
10	3	4.17	100.00
Total	**72**	**100.00**	