Self-discrimination: A field experiment on obesity.*

Pablo Brañas–Garza & Antonios Proestakis
GLOBE: Universidad de Granada

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Abstract

While it is well established in the literature that "unattractive"people and females are discriminated against in a number of environments, little is known about the behavior of these discriminated people. Do they develop differential behavior as a result of internalized past differential behavior towards them? Our experimental setting investigates whether these potentially discriminated people respond in a different way when the opportunity to earn a positive amount of money arises. Our results confirm our "self-discrimination" hypothesis only on obesity, revealing that people who feel relatively obese are significantly less likely to grab such a chance.

JEL: C93, J16

Keywords: Discrimination, obesity, beauty, internalization, gender economics.

1 Introduction

As chiefly labor market studies have shown, appearance and gender can have an effect on earnings. Prior work in the field of labor economics has identified a "beauty premium" (Hamermesh & Biddle[15]) and a gender gap (Goldin[13], O'Neill [22],[23]) in wages. Moreover, several laboratory experiments have tested for appearance and gender effects after relaxing the anonymity restriction usual to experimental settings (Solnick & Schweitzer [27], Andreoni & Petrie[1], Rosenblat[25], Gneezy et al.[12], Castillo et al.[4]).

All these experiments analyze the effect of gender and beauty in bargaining settings (ultimatum game, investment game, dictator game). In most cases, the conclusion is that both "attractive" people and males end up better off

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in bargaining games than "unattractive" people or females. Nevertheless, the reason for such differential treatment is not at all clear.

Moreover, when interrelating beauty and gender, the topic becomes even more complicated. According to Hatfield et al.[16] and Zebrowitz[29], females should experience more differential judgments and treatments based on attractiveness than males because human culture values attractiveness more in females than in males. As a consequence, it is expected that the effect of attractiveness should be larger for females than males. According to this claim, "unattractive" females should therefore suffer more discrimination than "unattractive" males. Hamermesh and Biddle[15] reach the opposite conclusion however. Surprisingly, they find that males are more affected by attractiveness.

In this study, we analyze the internalization of discriminative behavior towards "less attractive" people and women. The internalization hypothesis is inspired in socialization and social expectancy theories (Langlois[19], Snyder et al.[26]) on attractiveness. According to these theories, social stereotypes create their own reality through a causal mechanism in four steps: 1) appearance elicits social stereotypes or expectations for the behavior and traits of attractive and unattractive targets; 2) these expectations are activated by perceivers in the form of differential judgments and treatment towards attractive and unattractive targets; 3) which cause the development of differential behavior and traits in attractive and unattractive targets, and finally, 4) attractive and unattractive targets internalize differential judgment and treatment and eventually behave differently and possess different traits (see Darley & Fazzio[8]; and Zebrowitz[29] for a detailed discussion).

The internalization process is well analyzed in a comprehensive review of the literature on beauty by Langlois et al.[18]. Langlois finds only weak support for the assertion that attractive adults have more positive self-views (on occupational success, popularity, dating and sexual experience, physical health, extroversion, self-confidence/self-esteem, social skills, mental health, intelligence) than unattractive adults, but reports no gender differences.

This theory is also in line with findings in social psychology on discrimination towards obese people (Cossrow, Jefferey, & McGuire[5]; Rogge, Greenwald, & Golden[24]). In this literature, the fourth step of internalization is expressed through a negative relation between being overweight or obese and self-esteem (Crandall[6], Friedman et al.[11]).

In an experimental paper related to our study, Solnick & Schweitzer [27] tested the hypothesis that attractive people and men will demand more than unattractive people and women in an ultimatum game. Although the hypothesis was rejected, higher final payoffs were reported for both "privileged" types. In a recent public goods experiment, Andreoni & Petrie[1] report that higher payoffs for attractive people and females are not due to differential behavior by attractive people and females but due to how others respond to beauty and gender. Moreover, Eckel & Wilson[9] found that attractive people are trusted at higher rates under a trust game framework. Finally, Mobius and Rosenblat[21] use a labor market experiment to decompose the beauty premium. They found that employers wrongly expected that physically attractive workers would per-

form better at their jobs. Finally, there are even more experimental studies highlighting a clear gender effect on behavior and payoffs[1].

In this study, we take into account evidence from past literature that "less attractive people" and women are treated differently and analyze *the internalization of such discriminative behavior*. Our main rationale is that unattractive and female targets internalize differential judgments and treatment and eventually develop differential behavior and self-views. In our experimental setting, we offer experimental subjects the opportunity to request any amount of money for the effort they have made in filling out a questionnaire. If our rationale is true, then unattractive people and women should be expected to demand less money than attractive people or men, respectively. At this point, let us clarify that in our experiment, the term "attractiveness" touches upon two different dimensions regarding appearance. As we will describe analytically in the following section, the first dimension deals with subjects' self-reports on the physical trait "obesity", while the second one deals with the physical trait "beauty".

Our experimental study differs from the above studies in the following aspects. First of all, we do not use interactive experimental games (ultimatum, public goods, etc.) to measure differential or discriminative behavior towards unattractive people or females. Instead, we perform a "non-interactive" game in order to prevent potential influence between subjects. Following Fiona Greig's[14] example, subjects are simply asked *how much money they would like to request as a compensation for the effort they made to complete this particular questionnaire and for the information they provided us*. In this way, every subject is given exactly the same opportunity to earn a positive amount of money, while avoiding any influence during the communication process.

Secondly, we have recruited the 269 subjects participating in our experiment from their natural environment. To do so, 27 mediators-interviewers received special training to conduct this particular experiment according to experimental protocols and specifications.

Thirdly, *beauty* and *obesity* – our measures of attractiveness - are reported by means of Likert-scale questions addressed to the subjects (self-reports). We are fully convinced that self-perception of appearance is more relevant than actual appearance or appearance estimated by others insofar as our study analyzes an internalization process[2]. This consideration is also in accordance with literature that describes a more robust relationship between perceived weight and self-esteem than actual weight and self-esteem (Miller & Downey [20]).

Moreover, a fourth difference of our study is the fact that we have included mediators' reports in addition to self-reports. In close line with past literature related to experiments on the beauty premium (see Solnick et al.[27], Eckel et al.[9], Andreoni et al.[1], Mobius et al.[21]), we also enable third parties to rank

[1] An extensive review of the literature on gender effects in experimental games is described in Croson and Gneezy[7].

[2] A potential problem arising from such a procedure is that subjects may suspect researchers' interest and show influenced behavior, leading to a conformity problem. As is fully analyzed in the next section, we deal with this problem by including additional tasks in the questionnaires to distract subjects' attention.

subjects' "attractiveness" level. As will be discussed later, significant differences between self-reports and mediators' reports on obesity level highlights another *self-discriminated* type of person: those who report themselves to be obese, but according to others, are not[3].

Finally, following Boone et al.[2], Brandstätter and Güth [3] and Kurtis et al.[17], subjects' personality characteristics are also taken into consideration. Again using Likert-scale questions addressed to both subjects and mediators, we measure for *ambition, self-confidence, leadership, sociality, creativeness and benevolence*. Like in Fiona Greig's[14] study, we find that the most relevant characteristics are *ambition* and *self-confidence*, which are finally used as controls in our analysis.

To sum up, the central issue of this experimental study is expressed through three basic questions:

- Do "obese" people, who self-report a higher-than-median level of obesity request less money than "non-obese" people ?
- Do "beautiful" people, who self-report a higher-than-median level of beauty request more money than "non-beautiful" people?
- Do women request less money than men?

The study is organized as follows: the experimental methods are described in detail in section 2, while the data and results are presented in section 3 and 4, respectively. Finally, section 5 concludes with a discussion of the results.

2 Experimental Methods

One[4] of the most important advantages of this research project is the fact that we conduct an economic field experiment with quite a large sample (269 subjects) consisting of various types of people from different socioeconomic backgrounds. In order to achieve this aim, 27 mediators-interviewers were fully trained to recruit subjects and conduct the experiment. All of the subjects were students enrolled in the course titled "Economic Analysis of Collective Relations" (2007) taught at the University of Granada who were interested in furthering their studies beyond the diploma level to obtain a B.A.[5]. As a result, 27 people of different ages (20-60 years of age) and socioeconomic backgrounds

[3]Mediators' reports are also used to check whether the mediators indeed recruited real subjects or they created fake ones. This is done by checking mediators' answers against those of the subjects'.

[4]Detailed instructions for the whole experimental process are described in Appendix 1. Questionnaires Q1 and Q2 are provided in Appendix 6 and 7, respectively.

[5]Under the Spanish legislation on education, students who have obtained a university diploma (which requires 3 years of study) may continue their studies to obtain a B.A. (which requires 4 years of study) by undertaking additional courses.

were enrolled in this particular course. None of the mediators had any past experience in experimental economics, while their participation in the experiment as "interviewers" solely had a pedagogical aim[6].

2.1 Stage 1: Mediators' Training

Mediators were trained for a total of six hours. Training included a general description of experimental economics with special reference made to basic experimental protocols. Additional instructions regarding this specific experiment were given in detail. Finally, each mediator was asked to recruit 10 subjects to participate in an economic experiment within one week's time. We also clearly stated (especially for the mediators who were also workers) our preference for employed subjects and a balanced subject pool regarding gender. After the first week, the mediators were asked to submit a list with the names of the 10 subjects they had recruited [7].

2.2 Stage 2: Questionnaires and Implementation

The second stage of the experiment began with mediators' answers to questionnaire Q1, which was used in this phase to check that their subjects were real people. After completing Q1, the mediators received ten Q2 questionnaires and ten envelopes[8], which they delivered to their subjects.

The first two parts of Q1 coincide with the first two parts of Q2. The only difference between the two questionnaires is that the questions on Q1 were answered by each of the 27 mediators 10 times to describe each of their 10 subjects, while the questions on Q2 were self-reported and therefore only answered one time by each of the 269 subjects. The following diagram shows the general structure of questionnaires Q1 and Q2.

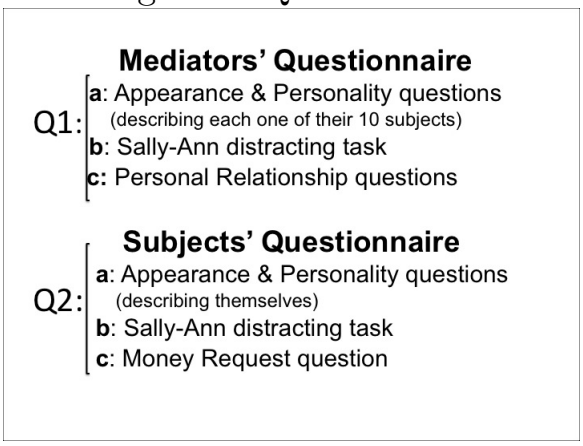
In the first part of the questionnaire given to the subjects, Q2a, the subjects were requested to answer 4 Likert questions about their appearance, namely *beauty, obesity, height* and *manner of dress*, and five Likert questions about their personality characteristics, specifically *ambition, self-confidence, sociality, creativeness* and *benevolence*. Nevertheless, in our analysis we use only *beauty* and *obesity* as explanatory variables and only *ambition* and *self-confidence* as control variables. The purpose of the rest of the questions was to distract subjects' attention from the real experimental questions. For this same reason, an adjusted version of the Sally-Ann task (Wimmer et. al. [28]) was included

[6] Upon completion of the course, the students were awarded a grade for a presentation on the results/conclusions obtained from the data.

[7] In order to protect the subjects' identities, the mediators were asked to codify the names so that they would be recognizable only by the corresponding mediator and no one else

[8] The envelopes bore the seal of the University of Granada and were used to preserve subjects' anonymity from the monitors.

Diagram 1:Questionnaires



in the second part of the subjects' questionnaire, Q2b. The Sally-Ann task is a psychological test which enables a series of images (see Appendix 6).

Finally, while the third part of the mediators' questionnaire, Q1c, simply describes the personal relationship between the mediators and each of their subjects, the third part of the subjects' questionnaire, Q2c, actually consists the dependent variable of our research project. In this part, subjects were asked to reveal *how much money they would like to request as a compensation for the effort they made to fill out this particular questionnaire and for the information they provided us.* We also clarified that the Spanish Research Council had provided a certain amount of money for this particular project. Q2 continues by asking subjects' to give their name and home address so that the researchers could send the subjects the money they requested [9]

Moreover, the participants in the experiment were told that the information they provided to researchers was protected by the Law on the Protection of Personal Data. At the end of the Q2 questionnaire, the subjects were asked if they would be willing to participate in another experiment in the near future.

The second stage of the experiment concluded by instructing mediators to provide their subjects with delicate hints about how the payment would be made. In short, they "must" assure their subjects that they are truly going to receive a positive amount of money if they ask for it. Moreover, it was emphasized that only those subjects who provide their home address would be paid[10]. The mediators were also instructed to inform their subjects that the budget for this particular project was small and that the researchers were only willing to pay subjects according to the real value of their effort[11]. Finally, the

[9] This was also another way to convince the subjects that we were truly willing to pay them the money they requested.

[10] This mechanism is also used in order to ensure the researchers that the participants were real people and not simply made up by the mediators.

[11] We clarified this point using the following wording: "Obviously, we are not going to pay anyone 1 million euros for filling out a questionnaire."

mediators were given two weeks to administer the Q2 questionnaires to their subjects and return the completed questionnaires.

2.3 Payments

Finally, the third stage of the experiment began at the moment that the mediators submitted the Q2 questionnaires that had been completed by their subjects. The questionnaires were submitted in sealed envelopes. As regards the payment process, the mediators preferred to receive subjects' payments on their behalf instead of mailing the money to them. To this end, the interviewers were asked to submit within two weeks time signed copies of the identity cards of the subjects who had requested money in the question in part "c" of questionnaire Q2. Payments were made two weeks later according to the following rule: "Subjects who request 10 euros or more, will be paid 10 euros. All the rest will receive the exact amount of their request." Finally, of the 154 subjects who requested payment, only the 89 subjects who provided copies of their identification card were paid. The total cost of the project was 854 euros .

3 Data Considerations

In this section, we begin our analysis by describing the special characteristics of the dataset collected during the experimental process. In most cases, the variables used in our analysis are generated out of the raw data, without any intervention. However, in the case of the dependent variable *money*, it was necessary to transform the initial raw variable.

The dependent variable under consideration is *the amount of money that subjects requested in compensation for the effort they made to fill out the particular questionnaire and for the information provided us.* Despite the fact that the variable *money* is initially a continuous variable, we have to take into account three special characteristics of this variable, especially since regression analysis is to be applied:

1. 42.75% of subjects requested 0 euros[12],
2. the value of the variable has a very wide range: 4.46% of the subjects requested more than 250 euros, while one subject requested 62,000 euros and another one asked for an infinite amount of money, and
3. there are several focal points (apart from 0) such as 10, 20, 30, 50, 100 which have frequencies of more than 5% each.

Therefore, treating *money* as an ordinary continuous variable is not so convincing. Moreover, we realized the need to not exclude extreme values from our regressions since they are of special interest from a theoretical point of view. Asking for an infinite amount of money is the Nash equilibrium of such a game,

[12]Blank-answers are also included in 0 requests.

as the participant assures that he/she will receive the highest amount of money regardless of what the other subjects request.

Instead, it is more convincing to assume that all the subjects who ask for extremely high amounts of money belong to the same category. Furthermore, the fact that there are several focal points in the continuous variable suggested that it would be reasonable and representative to generate categories around these points. As a result, a more balanced variable with 6 ordered categories is generated - and used for further analysis - as follows:

Table 1: Dependent Variable: Money

label	0	1	2	3	4	5
categories	0	$1-15$	$16-30$	$50-70$	$90-100$	>149
n	115	39	46	28	17	24

In the statistical analysis of the next section, the dependent variable *money* is represented in three different ways, which correspond to three slightly different questions.

money(.): is a 6-category ordinal variable which includes all the observations exactly as described above. This variable attempts to shed light on the question:"which people - according to their physical traits and gender - request more money?"

money(1/0): is a dichotomous variable. The first category includes the 115 subjects who requested 0 euros, while the second category, which is an aggregation of categories 1-5 of the variable *money*, includes the 154 persons who requested a positive amount of money. In this case the question under examination is simply the following: "who actually requests money and who does not?"

money(>0): is a 5-category ordinal variable including only the 154 subjects who asked for a positive amount of money. The conditional question formed out of this approach is the following: "Given that people request a positive amount of money, who requests more?"

While the first two representations of the variable *money* may be obvious, the third one necessitates further explanation. We focus on this specific sub-sample mainly because we consider that all these people form a group of special interest. While there are several - sometimes contradicting - reasons to explain why a person does not request any amount of money (interviewers' influence, subjects do not believe in experimental methods, they do not want to provide their address, etc.), we believe that the people who overpass these limits and finally request a positive amount of money belong to a more homogenous category with its own distinct argumentation for proceeding in such a way.

Regarding the independent variables enabled in the analysis, no complicated transformation takes place. These are:

***obesity*:** an ordinal self-reported explanatory variable describing the level of subjects' obesity (from 1=very thin to 7=very obese).

***beauty*:** an ordinal self-reported explanatory variable describing the level of subjects' beauty (from 1=very ugly to 7=very beautiful).

***female*:** a dummy self-reported explanatory variable taking the value of 1 if the subject is female and 0 otherwise.

***age*:** a continuous monitor-reported control variable describing subjects' age in years.

***wage*:** a continuous monitor-reported control variable describing subjects' wage in euros.

***ambition*:** an ordinal self-reported control variable describing the level of subjects' ambition (from 1=not ambitious at all to 7=very ambitious).

***self-conf.*:** an ordinal self-reported control variable describing the level of subjects' self-confidence (from 1=not self-confident at all to 7=very self-confident).

Finally, we also realized that the nature of the variable *obesity* was not as trivial as the variable *beauty*. While *beauty* could be characterized as a monotonic variable in terms of utility - the more beautiful someone feels the better he/she is - the case of *obesity* is not exactly the same. For instance, feeling that one is very thin does not necessarily imply that one is more attractive than someone who feels very obese. For this reason, two dummy variables were generated out of the variable *obesity* as follows:

***dobese*:** a dummy variable taking the value of 1 if the subject reports level 5, 6 or 7 in the question on "obesity" and 0 otherwise,

***dthin*:** a dummy variable taking the value of 1 if the subject reports level 1, 2 or 3 in the question on "obesity" and 0 otherwise.

As regards the descriptive statistics of the data, the 27 mediators collected data from 269 subjects. The subject pool was comprised of 55% females and 35% students. About 37% of the subjects did not work at all, 18% worked in a low-level job and the remaining 45% had a medium or high-level job. Table 2 below shows the descriptive statistics of the variables used in our analysis.

Table 2: Descriptive Statistics

Variable	N	Mean	Median	Mode	Std. Dev	Min	Max
obesity	269	4.18	4	4	1.05	1	7
beauty	269	4.79	5	5	0.97	1	7
female	270	0.55	1	1	0.50	0	1
age	270	29.33	25	24	9.47	18	65
wage	171	1316.81	700	1500	848.44	100	7000
ambition	269	4.52	5	5	1.34	1	7
self-conf	269	4.49	5	5	1.48	1	7
dobese	269	0.33	0	0	0.47	0	1
dthin	269	0.20	0	0	0.40	0	1

From the above table we observe that:

Remark 1 *The mean, the median and the mode of the variables beauty, ambition and self-confidence are much higher than expected. It seems that subjects overestimated their characteristics, although it was emphasized that the median value is 4*[13]*. However, in the case of obesity, the corresponding mean value approaches the expected one, while the mode and the median are exactly 4.*

There are two possible explanations for this. The first is simply that obesity is a more objective and easily observable characteristic. In other words, different levels of obesity are easily recognized by subjects, thus enabling them to describe themselves more accurately.

The second explanation, however, points in a contrary direction. First of all, what people consider to be normal - and they denote in our scale as 4 - is actually the obesity level of the majority of the population. In sharp contradiction, there is a vast amount of literature confirming that modern societies suffer from being overweight or obese. Therefore, it would be more reasonable for the true population mean of the variable *obesity* to lie around five. Finally, if this is the case, we conclude that, like the rest of the ordinal variables, non-obesity (using the same terms) is overestimated.

4 Results

The aim of the first part of this section is to give an overview of the problem under examination. To do so, we examine the impact of each of the explanatory variables (beauty, obesity and gender) on our dependent variable by analyzing graphic and nonparametric tests. Finally, in the second part, we advance in our analysis by performing probit regression analysis which allows us to control for other factors that may impact our dependent variable.

[13]The Q2 questionnaires included the following hint: note that 4 means neither more (than the average) nor less.

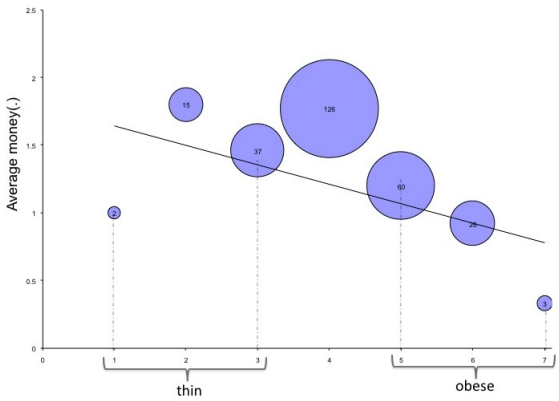
4.1 Preliminary results

In this subsection we try to shed light on any potential relation or trend between the dependent variable *money*(.) and the explanatory variables *beauty, obesity* and *gender*.

4.1.1 *Obesity*

The first figure shows the average amount of money requested by the members belonging to the seven different levels of the variable *obesity*. The size of the bubble is proportional to the number of people belonging to each level of obesity. Additionally, the number written in each bubble gives the precise number of subjects in each group.

Figure 1: Average Money Requests by Obesity Level



Note: The size of the bubbles (and the number shown) is proportional to the number of people belonging to each of the 7 obesity groups represented on the horizontal axis.

At first glance there does not appear to be a clear trend between the two variables under examination. However, when focusing more closely on the groups of people belonging to obesity levels 4-7, a clear negative trend can be seen, leading to the following observation:

Observation 1: The more obese a subject feels, the less money he/she requests on average.

Observation 1 is also supported by the nonparametric test (Cuzick and Mann-Whitney test). As is explained in detail in Appendix 2, the different requests made between people at obesity level 4 and people at obesity level 5 and 6 are significant and negative.

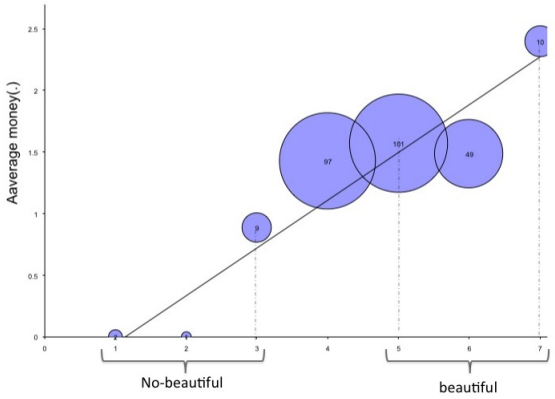
On the other hand, there is no clear pattern for the average requests among the people who feel thin (level 1-3). Moreover, the combination of these two observations enforces our argument that the variable *obesity* could actually be analyzed better if it is disentangled into two distinct variables, *dobese* and *dthin,* as described in the previous section. Finally, Figure 1 also includes the linear regression line, which reveals a smooth negative trend.

4.1.2 *Beauty*

Figure 2 provides exactly the same information as the first, but for the different levels of the variable *beauty*. In this case, the observation is even more clear and represents the whole sample:

Observation 2: The more beautiful a subject considers him/herself, the more money he/she requests on average.

Figure 2: Average Money Requests by Beauty Level



Note: The size of the bubbles (and the number shown) is proportional to the number of people belonging to each of the 7 beauty groups represented on the horizontal axis.

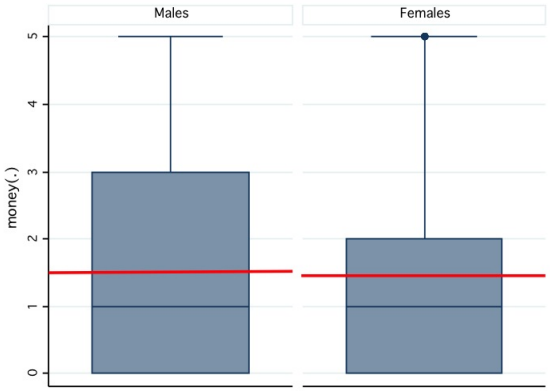
As is also illustrated from the linear regression line, there is a positive trend between average amount of money requested and different levels of beauty. Nevertheless, this claim is partially supported by nonparametric tests (for more details see Appendix 2). The only significant differences in *money*(.) requests are found between people at beauty level 7 and people at beauty level 1, 3 and 4.

Another secondary observation, which is also related to *Remark 1* of the previous section (page 10), is the fact that the mean value of *beauty* should lie very close to 5 as the majority of the observations and the median belong to category 5. Moreover, only 2 subjects and 1 subject report that they belong to beauty level 1 and 2, respectively, while there is quite a large number of observations for levels 6 and 7.

4.1.3 *Gender*

Finally, the following box-plot represents the *money*(.) requests by gender.

Figure 3: Money Requests by Gender



Note: The thick (red) lines indicate the means of each subsample

As we can see, the two subsamples have exactly the same median, while the males' mean (thick-red line) is slightly higher than the females' mean. The only notable difference occurs for the values of the upper quartiles where males are equal to 3 and females are equal to 2. Therefore, we can easily conclude:

Observation 3: There is no substantial gender difference in money requests[14].

4.2 Regression Analysis

In this section, regression analysis is performed mainly for two reasons: a) we wish to control for the personality characteristics (ambition and self-confidence) and the socioeconomic variables (age, wage) that probably affect the dependent variable, and b) we want to control for the influence of interviewers on the subjects' answers.

This second reason is of great importance since we were unable to be present when the mediators were instructing the subjects and therefore could not monitor them. Although they were specifically trained to not influence subjects' answers, we must still take into account that the subjects were either family members or colleagues[15].Consequently, during the following regression analysis we allow for intragroup correlation and relax the usual requirement that the

[14]The same conclusion is fully confirmed by nonparametric tests (see Appendix 2).

[15]A Kruskal-Wallis test on the variable *money*(.) for significant differences among groups of people dealing with different mediators confirms this claim ($Pr. > |z| = 0.0001$).

observations be independent. That is, the observations are independent across groups (27 clusters for different interviewers), but not necessarily within groups. This kind of analysis affects the standard errors and variance-covariance matrix of the estimators, but not the estimated coefficients.

The following table reports the coefficients and the standard errors (in parenthesis) for two ordered probit regressions (columns 1(a) and 1(b)) on the dependent variable *money*(.), two probit regressions (columns 2(a) and 2(b)) on the binary variable *money*(1/0) and finally two ordered probit regressions (columns 3(a) and 3(b)) on *money*(> 0); all with the aforementioned cluster specification. The only difference between regressions of type (a) and (b) is that while *obesity* is used in the first ones as the main explanatory variable, the dummies *dobese* and *dthin* are engaged in the second ones in order to disentangle the effect.

Table 3: Probit Regressions

Variable	*money*(.)		*money*(1/0)		*money*(> 0)	
	1(a)	1(b)	2(a)	2(b)	3(a)	3(b)
obesity	-.109*		-.054		-.196**	
	(.063)		(.077)		(.090)	
dobese		-.422***		-.340**		-.558***
		(.124)		(.150)		(.208)
dthin		-.230		-.347		-.0500
		(.212)		(.253)		(.244)
beauty	.087	.073	.125*	.110	-.030	-.036
	(.077)	(.347)	(.077)	(.081)	.(090)	(.087)
female	-.003	.000	.044	.055	-.070	-.081
	(.167)	(.170)	(.200)	(.200)	(.219)	(.226)
age	-.129**	-.128**	-.134**	-.133**	-.092	-.095
	(.059)	(.057)	(.062)	(.060)	(.073)	(.071)
age^2	.001*	.001*	.001*	.001*	.001	.001
	(.001)	(.0007)	(.001)	(.0007)	(.001)	(.001)
wage	-.000	-.000	-.0001*	-.0002*	.0004***	.0004***
	(.0001)	(.000)	(.0001)	(.0001)	(.0001)	(.0001)
ambition	.095	.098	.061	.060	.110*	.121**
	(.063)	(.063)	(.073)	(.073)	(.059)	(.062)
self-conf	.025	.027	.041	.042	.043	.047
	(.060)	(.060)	(.065)	(.065)	(.057)	(.058)
constant			2.042*	2.06*		
			(1.128)	(1.107)		
N	269	269	269	269	154	154
$Pr > chi2$	0.001	0.0000	0.0004	0.0001	0.0000	0.0000

Note: Standard errors (adjusted for 27 clusters in interviewers) of parameter estimates in parentheses. Significance level is marked with * for $p <= 0.10$, ** for $p <= 0.05$, and *** for $p <= 0.01$.

We control for the continuous variables *age,* age^2 and *wage* and for the ordinal variables *ambition* and *self-confidence* in all the regressions. No mul-

ticollinearity problem was observed in our regression models among the basic explanatory variables[16] or among the aforementioned control variables.

In addition to the above illustrated models, the interval variable *money-interv.* and the continuos variable *money-cont.* are also analyzed in Appendix 3 using interval and tobit regression methods[17], respectively. Although one might consider that these two methods are more adequate for our data, the results are very similar to those obtained from the ordered probit model (1(a) and 1(b)). More specifically, the results are identical in terms of significance in the case of the three main variables under examination (*obesity, beauty, female*). However, for reasons of simplicity and comparison (with the binary-probit model) we only show the results of the ordered probit in the main body of this paper, .

Following the same structure as in the previous subsection, we focus our analysis on the three main explanatory variables: *obesity*, *beauty* and *female*.

4.2.1 *Obesity*

As we can see from Table 3, regressions 1(a) and 3(a) confirm the negative association of the dependent variables ($money(.)$ and $money(>0)$) with obesity. In particular, *obesity* is associated with money at a 10% significance level in regression 1(a). However, when people requesting 0 euros are excluded from the sample in regression 3(a), the association is even stronger, reaching a 5% significance level. Nonetheless, while the sign of *obesity* remains negative in regression 2(a), it is not significant.

When disentangling *obesity* in regressions 1(b) and 3(b), the variable *dobese* is observed to be negatively associated at a 1% significant level in both models, while *dthin* is not (not even at 10% significance level). The same is true in regression 2(b), but *dobese* is associated with $money(1/0)$ at a 5% level of significance. All these results suggest that the negative sign of 1(a), 2(a) and 3(a) is due to the fact that *obese* subjects (level 5, 6 and 7) request less money, but not because *thin* subjects request more money. Regarding obesity, there 3 main conclusions can be drawn from each of the dependent variables $money(.)$, $money(1/0)$ and $money(>0)$:

Result 1:

a) (.): "Obese" subjects request significantly less money than "non-obese" subjects.

b) (1/0): "Obese" subjects (significantly more times) do not request any money at all as compared to "non-obese" subjects.

[16] Despite our expectations, the correlation coefficient between *obesity* and *beauty* was only 0.023.

[17] In both methods, the data for money requests equal to zero (115 observations) are left censored, while the data for money requests equal to or higher than 150 (24 observations) are right censored. These data correspond to category 0 and 5 of the dependent variable $money(.)$ enabled in the ordered probit model.

c) (>0): Among subjects who request a positive amount of money, "obese" subjects request significantly less than "non- obese" subjects.

4.2.2 *Beauty*

As regards the variable *beauty*, no significant association with the corresponding dependent variables of models 1(a), 3(a) and 1- 3(b) has been reported. The only exception is regression 2(a) in which *beauty* is positively and significantly associated with *money*(1/0) but only at the 10% significance level. Interestingly, *obesity* is not reported to be significant only in this specific model. Apparently, the significant dominance of *dobese* is recuperated in model 2(b), indicating once again that using the two dummies instead of *obesity* is probably the most reliable and consistent approach.

Despite our expectations as expressed in observation 2 of the previous subsection, the significant association of *beauty* with the dependent variable disappears as soon as the control variables *age, wage, ambition and self-confidence* are introduced in our regression. As shown in Appendix 4, this is especially true for the variables *age and ambition* as their inclusion in the regression process immediately neutralizes the effect of *beauty* on *money*(.).

After controlling for all the aforementioned variables, the following overall conclusion dominates regardless of the regression model used:

Result 2: Subjects' beauty has no significant effect on money requests (either on amount or frequency).

4.2.3 *Gender*

The same result is also true for the variable *female* as it is not significant in any of the aforementioned regressions (with or without controls). Nevertheless, a very strong observation emerged when performing the nonparametric tests (see Appendix 2): the negative trend between money requests and *obesity* or *dobese* is confirmed only in the female subsample.

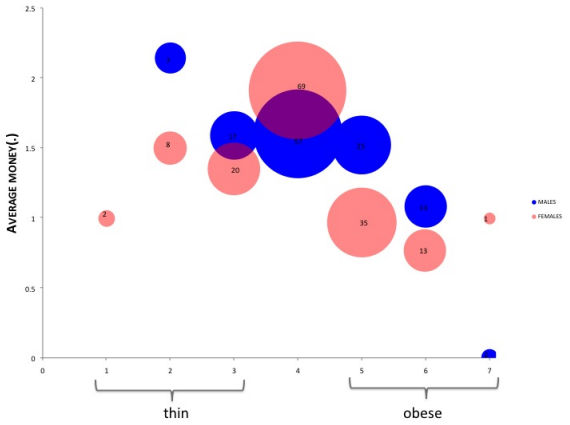
Additionally, this observation can be easily illustrated in the following figure where the dark blue and the light red bubbles represent males' and females' money requests, respectively. It is clear that obese females (level 5, 6 and 7) request significantly less money than non-obese females (level 4). On the other hand, in the case of males, the negative trend is only true (but not significant) for the highest obesity levels (6 and 7), where there are only few observations.

In order to demonstrate the combined effect of *female* and *dobesity* on money requests, two interaction dummy terms have been incorporated into our regression model[18]. These are:

fdobese: takes the value of 1 if the subject is both obese (level 5-7) and female and 0 otherwise.

[18]For simplicity sake, only models (b) will be used as a reference.

Figure 4: Average Money Requests by Obesity Level and Gender



Note: The size of the bubbles is proportional to the number of people belonging in each one of the 7-obesity groups represented in the horizontal axe.

mdobese: takes the value of 1 if the subject is both obese (level 5-7) and male and 0 otherwise.

In order to avoid problems of multicollinearity (and since *female* was not significant in any of the previous regressions), *female* and *dobese* are eventually replaced by the two new variables.

Comparing the results of the table bellow with the corresponding results of Table 3, we see that obesity is negatively and significantly associated with money requests only for females[19]. Due to the fact that males' obesity is also negatively (but not significantly) associated with the dependent variable, it is also expected that the significance of *fdobese* will be weakened. Interestingly, this result is only confirmed in regressions 2(b_i) and 3(b_i), but not in 1(b_i) where the 1% significant level is maintained. Finally, control variables generally have the same effect as in the regressions without interaction terms.

[19]The same result is confirmed when the above regression analysis is repeated separately for the male and the female subsamples (see Appendix 5 for more details). We observe that the variable *obesity* in model 2(a) and *dobese* in models 1(b), 2(b), 3(b) are significant only for the female sample (with corresponding p-values: p(2a)=0.087, p(1b)=0.001, p(2b)=0.019 and p(3b)=0.014, respectively).

Table 4: Ordered Probit Regressions Using Interaction Terms

Variable	*money*(.)	*money*(1/0)	*money*(> 0)
	1(b_i)	2(b_i)	3(b_i)
fdobese	-.53***	-.42*	-.76**
	(.16)	(.21)	(.31)
mdobese	-.28	-.23	-.31
	(.20)	(.19)	(.24)
dthin	-.23	-.34	-.04
	(.21)	(.25)	(.24)
beauty	.07	.11	-.04
	(.07)	(.08)	(.09)
age	-.12**	-.13**	.-10
	(.05)	(.06)	(.07)
age^2	.001*	.001*	.001
	(.000)	(.000)	(.001)
wage	-.000	-.0002**	.0004***
	(.001)	(.0001)	(.0001)
ambition	.09	.06	.12*
	(.06)	(.07)	(.06)
self-conf	.01	.03	.03
	(.06)	(.06)	(.06)
constant		2.12**	
		(1.07)	
N	269	269	154
$Pr > chi^2$	0.0000	0.0002	0.0001

NOTE: SE and significance level as previous table.

From the above analysis we can conclude:

Result 3: Although there is no significant gender effect on subjects' money requests (either on amount or frequency), there is evidence that the negative association between *money*, *money*(1/0), *money*(> 0)and *dobese* is mainly due to the participation of females in the sample.

4.2.4 *Control variables*

Finally, the following general remarks can be made regarding the control variables:

1) *Age* is negatively associated with the dependent variable in regressions 1(a&b) and 2(a&b), but not in regressions 3(a&b). A possible explanation is that the majority of people that requested 0 euros are older.

2) In regressions 3(a&b), *wage* turns positive and highly significant. This result indicates that high-wage people may request more money because they value their time more than other people.

3) Despite our expectations that the variable *ambition* would be of great importance in our model, it was only found to be significant in regressions 3(a&b). This supports our claim that the sample used in regressions 3(a&b) is comprised of a particular group of people with special characteristics such as ambition.

5 Discussion

The basic suggestion of this study - that discriminated people behave differently due to past discrimination - seems to be the second part of the "discrimination story". Therefore, in this experimental setting we try to isolate and analyze this second part separately based on the assumption that there are people who suffered discrimination in the past due to one or more of their physical traits. We focus on three physical traits: obesity, beauty and gender which, according to the literature, could "provoke" differential behavior. As regards the first two traits, problematic treatment is observed when targets' traits deviate from the "standard norm" accepted by society. As regards gender, however, discrimination is activated towards females in a number of environments which are traditionally considered "men's business".

The main result of our study is that relatively obese people request significantly less money than non-obese people when such an opportunity arises. This result is in perfect accordance with the fourth step of the internalization process described in the introduction: unattractive targets internalize differential judgment and treatment and eventually behave differently. According to our experimental setting, unattractive targets are precisely those who report themselves to be obese and have internalized differential judgment and treatment related to their past life. Indeed, these are the people that eventually behave differently in our setting by requesting less money than non-obese people.

Given that this type of people developed a special behavior in our dataset, we focus more closely on them. In particular, we want to find out whether their self-reports on obesity are also confirmed by their monitors' reports.

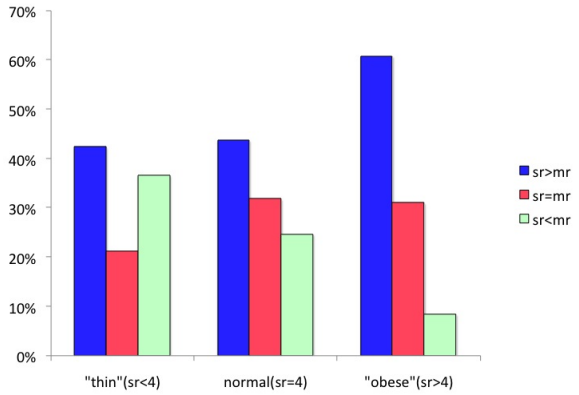
The following graph (Figure 5) shows, for each of the main obesity categories [20], the percentage of people who underestimate (self-report<monitor's report), accurately-estimate (self-report=monitor's report) or overestimate (self-report>monitor's report) their own obesity level compared to the monitor's evaluation.

It is striking to note that the percentage of people (62%) who overestimate their obesity level in the "obese"category is much higher than the percentage of "thin" subjects (42%) or the percentage of subjects who categorize themselves as "normal" (44%). A Mann-Whitney test[21] confirms that both percentage differences are statistically significant with $Pr > |z| = 0.028$ and $Pr > |z| =$

[20]In order to facilitate this analysis we aggregate obesity levels 1, 2 and 3 into the "thin"category and levels 5, 6 and 7 into the "obese"category.

[21]In order to perform the test, the binary variable *overestimation* (=1 if sr>mr, =0 otherwise) is used.

Figure 5: Subjects' reports compared to Monitors' reports



Note: *sr* stands for self-reports while *mr* stands for monitors' reports on obesity.

0.010, respectively.

Taking into account the findings in social psychology concerning the robust negative relation between perceived weight and self-esteem (Miller & Downey [20]), we believe that people who *overestimate* their own obesity level probably have lower self-esteem even when compared to other (both underestimating and accurate-estimating) obese people.

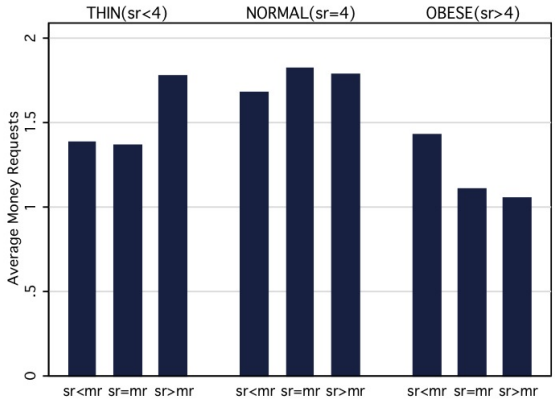
Therefore, according to our experimental setting, it is expected that this particular type of obese person would request a lower amount of money. Focusing on the far right section of the following graph (Figure 5) where the average money requests by different types (according to "misestimation") of obese people is described, it is confirmed that overestimating-obesity obese people (sr>mr) request the least money compared to the other obese types.

Nevertheless, the negative trend illustrated above was not shown to be significant neither in Mann-Whitney tests, nor when included as a regressor[22] in our regression analysis.

The results of the variable *beauty* did not meet our initial expectations. Unlike the obese people, the "non-beautiful" people did not request, on average, a significantly different amount of money than beautiful or normal people. In our opinion, this result can be explained by how people perceive beauty. As has been shown in Figure 2, only 12 out of 269 subjects (4.5%) self-report that they belong to beauty level 1,2 or 3, while the mean of our sample is almost 5. This means that either there are not so many "ugly" people in the world or that people tend to overestimate their beauty level. Given that the second explanation is

[22]To this aim, a dummy variable indicating obesity overestimation was introduced in the basic regression models.

Figure 6: Money Requests by Obesity Misestimation



Note: *sr* stands for self-reports while *mr* stands for monitors' reports on obesity

more convincing, we conclude that beauty is a very subjective measure and that people set their own standards, especially when judging themselves.

A further explanation for this is that beauty, compared to obesity, is a less-observable trait. Therefore, it is easier for a person not to admit or even hide that he/she is "ugly", while it is almost impossible to do the same when one is overweight.

At this point let us emphasize the fact that our measure of beauty was designed to capture subjects' self-perceptions on beauty. Although the distribution of this variable was not as expected and it did not have the expected impact on the dependent variable, it correctly illustrated how people feel about themselves, which is the most *relative/relevant (relativo o relevante?)* factor when talking about internalization process.

Regarding the no-gender effect, a possible explanation is that females suffer discrimination in particular environments. Therefore, if they do develop differential behavior, it would be within these particular contexts. This argument is in line with the literature in experimental economics which supports that females' decisions are more context dependent (see Croson & Gneezy[7]).

Nevertheless, as shown in the last part of the results, obesity appears to be significant only in females' requests, while obesity was not significant at all in the male sample. An explanation for this result can be found in the studies by Hatfield et al.[16] and Zebrowitz[29] who claim that human culture values attractiveness more in females than in males.

The overall conclusion of this study is that relatively obese people demand less or they demand nothing compared to non-obese. An implication of this result is that it is more rare for obese people to spontaneously "grab the chance" to have a positive outcome. Moreover, even if they do grab it, they will be more

modest, gaining the lower possible benefit compared to non-obese people.

Even though this is an experimental study, our result can not be compared to other experiments which are usually of an interactive bargaining character between two or more people. In our setting, the second "player" is an institution which provides money for subjects' effort. Nevertheless, we believe that we have created conditions that faithfully reflect negotiations between a person and an institution.

A real life implication of our results could be a salary negotiation between a potential employee and his/her employer (or the human resource manager). Obviously, the second participant in the negotiation simply represents an institution, just as the mediator in our setting represented the University of Granada. Regarding our research question, it is similar to a question that employers commonly ask job candidates: How much money would you like to receive for doing this particular job? The result of this study claims that people who feel they are obese will begin negotiations at a more disadvantageous or lower point than non-obese people and are therefore more likely to end up with a lower salary.

Finally, another implication could also be related to the decision to employ people as negotiatiors. Our results suggest that it would be wise to select non-obese people for such a job.

To sum up, we attempted to shed light on the meaning of internalized self-discrimination and the physical traits or gender characteristics that are most related to this type of discrimination. However, important questions remain to be answered regarding the extent to which self-discrimination has an impact on decisions by discriminated people and under what particular conceptual contexts the impact is larger.

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Appendices

Appendix 1: Detailed chronological description of the methodological process.

Three types of subjects participated in the experiment.

a) 2 head researchers (MR): Both researchers are members of the Department of Economic Theory and History at the University of Granada with broad experience in the experimental field. After designing the experiment, their main concern was to "train" the mediators to conduct an economic experiment correctly and inform them about basic experimental protocols related to this particular experiment. The researchers accomplished their mission through the analysis of the data and the writing of this report.

b) 27 mediators-interviewers (med): All the mediators were students enrolled in the course titled "Economic Analysis of Collective Relations" (2007) at the University of Granada. None of the mediators-interviewers had past experience in the experimental field aside from this particular class. Given that their participation as interviewers in the experiment had a solely pedagogical aim, they received a final grade for a presentation based on the results/conclusions drawn from the data. Communication between the interviewers and researchers mainly occurred during the 3-hour class. Some additional instructions and data were provided via e-mail.

c) 269 subjects (subj): All the subjects were related to the interviewers in three different ways: 1) friends (59.6%); 2) family members (20%); and 3) colleagues (20.4%). While the experiment was being conducted (answering questionnaires), the subjects were in their natural environment.

Step 1. Starting date: October 23, 2007

A. General experimental instructions provided to mediators (Duration: 3 hours) The mediators received general information about experimental procedures, emphasizing important features of experiments such as anonymity, protection of personal data, the no-deception rule, payments, etc.

Step 2. Starting date: October 30, 2007

A. Specific experimental instructions provided to mediators (Duration: 3 hours) Mediators were informed that they were going to participate as interviewers in a socioeconomic experiment. To do so, each of the interviewers was asked to find 10 subjects willing to answer some questionnaires. At this point, the only information interviewers received and had to pass on to their subjects was as follows:

1. Both subjects and interviewers are required to fill out a questionnaire of a socioeconomic nature. The questionnaire takes subjects 15 minutes to complete and interviewers about 1 hour.

2. The questionnaires are totally anonymous (the completed questionnaires will be returned to the head researchers in sealed envelopes). The data will be extracted in a confidential manner and recoded by the 2 chief researchers to prevent interviewers from identifying their subjects in any of the remaining steps of the procedure.

3. Interviewers must ensure that the subjects understand that the experiment is of a socioeconomic nature by emphasizing the fact that subjects will receive money for their participation at the end of the experiment.

   At this point, more detailed instructions were given to the interviewers (about who was sponsoring the experiment and why) in order convince them that the payments would be made and would not affect any of the interviewers' or researchers' budgets.

B. Searching for subjects and drawing up a list of names. (Duration: 1 week) The interviewers were required to find 10 subjects within one week's time who were willing to participate in the experiment according to the above instructions. By the end of the week, interviewers were asked to submit a copy of a coded list of the subjects' names in order to protect their anonymity.

Step 3. Starting date: November 6, 2007

A. Subjects' list, interviewers' questionnaires(Q1) (see appendix 6) and some additional instructions. (Duration: 3 hours) During a 3-hour class, researchers handed in a copy of the interviewers' coded name list. The researchers kept another copy in order to remember the order they had assigned to each subject in order to complete questionnaire Q1. In Q1, the interviewers had to answer questions related to the physical and psychological characteristics of each of their subjects (part A). A modified version of the Sally-Ann task (a well-known psychological experiment) was included in the questionnaire for distracting subjects attention (part B).

Moreover, highly detailed instructions were given to interviewers about each of the questions for two main reasons. First, the researchers wanted to be sure that the interviewers had understood the questions correctly so that they would give the most appropriate answer. Second, the researchers wanted to prepare the interviewers so that they would be able to solve any problems that the subjects might encounter when answering questionnaire Q2 (see appendix 7) under the supervision of their corresponding interviewer (the researchers were not present at this phase). It should be emphasized that, at this point, the researchers did not yet allow the interviewers to know that they were going to answer the same questions as their subjects (although in this case the subjects described their own selves). The reason why the researchers decided not to let this information become common-knowledge is because most of the interviewers and subjects were either friends or family members and such information may induce interviewers to answer in a more "friendly" way.

After the interviewers filled out questionnaire Q1 and handed them back to the researchers, they were given questionnaire Q2. Each interviewer received 10 Q2 questionnaires and 10 envelopes to deliver to their subjects. Furthermore, the interviewers were given additional instructions related to part C of questionnaire Q2, which was not included in questionnaire Q1. At this point, the subjects were clearly informed that they could earn some money from this process by answering the corresponding question in part C of questionnaire Q2, which asks subjects to provide their full home-address in order to mail them the money. They were finally told that the experiment was completely anonymous and the subjects' answers must be returned in sealed envelopes.

B. Handing out and receiving back answers for questionnaires Q2 (Duration: 2 weeks) Over the next two weeks, the interviewers were required to deliver questionnaire Q2 and the envelope to their subjects and explain how to fill them out following the researchers' instructions.

Step 4. Starting date: November 20, 2007

A. Receiving back questionnaires Q2 and discussion. (Duration: 3 hours) At this stage, the interviewers returned the sealed envelopes with the subjects' answers and had time to discuss any problems that may have arisen during the process. In general, the interviewers encountered no problems regarding the comprehension and answering of the Q2 questionnaires. In some cases, the interviewers were asked to give additional explanations about the Sally-Ann task. However, as the interviewers had been properly trained (and had also carried out the same task), they were able to answer the subjects' questions. Moreover, most of the subjects asked the interviewers to confirm if the question regarding payment for their participation in the experiment was true (part C in questionnaire Q2). Once again, the interviewers were able to clarify that not only was the question totally true, but also that the money had been provided by a governmental/local research institute that had nothing to do with either the researchers' or the interviewers' budget. This reaction by the subjects was expected since the experiment was held in the subjects' natural environment and their interviewers were mostly friends or family members. For this reason, the researchers insisted that consistent instructions be given in advance.

B. Data extraction (Duration: 2 weeks) Over the following two weeks, raw data were extracted from both the Q1 and the Q2 questionnaires. The data were also recoded and given back to the interviewers for further elaboration as part of a project they were required to do for the course on Economic Analysis of Collective Relations, thus protecting the anonymity of the subjects.

Step 5. Starting date: December 4, 2007

A.Data delivery and payment instructions (Duration: 3 hours) In this stage, the raw-recoded data was given to the interviewers together with

a description of the variables. As regards the payment process, the majority of the interviewers preferred to receive the subjects' payments on their behalf instead of mailing the money to them. To do so, the interviewers were asked to submit, within two weeks time, signed copies of the ID cards for those subjects who asked for money in the corresponding question in part C of questionnaire Q2.

B. Collecting subjects IDs (Duration: 2 weeks) Over the following two weeks, the interviewers were asked to copy the subjects' ID cards and submit them to the researchers in order to receive the payments.

Step 6. Starting date: December 18, 2007

A. Payments (Duration: 3 hours) After submitting a signed copy of the subjects' ID cards to the researchers, the interviewers received the payments on behalf of their subjects . The payment was correlated to part C of questionnaire Q2. Of course it was impossible for subjects to receive a payment for the exact amount of money they requested. The researchers decided to pay: a) 10 euros to the subjects who requested 10 or more euros (in part C); and b) the exact amount to the subjects who requested less than 10 euros. The interviewers paid 89 subjects a total of 854 euros.

Appendix 2: Nonparametric test analysis.

In order to test if the differences illustrated in the *Preliminary Results* section were also significant, we performed a nonparametric test for trend across ordered groups. The test is a useful adjustment of the Kruskal-Wallis test for ordered variables and was first used by Cuzick[23]. In the following table we report Cuzick's z-statistic and the corresponding significance level. The test was performed separately for the three variables $money(.), money(1/0)$ and $money(>0)$ generated in the previous section. Cuzick's z-statistic tests the null hypothesis that all medians (across the different groups of *beauty*[24] or *obesity*) are the same ($Ho : \theta 1 = \theta 2 = \ldots = \theta k$) against the alternative hypothesis that the medians are ordered in magnitude ($Ha : \theta 1 <= \theta 2 <= \ldots <= \theta k$). If the alternative hypothesis is true, then at least one of the differences is a strict inequality ($>$).

Table 2: CUZICK-TEST

Variable	$money(.)$		$money(1/0)$		$money(>0)$	
	z	$Pr > \|z\|$	z	$Pr > \|z\|$	z	$Pr > \|z\|$
obesity	-1.96	0.051	-1.11	0.267	-2.32	0.021
beauty	2.12	0.034	2.25	0.025	0.24	0.807
female	-0.08	0.933	1.46	0.144	-0.81	0.418

As we can see regarding the variable $money(.)$, a significant positive trend among the different groups of beauty and a negative trend among the different groups of obesity is confirmed. Nevertheless, this result holds only partially for $money(1/0)$ and $money(>0)$. For $money(1/0)$ in particular, only the positive trend on *beauty* is significant, while for $money(>0)$ only the negative trend on *obesity* is significant [25]. Finally, no gender difference[26] is confirmed for any dependent variable.

Unfortunately, in the case of rejecting the null hypothesis, the test does not give any information about how many or which groups have ordered medians. In order to disentangle the exact trends, we performed separate Mann-Whitney tests, testing for significant differences between two groups in each test

When performing the test for the variable $money(.)$ for all possible *obesity* pairs of groups, we found a significant (negative) difference between the medians of group 4 and group 5 ($Pr. > |z| = 0.022$) and the medians of group 4 and group 6 ($Pr. > |z| = 0.025$). This result, which supports the claim in observation A, indicates that:

[23] The Jonckheere-Terpstra test is a similar test in which the majority of cases confirmed Cuzick's test results.

[24] Note that when we refer to group "x" of a particular variable, we mean the group of subjects that have self reported level "x" on the Likert scale question in Q2 for this particular variable.

[25] We also perform the test for the variables *ambition* and *self-confidence*. A positive trend is confirmed only for ambition and only when money ($Pr > |z| = 0.035$) and $money(>0)(Pr > |z| = 0.074)$ are tested.

[26] The Cuzick-test is equal to the Mann-Whitney test for the binary variable *female*.

Nonparametric Result 1: People who consider themselves *obese* (level 5 or 6) request a lower amount of money than people who consider themselves neither *obese* nor *thin* (level 4).

For the variable *beauty*, the corresponding pairs that reveal a positive trend are group 1 with 7 ($Pr. > |z| = 0.079$), group 3 with 7 ($Pr. > |z| = 0.064$), and group 4 with 7 ($Pr. > |z| = 0.086$). In this case we have to take into account that groups 1, 3 and 7 included only 2, 9 and 10 observations, respectively, while group 4 included 97 observations. This also explains why all the above trends are only significant at the 10% level.

Nonparametric Result 2: People who consider themselves *beautiful* or *handsome* (level 7) request significantly more money than people who consider themselves either "ugly" (level 1 or 3) or *average beautiful* (level 4).

Moreover, regarding gender, the nonparametric tests do not confirm any significant difference in the corresponding money requests. Nevertheless, by splitting the data into two subsamples for males and females and replicating the above tests by gender, we realize that the negative trend between *obesity* and money requests holds only in the female sample [27]. This finding leads to the following conclusion:

Nonparametric Result 3: Although no significant gender difference was found regarding the amount of money requested, there is evidence that the negative trend between money requests and *obesity* or *dobese* is mainly due to the participation of females in the sample.

[27] For the variable *money*(.), *money*(1/0) and *money*(> 0), level 5 and 6 "obese" females request significantly less money than "normal" females in level 4. For the variables *money*(.) and *money*(1/0), "beautiful" males in level 7 request significanlty more money than "normal" males in level 4 or "ugly" males in levels 1 and 2, but very few observations are included in these categories.

Appendix 3: Interval and Tobit Regressions.

Table 5: Interval and Tobit Regressions

	Interval Regressions		Tobit Regressions	
Variable	$money - interv(.)$		$money - cont.$	
	1(a)	1(b)	1(a)	1(b)
obesity	-8.27*		-8.61*	
	(5.08)		(5.10)	
dobese		-29.27***		-28.19***
		(9.67)		(9.63)
dthin		-14.64		13.14
		(15.38)		(15.29)
beauty	6.76	5.80	6.96	6.05
	(6.52)	(6.47)	(6.65)	(6.59)
female	-1.64	-1.40	-1.18	.921
	(12.66)	(12.83)	(12.68)	(12.86)
age	-10.32**	-10.19**	-10.39**	-10.27**
	(4.66)	(4.45)	(4.63)	(.080)
age^2	.112*	.109*	.113*	.110*
	(.061)	(.059)	(.61)	(.059)
wage	.000	.001	-.0002	-.0007
	(.007)	(.008)	(.008)	(.008)
ambition	8.27*	8.47*	8.40*	8.62*
	(4.87)	(4.86)	(.123)	(4.81)
self-conf	.567	.066	.448	.053
	(.458)	(4.54)	(.458)	(.453)
constant	(164.64**)	144.27**)	165.53**	143.11**
	(79.75)	(71.24)	(79.41	(70.65)
N	269	269	269	269
cens.left	115	115	115	115
cens.right	24	24	24	24
$Pr > chi^2$	0.0283	0.0048	0.0275	0.0018

NOTE: SE and Sign. level as previous tables. Left-censored observations (154) if $money(.) = 0$ and right-censored observations (24) if $money(.) > 0$

Appendix 4: Adding control variables in Ordered Probit Regression 1(b).

Table 5: Ordered Probit Regressions

Variable	*money*(.)				
	1(b_1)	1(b_2)	1(b_3)	1(b_4)	1(b_5)
dobese	-.42***	-.42***	-.43***	-.43***	-.42***
	(.13)	(.13)	(.13)	(.13)	(.13)
dthin	-.15	-.23	-.17	-.14	-.15
	(.20)	(.20)	(.20)	(.20)	(.20)
beauty	.15**	.11	.13*	.11	.14*
	(.07)	(.07)	(.07)	(.07)	(.07)
female	-.01	-.05	-.10	.03	.01
	(.14)	(.14)	(.14)	(.15)	(.14)
age		-.13**			
		(.06)			
age^2		.001*			
		(.000)			
wage			-.0002**		
			.0001		
ambition				.10**	
				(.05)	
self-conf					.03
					(.05)
N	269	269	269	269	269
$Pr > chi^2$	0.0006	0.0000	0.0001	0.0017	0.0017

NOTE: SE and Sign. level as previous tables.

Appendix 5: Probit Regressions by Gender.

Table 6(a): Probit Regressions by Gender

	Female Sample					
Variable	*money*(.)		*money*(1/0)		*money*(> 0)	
	1(a)	1(b)	2(a)	2(b)	3(a)	3(b)
obesity	-.117		-.044		-.281*	
	(.094)		(.114)		(.164)	
dobese		-.685***		-.624**		-.685***
		(.208)		(.266)		(.208)
dthin		-.415		-.566		-.415
		(.315)		(.341)		(.315)
beauty	.077	.068	.102	.089	-.040	.068
	(.106)	(.102)	(.109)	(.105)	.(138)	(.102)
age	-.088	-.077	-.076	-.061	-.097	-.076
	(.070)	(.063)	(.080)	(.073)	(.072)	(.064)
age^2	.001	.001	..001	.001	.001	.001
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
wage	-.000	-.000	-.0001	-.0002	.000	-.000
	(.0001)	(.000)	(.0001)	(.0001)	(.0002)	(.0001)
ambition	.089	.094	.077	.081	.080	.094
	(.080)	(.081)	(.095)	(.098)	(.075)	(.082)
self-conf	.006	-.017	-.038	-.071	.119	-0.17
	(.084)	(.083)	(.084)	(.081)	(.076)	(.083)
constant			1.321	1.42		
			(1.558	(1.408)		
N	148	148	148	148	88	88
$Pr > chi2$	0.057	0.0000	0.0805	0.0000	0.0326	0.0013

Note: Standard errors (adjusted for 27 clusters ininterviewers) of parameter estimates in parentheses. Significance level aremarked with * for $p <= 0.10$, ** for $p <= 0.05$, and *** for $p <= 0.01$.

Table 6(b): Probit Regressions by Gender

	Male Sample					
Variable	*money*(.)		*money*(1/0)		*money*(> 0)	
	1(a)	1(b)	2(a)	2(b)	3(a)	3(b)
obesity	-.093		-.064		-.281	
	(.096)		(.140)		(.164)	
dobese		-.163		-.111		-.149
		(.193)		(.225)		(.256)
dthin		-.059		-.192		.143
		(.273)		(.360)		(.255)
beauty	.130	.121	.250*	.241*	-.040	-.087
	(.131)	(.132)	(.134)	(.136)	.(138)	(.169)
age	-.192***	-.196***	-.228***	-.235***	-.097	-.120
	(.076)	(.077)	(.076)	(.080)	(.072)	(.149)
age^2	.002**	.002**	.002***	.003***	.001	.001
	(.001)	(.001)	(.001)	(.001)	(.001)	(.002)
wage	-.000	.000	-.0001	-.0002	.0004**	-.000**
	(.0001)	(.000)	(.0001)	(.0001)	(.0002)	(.0002)
ambition	.091	.090	-.031	-.036	.080	.210
	(.106)	(.107)	(.123)	(.123)	(.075)	(.143)
self-conf	.045	.050	.189*	.196*	.119	-0.147
	(.095)	(.099)	(.110)	(.116)	(.076)	(.124)
constant			2.959**	2.951*		
			(1.509	(1.665)		
N	121	121	121	121	66	66
$Pr > chi2$	0.0020	0.0048	0.0000	0.0001	0.0005	0.0005

Note: Standard errors (adjusted for 27 clusters ininterviewers) of parameter estimates in parentheses. Significance level aremarked with * for $p <= 0.10$, ** for $p <= 0.05$, and *** for $p <= 0.01$.

Appendix 6: Questionnaire Q1.

An experiment of the students of the course
ECONOMIC ANALYSIS OF COLLECTIVE
RELATIONS 2007

QUESTIONNAIRE

Interviewer: . . . . . .
Profesor in charge: Pablo Brañas Garza
Assistant Profesor: Antonios Proestakis

PART 1

With the following questions you are going to describe your friends' physical characteristics and their personality. Please put the name list in front of you and check the number that describes better the level of the following characteristics for each one of your subjects:

Regarding their physical characteristics:

a) ugly :... 1... 2..... 3..... 4..... 5..... 6..... 7... handsome/beautiful

Subject 1:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 2:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 3:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 4:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 5:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 6:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 7:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 8:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 9:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Subject 10:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

b) thin :... 1... 2..... 3..... 4..... 5..... 6..... 7... obese

Subject 1:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

. ⋮

Subject 10 :..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

c) badly dressed :... 1... 2... 3... 4 ... 5... 6 ... 7... well-dressed

Subject 1:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

. ⋮

Subject 10 :..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

d) short :... 1... 2... 3... 4 ... 5... 6 ... 7... tall

Subject 1:..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

. ⋮

Subject 10 :..... 1..... 2..... 3..... 4..... 5..... 6..... 7.....

Regarding their personality:

e) shy :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . leader

Subject 1:. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

. ⋮

Subject 10 :. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

f) introverted :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . very social

Subject 1:. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

. ⋮

Subject 10 :. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

g) anodyne :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7creative

Subject 1:. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

. ⋮

Subject 10 :. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

h) bad person :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . nice person

Subject 1:. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

. ⋮

Subject 10 :. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

i) no ambitious :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . very ambitious

Subject 1:. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

. ⋮

Subject 10 :. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

j) no self-confident :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . very self-confident

Subject 1:. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

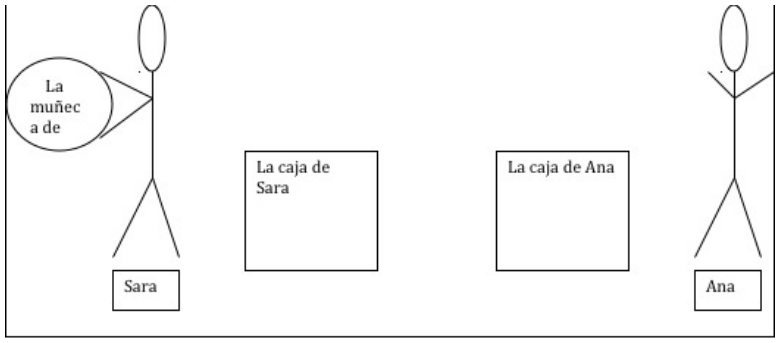
. ⋮

Subject 10 :. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

PART 2

Observe the following figures and answer the corresponded question

Image 1:	Sara was playing with her doll when Anna arrived.
Image 2:	Before Sara leave to school, she placed her doll between the two boxes.



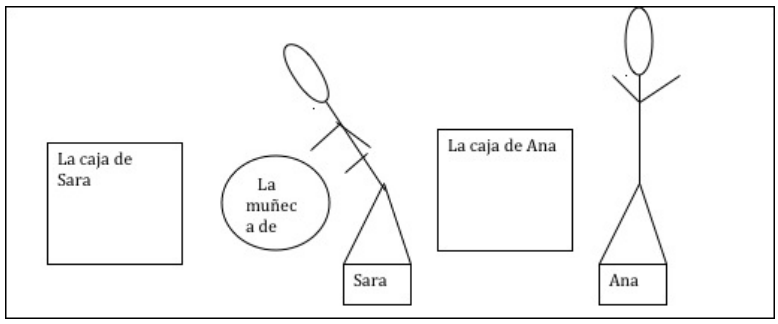


Image 3: While Sara was at school, Anna put Sara´s doll in one of the two boxes.

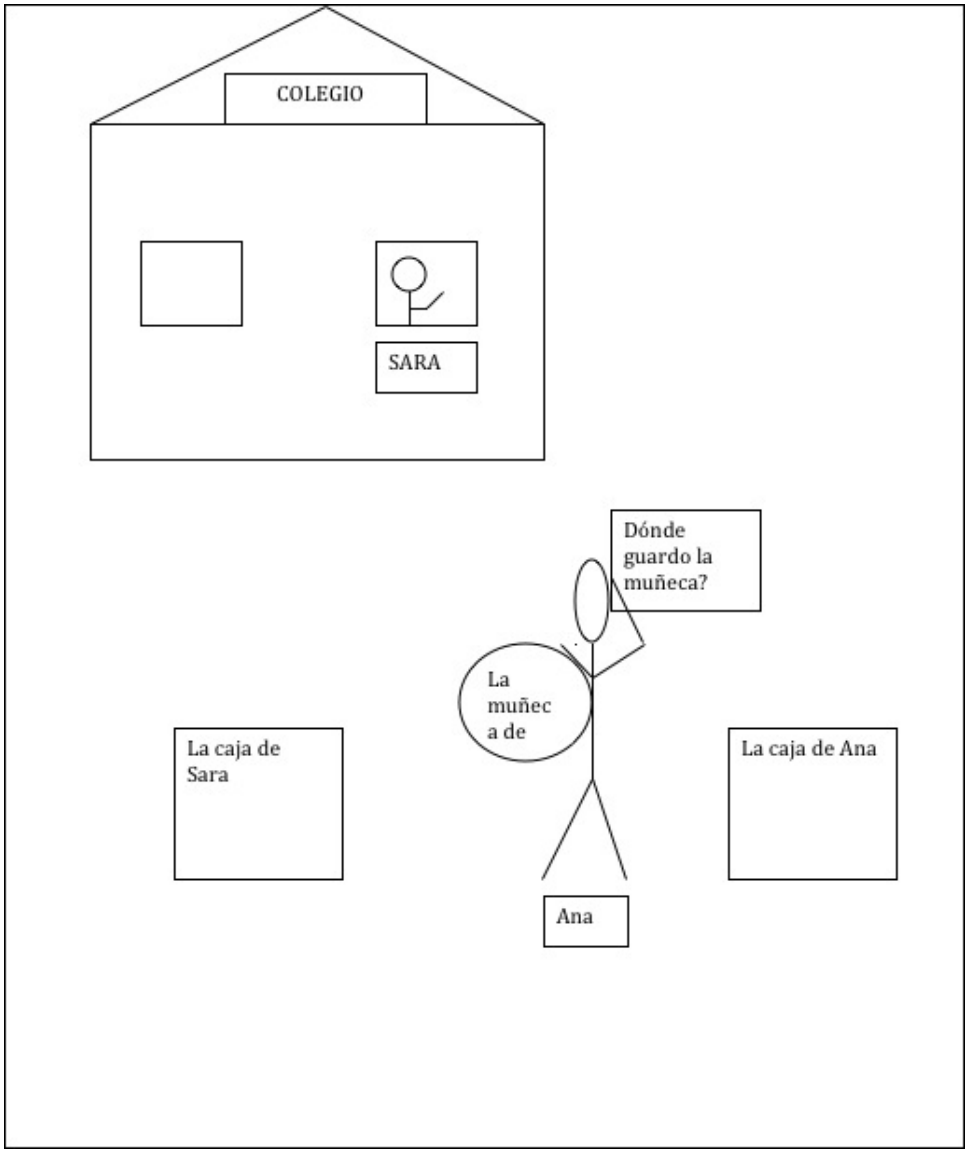
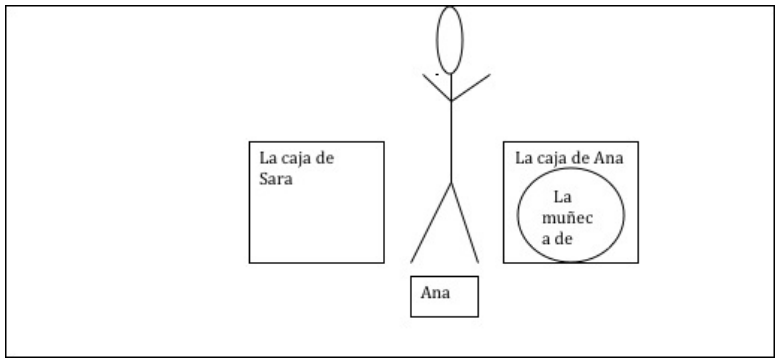
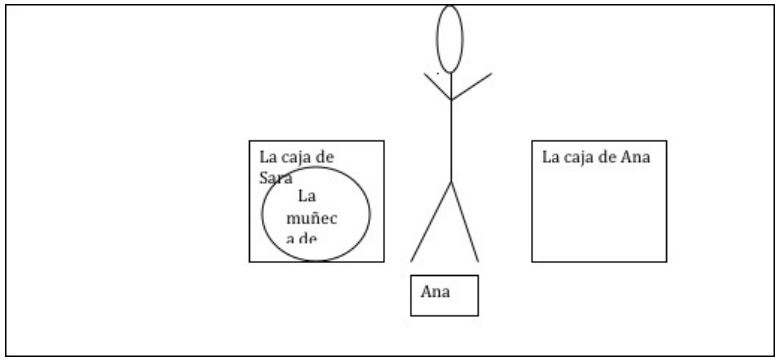


Image 4a: Anna can place the doll in her own box, or…

Image 4b: Anna can place the doll In Sara´s box





Imagine that Sara is one (each time) of your subjects (Anna could be anyone else but one of the other subjects). Sara arrives back from school and she wants to play with her doll. Where is she going to look for it? Please mark the letter (a-k) that corresponds to the action that characterizes better your subjects behavior.

Subject 1 looks for the doll
. . . a. . . b. . . c. . . d . . . e. . . f . . . g. . . h. . . i. . . j. . . k. . .
. ⋮
Subject 10 looks for the doll
. . . a. . . b. . . c. . . d . . . e. . . f . . . g. . . h. . . i. . . j. . . k. . .

a) In her own box because she knows (100%, Anna's box 0%) that Anna has put it there.

b) In her own box because she almost does not have any doubts (90%, Anna's box 10%) that Anna has put it there.

c) In her own box because she is very sure (80%, Anna's box 20%) that Anna has put it there.

d) In her own box because but she is not so sure (70%, Anna's box 30%) that Anna has put it there.

e) In her own box because she thinks (60%, Anna's box 40%) that Anna has put it there.

f) In any of the two boxes (50%, Anna's box 50%) since she does not know at all where Anna has put it.

g) In Anna's box because she thinks (60%, Sara's box 40%) that Anna has place it there.

h) In Anna's box because she is quite sure (70%, Sara's box 30%) that Anna has place it there.

i) In Anna's box because she is very sure (80%, Sara's box 20%) that Anna has place it there.

j) In Anna's box because she almost does not have any doubt (90%, Sara's box 10%) that Anna has place it there.

k) In Anna's box because she knows (100%, Sara's box 0%) that Anna has place it there.

PART 3

Description of the relation with subjects.

a) What is your relation with each one of your subjects (brother, spouse, flatmate, partner, boyfriend, etc.) :

Subject 1:. . . . . .

. ⋮

Subject 10 :. . . . . .

b) Mark the level that describes better your relation with each one of your subjects (independently of being friends or family), according to the following scale of relationship.

flat relationship:. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . close relationship

Subject 1:. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

. ⋮

Subject 10 :. . . . . 1. . . . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . . . .

c) In the case that some of your subjects work, please fill in the following table:

Subject 1works in . . . . . and I think that he/she earns about . . . . . .

. ⋮

Subject 1works in . . . . . and I think that he/she earns about . . . . . .

Appendix 7: Questionnaire Q2.

An experiment of the students of the course
ECONOMIC ANALYSIS OF COLLECTIVE
RELATIONS 2007

QUESTIONNAIRE

Interviewee(subject's code, not the NAME): . . . . . .
Interviewer: . . . . . .
Profesor in charge: Pablo Brañas Garza
Assistant Profesor: Antonios Proestakis

PART 1

In the following questions you are asked to describe your physical characteristics and your personality. Please check the number that describes better the level of the following characteristics:

Regarding your physical characteristics, you consider yourself:

a) ugly :. . . 1. . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . handsome/beautiful

b) thin :. . . 1. . . 2. . . . . 3. . . . . 4. . . . . 5. . . . . 6. . . . . 7. . . obese

c) badly dressed :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . well-dressed

d) short :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . tall

Regarding your personality, you consider yourself:

e) shy :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . leader

f) introverted :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . very social

g) anodyne :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7creative

h) bad person :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . nice person

i) no ambitious :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . very ambitious

j) no self-confident :. . . 1. . . 2. . . 3. . . 4 . . . 5. . . 6 . . . 7. . . very self-confident

PART 2

Observe the following figures and answer the corresponded questions:

SAME PICTURES AS APPENDIX 6

A. Imagine that Sara and Anna could be any person. Sara arrives back from school and she wants to play with her doll. Where is she going to look for it? Please mark the corresponded letter (a-k) (you must mark only one).

a) In her own box because she knows (100%, Anna's box 0%) that Anna has put it there.

b) In her own box because she almost does not have any doubt (90%, Anna's box 10%) that Anna has put it there.

c) In her own box because she is very sure (80%, Anna's box 20%) that Anna has put it there.

d) In her own box although she is not so sure (70%, Anna's box 30%) that Anna has put it there.

e) In her own box because she thinks (60%, Anna's box 40%) that Anna has put it there.

f) In any of the two boxes (50%, Anna's box 50%) since she does not know at all where Anna has put it.

g) In Anna's box because she thinks (60%, Sara's box 40%) that Anna has place it there.

h) In Anna's box because she is quite sure (70%, Sara's box 30%) that Anna has place it there.

i) In Anna's box because she is very sure (80%, Sara's box 20%) that Anna has place it there.

j) In Anna's box because she almost does not have any doubt (90%, Sara's box 10%) that Anna has place it there.

k) In Anna's box because she knows (100%, Sara's box 0%) that Anna has place it there.

B. Imagine that YOU are Sara. Where are you going to look for your doll? Please mark the corresponded letter (l-v) (you must mark only one).

a) In my own box because I know (100%, Anna's box 0%) that Anna has put it there.

b) In my own box because I almost do not have any doubt (90%, Anna's box 10%) that Anna has put it there.

c) In my own box because I ma very sure (80%, Anna's box 20%) that Anna has put it there.

d) In my own box although I am not so sure (70%, Anna's box 30%) that Anna has put it there.

e) In my own box because I think (60%, Anna's box 40%) that Anna has put it there.

f) In any of the two boxes (50%, Anna's box 50%) since I do not know at all where Anna has put it.

g) In Anna's box because I think (60%, Sara's box 40%) that Anna has place it there.

h) In Anna's box because I am quite sure (70%, Sara's box 30%) that Anna has place it there.

i) In Anna's box because I am very sure (80%, Sara's box 20%) that Anna has place it there.

j) In Anna's box because I almost do not have any doubt (90%, Sara's box 10%) that Anna has place it there.

k) In Anna's box because I know(100%, Sara's box 0%) that Anna has place it there.

PART 3

At this moment, we would like to know the amount of money that you would like to request as a compensation for the effort you made to complete the questionnaire and for the information you provide us. The money disposed for this research project is given by the Spanish State. Do not forget that this money does not belong neither to us (neither affect us) nor to the Spanish State.

How much money would you like to receive for filling out this questionnaire?

I request the following amount of money: ..... euros

In the attached stick we would like you to fill in your full name and address in order for us to send your money by mail. Obviously, this is optional, but in the case you want to receive your payment it is the only way. Please read the following compromise regarding data protection.

PAPER STICK HERE

Please, provide us with your phone number or e-mail address (or both), in order to contact you in about two weeks time for confirming the reception of the money sent.

Mobile number:

E-mail:

According to the *Law of Data Protection*, the information provided in the previous pages is not going to be corresponded with your personal data. Finally, in

Economics Faculty, there are constantly experiments organized. In these experiments, of various types (on-line, by mail, presence, etc) different types of people participate and of course money are earned depending on participantsperformance on the tasks. If you like it, we can include your personal data in our data base in order to inform you when you can earn some money. In order to be more operative and no annoying you for things that you are not interested in, we ask you to tell us from which amount of money you would be interested in participating.

- Are you interested in participating in one of these? YES..... NO.....
- In the case of being interesting, from which amount money would you willing to participate?.....
- If you had to come to the Faculty of Economics (Cartuja), would you do it? YES..... NO.....

  Thank you very much for your effort and help, *Pablo Brañas Garza and*

  Antonios Proestakis, University of Granada.