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Abstract

Based on an experiment conducted with undergraduate students from three different majors (business economics, psychology and engineering), we study the relationship between honesty and altruism. We asked participants to toss a coin with a black and a white side. Participants won a chocolate if they reported the white outcome, whereas no gift was given if they reported black. It was done privately, so they could decide whether or not to cheat. Reporting the prize-losing side (that is, being honest when losing) could result in 3 effects, depending on the 3 conditions run: (i) no penalty, (ii) paying a penalty, or (iii) paying a penalty with an altruistic end (a donation to a non-profit organization). The amount of penalty was decided by each participant and the payment was also done in private. Although we cannot detect dishonesty on an individual level, we use statistical inference to determine cheating behavior. We find suggestive evidence that economics is significantly the most dishonest major when no penalty is involved. With economists in the lead, the results also indicate that all majors cheat if a penalty is requested. Surprisingly, when altruism plays a role, economists tend to have the most altruistic behavior, followed by psychologists. However, altruism does not reduce engineers' propensity to lie. No significant differences are found regarding gender.

Keywords: cheating, altruism, penalty, donation.

JEL classification: A12, D03, D64.

PsycINFO classification: 3120.

1. Introduction

Not a single day goes by without reading in the newspaper or watching on TV a new case of accounting fraud, audit fraud, tax evasion or corruption in the world. What does it mean? That someone cheated again. The underlying conflict can be pinned down to each subject's decision of being honest versus behaving advantageously. Let's ask yourself: "have I ever told a lie, even a very innocent one?". Probably, if you are honest of course, your thought will be: "yes, maybe daily". This implies that cheating behavior is undoubtedly widespread, and is damaging not only individuals' own trustworthiness but also economy's in general, causing extraordinary economic and social costs (Mazar and Ariely, 2006). For this reason, a deeper understanding of this topic continues to be an essential path to follow. There is a substantial body of literature related to experimental studies in Economics about dishonesty (e.g. Fischbacher and Heusi, 2013; Gneezy, 2005; Houser, Vetter and Winter, 2012; Mazar, Amir and Ariely, 2008; Pascual-Ezama, Prelec and Dunfield, 2013), in which researchers have found that people tend to lie and have tried to determine the circumstances that cause this dishonest behavior. Our paper contributes to this ethical dilemma investigating the relationship between cheating and penalties, both simple monetary penalties and altruistic monetary penalties, and, specifically, the role played by major (business economics, psychology and engineering) and gender.

According to a classic approach of the standard economic model, everyone behaves as *homo economicus*, which implies that our dishonest actions would depend on a simple cost-benefit analysis. However, a wide amount of evidence does not support this statement. Many subjects refrain from lying, even if dishonesty does not hurt anyone or no cost is associated to it (Gneezy, 2005; Hurkens and Kartik, 2009; Sutter, 2009). Those individuals are lie-averse, and their aversion increases with the size of the lie (Lundquist

et al., 2009). Consistently, research has suggested that people try to find internal psychological reward mechanisms in order to self-justify unethical behaviors (Mazar and Ariely, 2006). Theoretically, cheating can be explained by various theories, although the most extended one is the self-concept maintenance theory (Mazar et al., 2008). It supports the notion that when deciding whether to lie or behave ethically, individuals attempt to find the balance between obtaining the highest payoff possible and maintaining a positive self-image. This theory is supported by extensive amount of empirical evidence (Gneezy et al., 2012; Grossman, 2010; Lazear, Malmendier and Weber, 2012). In line with this, studies confirm that the self-maintenance concept can lead people to behave more ethically (Fischbacher and Heusi, 2013; Kunda, 1990; Mazar et al., 2008; Shalvi et al., 2011), as well as internalized social norms can guide respondents to a preference of honesty (Pruckner and Sausgruber, 2013).

Past researchers have found that propensity of people to lie depends on different individual and contextual factors. In this work, we have focused on the major studied and the analysis of its empirical effects on cheating. The question about how the fact of studying one major or another affects cheating has been widely researched, especially for economics. Literature has showed up that there is a correlation between major and truth-telling (e.g Bowers, 1964; Frank, Gilovich and Regan, 1993). However, evidence that relates both concepts is not unanimous and the debate still persists. There is a line of related research studies that justifies the notion that economics students cheat more than others. It starts with Bowers (1964), who revealed that business and engineers are the profiles with the highest rates of cheating due to more demanding performance goals. More concretely, Frank, et al. (1993) emphasized that the self-interest model tends to inhibit cooperation, leading economists to behave more self-interestedly than others. They argued that economists learn to act uncooperatively in social dilemmas as a result

of their training in economics, expecting everyone to behave the same way. In that year, McCabe and Treviño (1993) applied a questionnaire and their findings reflect significant differences in cheating behavior among students from distinct departments, with business economists admitting to be the most cheaters, followed by engineers, scientists and humanities students. In a recent study, Lewis et al. (2012) postulated that economics students are much more apt to lie than non-economics. Moreover, López-Pérez and Spiegelman (2012) indicated that business students are significantly less lie averse than other disciplines, as they probably expect others to cheat as well. Additionally, Lundquist et al. (2009) proved that economics major is more likely to lie than non-economics, supporting this statement in their behavior as *homo economicus* in accordance with theories learnt in college.

However, a few other studies have determined that science and technology students are the most dishonest. Newstead, Franklyn-Stokes and Armstead (1996) argued that cheating is more common in science and technology students, than those in other areas. In this study conducted in England, science was broadly defined and represented by various disciplines like chemistry, biology and geography. They gave out a questionnaire to gather students' information about types of cheating they had engaged in. Hence, the methodology was limited because it consisted of a self-report about their own dishonesty, where participants could easily lie. The study of Marsden, Carroll and Neill (2005) also demonstrated that engineers cheat more than others.

So, according to the prior findings exposed, we start hypothesizing with two simple statements about cheating by major:

Hypothesis 1. *Economics students are the most cheaters and psychologists the least.*

Hypothesis 2. *With the possibility to cheat without being caught, the inclusion of penalties for being honest increases cheating behavior in all majors.*

On the other hand, the relationship between dishonesty and altruism has also received some attention. As noted in previous research, cheating and altruism were two separate concepts influenced independently by other factors (Fuller and Jackson, 1985; Newman 1979). Calabrese and Cochran (1990) proposed the connection between both concepts, and later on, Newstead et al. (1996) indicated that moral development is linked to cheating as well. Looking at the literature that explains the causes of behaving altruistically, we found different approaches. Newstead et al. (1996) highlighted that altruism is affected by the value of the object to donate. Another approach suggested by Andreoni (1990) pointed out that benevolence can be due to inherent instincts of cooperation or to "impure altruism", this is, an act to maintain the self-concept. In addition to this, in an experiment related to the voluntary action of voting, Dellavigna et al. (2013) confirmed that respondents are concerned about their social image. Then, some actions such as voting are done just because others will ask for them. Also, a recent study by Gneezy, Imas and Madarasz (2014) found that donations to charity increase after an immoral choice. Feelings of guilt may prevent people from breaking internal moral constraints. Furthermore, some evidence relates cheating and altruism, showing that individuals cheat more if the unethical action increases the benefits to others, viewing dishonesty as morally acceptable (Gino, Ayal and Ariely, 2013). To take a well-known character as an example, this is just like Robin Hood, when he says "I steal from the rich, and give to the needy". Bearing all this in mind, there is a connection between dishonesty and altruism, which seems favorable to a dampening effect on cheating, as subjects become aware of behaving more ethically and cooperatively with others.

A variety of evidence suggests a large difference in the extent to which economics majors and noneconomics behave altruistically. There is a clear debate among researchers about whether economists are less cooperative than noneconomists, with considerable disagreement. Starting with the free-rider hypothesis, economics students might be less likely to donate (Bauman and Rose, 2009; Carter and Irons, 1991; Marwell and Ames, 1981). Marwell and Ames (1981) believed economics graduate students are more likely than others to free-ride in a public goods experiment. In line with this, Carter and Irons (1991) affirmed that economists behave more in accordance with the rational/self-interest model when playing an ultimatum bargaining game. Bauman and Rose (2009) suggested that economics major is less generous and less likely to donate, based on a study in the University of Washington, Seattle. Their lack of generosity was explained by selection, that is, individuals were already selfish when they chose to become economists. There is also some indication in the literature that economics majors are more altruistic than noneconomics and tend to behave more cooperatively (Hu and Liu, 2003). Studying due payments to professional organizations, Laband and Beil (1999) revealed that professional economists are significantly more cooperative than professional political scientists and sociologists. In addition to this, Yezer, Goldfarb and Poppen (1996) found altruistic instincts in economists. They run an experiment where students in upper level economics classes were more likely to return money. Nevertheless, to the best of our knowledge, there is still sparse evidence that relates the choice between honesty and dishonesty with altruism by major profiles.

So, it seems reasonable that cheating behavior might decrease when altruistic instincts arise, and may lead to several differences between majors as shown in following hypothesis 3:

Hypothesis 3. *When altruistic instincts may affect a dishonest action, cheating behavior decreases in all majors, being psychologists the most altruistic and economics students the least.*

In order to empirically test all hypotheses announced, we replicated a coin toss experiment with undergraduate students, previously run by Bucciol and Piovesan (2011) and Fosgaard, Hansen and Piovesan (2013), where participants flipped a fair coin in private. Subjects knew in advance that there was only a prize-winning size and the reward consisted of a chocolate. Reporting the prize-losing side led to leaving without the chocolate under three different conditions: (i) no penalty, (ii) paying a monetary penalty or (iii) paying an altruistic monetary penalty that would be donated to a nonprofit organization. The amount of the payment was chosen by each participant. We allowed, then, for cheating behavior, as toss and payment were both conducted privately without any interaction with experimenters. A clear incentive to behave selfishly and donate the minimum amount possible was embedded.

Our findings contribute to prior work, demonstrating that economists cheat the most. Also, we can support that penalties' inclusion raises the tendency to lie for all academic profiles with honest behavior without penalties. Finally, although economics students are the most unethical in terms of honesty, they behave more altruistically than noneconomics, as their donations are the largest.

2. Methodology

The experiment took place in different public universities in Madrid. First of all, it is essential to point out that the surroundings of the experiment were similar among them. We ran the task outside the laboratory in private areas on campus but with lots of students passing by (e.g. in one side of a main hallway or in one corner of the cafeteria). Hence, students did not perceive the task as an experiment, but more as a game or a marketing strategy for the chocolates' brand, so answers were not distorted.

Participants

A total of 270 individuals (52% female) participated in the study. Participants were Spanish undergraduate students enrolled in three different majors: business economics (n=90), psychology (n=90) and IT engineering (n=90).

Materials and Procedure

The experiment consisted of a coin task replication (Bucciol and Piovesan, 2011; Fosgaard et al., 2013), where undergraduate students flipped a white/black coin, and recorded the outcome on a paper sheet. Only the ones who reported the white side earned the prize: a chocolate from a well-known brand (a red Lindt Lindor chocolate truffle). Subjects tossed the coin once, in private and one-by-one. Since participants were not examined by experimenters during the toss, there was an embedded incentive to cheat if the result was black.

In order to attract students, experimenters placed a visible poster which explicitly announced “Is this your lucky day? Flip a coin and win a chocolate!”. As each volunteer approached the table where experimenters stayed, a detailed and individual briefing of the task was provided. Once (s)he accepted the offer and enroll, to ensure that results could not be observed neither by the experimenter nor by the rest of the participants, (s)he

had to move a few meters away, where two tables were prepared. The first one held a big box to toss the coin privately. The second one had 2 containers: one with chocolates and an empty one to deposit the coin if losing.

Based on this simple setting, we designed three different conditions to explain the effect of penalties on cheating behavior. Consequently, in our experimental design, we employed two between-subjects factors: major [business economics (EC), psychology (PS) and IT engineering (EN)] and penalty [no penalty (NP), penalty (P) and altruistic penalty (AP)]. For the penalty factor, subjects were randomly assigned to the three different conditions (NP, P and AP). In the NP condition, if the participant reported black (the prize-losing side), neither the subject was rewarded nor punished to pay a monetary penalty. Participants in the P condition with a black report had to deposit a real coin (of any value) in a cup, as a monetary penalty. The payment was mandatory but not enforceable, as it also happened in private, so respondents could easily cheat. Finally, in the AP condition, the procedure was the same as that used in the P condition, but with an altruistic destination of the coin: a donation to a non-profit organization that helps people with uncommon illnesses, called FEDER (in Spanish, *Federación Española De Enfermedades Raras*).

Importantly, participants were not employed in more than one condition (as it was a between-subjects factor), so contamination effects from orders did not exist. Moreover, we controlled the time of the day (all of them between breakfast and lunch time), in order to avoid other factors that could explain differential results such as hunger. Lastly, as mentioned above, there was no interaction between participants and experimenters while the task occurred.

3. Results and Discussion

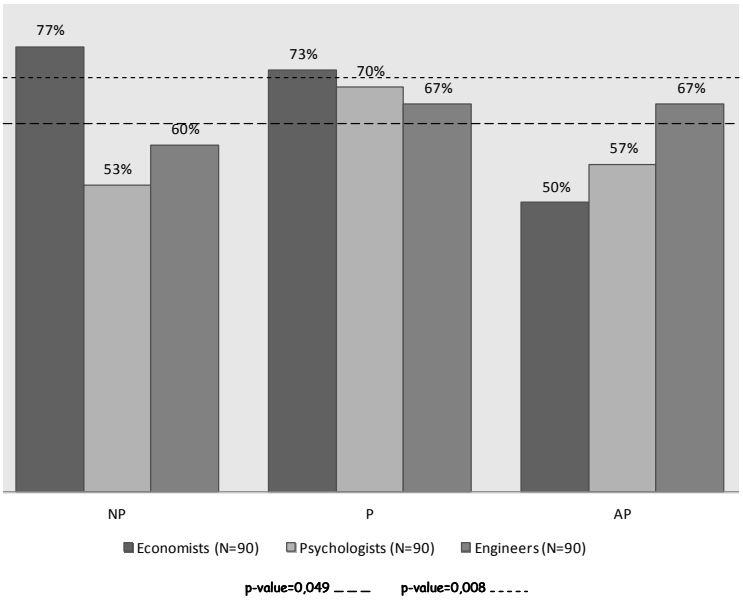
In our experiment, the white side of the coin represents the rewarded one. In a normal environment, a percentage of whites above 50% would indicate that some participants cheated. Nevertheless, considering the fact that we cannot trace the outcomes of the toss individually, the percentage of whites follows a binomial distribution with a confidence interval above 50% and below 100%.

Result 1. *Economics students are the most cheaters and psychologists the least.*

In the NP condition, we expected participants (overall, economics major) to over report whites, as there is an incentive (a chocolate truffle) to do so, and no chance of detection for lying. Quantitative results are shown in the graph (Figure 1). The null hypothesis of honest behavior is rejected at p=0.008 (dotted line) only for economists. The anomalous percentage of chocolates taken by economics students (77%) suggests that they cheat, contrary to noneconomics – psychologists (53%) and engineers (60%) –. In this condition, participants faced a simple trade-off between the joy of eating a chocolate truffle and the disutility of having a threatened self-concept because of lying. When penalties do not appear in the decision making process, it seems that a chocolate is not enough to affect the self-concept of psychologists and engineers. As per this first result, we confirm the first hypothesis declared.

Figure 1. Percentages of chocolates taken per condition and major

(Binomial significant differences)



The x axis shows the three different conditions run in the experiment: NP = No penalty; P = Penalty; AP = Altruistic penalty.

Result 2. *With the possibility to cheat without being caught, the inclusion of penalties for being honest increases cheating behavior in all majors.*

In the P condition, the null hypothesis of honesty is rejected for all groups and results are statistically significant: business economics students at p=0.008 (dotted line), and psychologists and engineers at p=0.049 (dashed line), as illustrated in the graph (Figure 1). Think about a participant who obtains the black outcome, but desired the chocolate and nobody is watching. Would (s)he take it or would (s)he rather leave a coin? Many of them took it, in all majors. This finding shows that penalties persuade participants to cheat. In the three profiles, business economics, psychology and engineering, out of 30 chocolates per major, participants took an abnormal number of chocolates according to chance probability (which is 15 over 30 chocolates): 22, 21 and 20, respectively (see Table 1), meaning that they probably cheated. In comparison with the NP condition, whereas a simple chocolate is not enough to convince psychologists and engineers to

behave unethically, a monetary penalty is, and it affects dishonesty. In contrast to the NP condition, the disutility of having a threatened self-concept because of lying is not high enough to decide paying. In consonance with the second finding, the second hypothesis is also verified.

Table 1. Detailed amounts of chocolates taken and penalties paid

Table 1

	Economists			Psychologists			Engineers		
	P* (n=30)	**AP**** (n=30)	**Diff.**	**P** (n=30)	**AP** (n=30)	**Diff.**	**P** (n=30)	**AP** (n=30)	**Diff.**
Chocolates taken	22	15	-7	21	17	-4	20	20	+0
Coins left	7	40	+33	10	18	+8	11	25	+14
Coins should be left	8	15	+7	9	13	+4	10	10	+0
Extra coins (diff.)	-1	25		1	5		1	15	
Money given	0.39€	8.66€	+ 8.27€	1.17€	3.05€	+ 1.88€	1.48 €	4.65 €	+ 3.17€
Avrg money given	0.05€	0.22€	+ 0.17€	0.13€	0.17€	+ 0.04€	0.15 €	0.19 €	+ 0.04€
Chi-square			3.455			1.148			.000
p-value			.063			.284			1.000

*P = Penalty
**AP = Altruistic penalty

Result 3. *When altruistic instincts may affect a dishonest action, cheating behavior decreases for economists and psychologists. Economics students are the most altruistic and engineers the least.*

In the AP condition, we added an altruism effect to the experiment. As can be seen in the graph (Figure 1), the null hypothesis of behaving honestly is rejected at p=0.049 (dashed line) only for engineers. While economists and psychologists decreased the percentage of chocolates taken (50% and 57%, respectively), engineers did not (67%). Results imply that economists and psychologists are affected by penalties' end (a donation to a nonprofit organization) and their altruistic instincts show up. Meanwhile, (surprisingly) engineers did not focus on the penalty's destination and avoided the moral compass to help a non-

profit organization. Contrary to our expectations, the economics profile is the one that behaves in a more altruistic way, followed by psychologists, and with engineers rank in the lowest position. Specifically, 30 chocolates could be taken by major. Economists took 15, whereas the number slightly increased to 17 and 20 for psychologists and engineers respectively (see Table 1). In line with this third result, our third hypothesis must be discarded.

Additional interesting results show up from a closer examination of the data, particularly if we consider both P and AP conditions. These findings are presented in Table 1.

Our design manifests that if a participant reports the white outcome, (s)he will take a chocolate and if black is mentioned, no chocolate is taken and one coin of any value must be left in private. This statement means that the number of chocolates taken plus the number of coins left should equal 30 by condition and major. Now, in the P condition, let's suppose that a certain participant obtains a black outcome. Do you really think that the subject would pay anything, being the payment a private action? Apparently, they did. Except for one participant: a business economics student. We indeed noted that when we counted 22 chocolates taken and only 7 coins left, when there should have been 8 coins in order to get to the figure of 30 (between chocolates taken and coins left).

Consider now the AP condition. Again, chocolates taken and coins left should count to 30. Actually, the number is higher in all majors: 25 extra coins deposited by economics (a total of 55 coins), 5 by psychologists (a total of 35) and 15 by engineers (a total of 45). There may be three possible explanations for those results. Firstly, participants, even winning, decided to donate and act cooperatively. Secondly, those who lost were likely to donate more than one coin. Thirdly, maybe subjects who got black decided to cheat, picked the chocolate and felt poorly afterwards so decided to leave a donation. From any of the three possibilities, we can interpret that altruism encourages people to become more

unselfish. However, in the case of engineers, results suggest that altruism effect does not incentivize them to behave more ethically. Altruism clearly diminishes the impact of cheating on economists and psychologists and enlarges donations to charity, mainly in economists. This last effect might be in line with a recent finding of Gneezy et al. (2014). They have detected that people who make an immoral choice first are more likely to donate to charity afterwards, driven by a temporal increase in guilt which they called *conscience accounting*. Our results bring up a complementary idea of permanence or continuity to this new concept. If the most dishonest profile (business economics) is also the most altruistic, these subjects who are used to make immoral choices regularly will have an ongoing increase in guilt, so a *Permanent Conscience Accounting* will induce them to donate more.

Another interesting question cannot be left unmentioned: what is the difference, in euro amounts, of penalties given between the two penalty conditions? Considering that all participants are undergraduate students from public universities with similar purchasing power, it is worthwhile comparing amounts given by economics students, which boost dramatically from the P condition to the AP, from 39 cents to 8.66 Euros. The difference between both conditions for this major is statistically significant, at conventional levels ($p=0.063$). Not such a drastic increase is experimented in the other academic profiles, but still relevant: from 1.17 to 3.05 Euros for psychologists, and from 1.48 to 4.65 Euros for engineers. However, if we analyze average coin value, the difference from the P condition to the AP is 17 cents for economists, while it is only 4 cents for psychologists and engineers.

Result 4. *Cheating differences by gender were not found*

As a final remark, our work also sheds light on gender differences. Prior studies suggest that gender has a predictive value for cheating behavior. Some academic papers declare

that women cheat less than men (Bowers, 1964; Bucciol and Piovesan, 2011; Dreber and Johannesson, 2008; Erat and Gneezy, 2012). As the balance of men and women over the three majors studied is not the same in Spain (e.g there are usually more women in psychology and more men studying engineering), it is worth running an analysis with gender as a factor.

Essentially, we do not find any significant differences between men and women:

- In the NP condition, where 52% of women were recruited for all majors, 70% of men (30 subjects over 43) reported white and took the chocolate, whereas 57% of women (27 participants over 47) declared to be lucky and won the award (χ^2=1.468; p-value=0.226).
- In the P condition, where 56% of women participated in total, no significant differences were found either (χ^2=0.857; p-value=0.355). In this second condition, men reported white 65% of the times (26 over 40) and women stated this result in 74% of the cases (37 over 50).
- Similar findings were obtained in the last condition, the AP, in which the participation of females was 46%, finding no differences by gender (χ^2=0.524; p-value=0.469). In this third condition, while men reported white 61% of the times (30 over 49), women did it in 54% of the chances (22 over 41).

Taking a deeper look into gender, no significant differences are found when gender is analyzed by degree, neither in economists nor in psychologists and engineers. However, an individual examination by gender shows more results. Whereas in the NP condition women were honest and only reported 57% of whites, they took the reward 74% of times in the P condition (χ^2=4.088; p-value=0.043). This result means that women behave honestly by nature but the mere presence of a penalty, even a very small penalty such as 1 cent [remember that the value of the coin (penalty) was

decided by the subject], decreases the level of honesty and increases cheating. Additionally, if the penalty destination is a nonprofit organization and altruism is considered, only 54% reported white and the penalty effect disappeared (χ^2=2.957; p-value=0.085). In this case, the level of honesty returned to the NP condition levels (χ^2=0.127; p-value=0.721).

Contrary to women, it seems that men are dishonest by nature (in the NP condition, they won the reward 70% of the times) and economic penalties do not change significantly the level of dishonesty. In the P condition, men reported 65% of whites (χ^2=0.215; p-value=0.643), while in the AP condition, white was revealed by them 61% of the times (χ^2=0.127; p-value=0.721).

4. General Discussion

The aim of this paper is to study the relationship between cheating and altruism. In a further attempt to assess whether the link of these concepts is affected by characteristics such as major, we test experimentally the extent to which business economics students, psychologists and engineers lie and donate when it is transparently clear that they are being observed. For this purpose, we used a private coin toss experiment (Bucciol and Piovesan, 2011).

Based on the setting provided by the experiment, in which the anonymity of the complete task is assured, we found enough evidence to affirm that many subjects cheated. As stated in Penner et al. (1976), the less constrained the social situation is, the more frequent subjects will engage in dishonest acts, actions which themselves perceive as opportunistic and excusable rather than actually dishonest. A perfect example of an excusable lie can be reflected in our task: lying to win an insignificant chocolate truffle where nobody gets

affected or deceived. More interestingly, this paper also corroborates current findings in the experimental literature. We suggest that not all that could cheat actually did so. Some participants prefer leaving the task without a reward rather than lying, in order to maintain a positive self-image. (Gneezy, 2005).

Moreover, the presence of penalties influences one's own likelihood to behave dishonestly. When payments of penalties are private, the willingness to pay for losing in a coin toss task is low, as it could be considered a petty crime. However, our analysis reveals altruistic actions, such as making a donation to a non-profit organization, to have differential predictive value in modifying cheating behavior. Dishonesty decreases when penalties have an altruistic destination. Butler, Giuliano and Guiso (2012) suggested that cheating may be affected by ethical and cooperative values. In consonance with their work, values related to cooperation, normally instilled by their parents, tend to soften the notion of cheating. An explanation for the high amounts donated could be linked to what Gneezy, Imas and Madarasz (2014) discovered recently. They determined that after an immoral choice, donations to charity boost, mainly driven by the *conscience accounting*, which is a temporal increase in guilt. Applying this notion to our results, that feeling of guilt might be experienced by subjects who secretly obtain the prize-losing side of the coin and thought about making the unethical decision of lying and reporting the prize-winning outcome. After having this immoral thought, the feeling of guilt could appear, inducing them to donate more. Therefore, feeling guilty about the thought of lying could be linked to an increase in donations. Moreover, business economics is the profile that cheats the most but it is also the most altruistic. Going further into this, the statement not only suggests a temporary feeling of guilt in economists but also the idea of a permanent one. As the major constantly considered the most unethical is also the one donates the most, the feeling of guilt might be seen as ongoing. Then, this effect could be called

Permanent Conscience Accounting, extending the concept presented by Gneezy, Imas and Madarasz (2014).

Throughout this work, we have focused on testing differences in majors' behavior and the analysis shows that business economics is the degree that cheats the most, followed, in order, by engineers and psychologists. Explanations from the literature suggest that this is probably due to their training in economics (Frank et al., 1993), as they learn how to maximize profits. Other reason could be their demanding performance goals (Bowers, 1964), which in the case of students this would be related to exams, assignments and workload in class. Another explanation that proves economists' lying behavior might be their expectation of others to cheat as they deal with competitive environments (López-Pérez and Spiegelman, 2012). Surprisingly, economists are also the ones that donate more, as they may be used to behave in traditionally communitarian ways and develop voluntary activities (Frank et al., 1993). Therefore, engaging in a prosocial activity encourages business economics students to reconsider their dishonest behavior. Based on our knowledge, a novel finding is reported in this paper when suggesting that engineers appear not to have altruistic instincts, as they are not affected by the penalties' end.

In relation to gender, differences are not found in this work. In accordance to previous literature, evidence regarding gender is inconsistent, as academic papers deviate in different ways. Sometimes researchers suggest that men cheat more than women (e.g Bowers, 1964; Bucciol and Piovesan, 2011; Dreber and Johannesson, 2008; Erat and Gneezy, 2012), whereas other evidence proves that women behave more dishonestly (e.g Antion and Michael, 1983; Leming, 1980; Newman, 1979). However, even lack of differences between men and women has also been reported, supporting our results (López-Pérez and Spiegelman; 2012; Childs, 2012; Holm and Kawagoe, 2010; Lundquist et al., 2009). Feldman, Forrest and Happ (2002) found that lies told by men and women

differed in content, although not in quantity. As previously shown, we do not find any differences in gender in our research, neither by degree nor by condition. Nevertheless, we support the idea that men and women have singular peculiarities in their behaviors.

Taking all prior results into account, the next question relates to a practical approach. Dishonesty can largely influence economic well-being. Cheating implies many costs, not only in the academic environment but also on general society, by impacting businesses. For example, investors would be hesitant about consulting an investment adviser who was known to have cheated (Marsden et al., 2005). Our paper may shed light on how businesses can prevent workers to behave unethically, and that is by reminding them about their altruistic instincts. In line with Reynolds and Ceranic (2007), rewarding positive moral traits (i.e. fairness, honesty or hardworking) could help firms to mitigate the effect on cheating, growing a moral identity on their employees. Also, several studies have linked the use of verbal reminders (Kerkvliet and Sigmund, 1999) and honor codes (Bowers, 1964; McCabe and Treviño, 1993, 1997; McCabe, Treviño and Butterfield, 1999, 2001) to lower levels of dishonest behavior. Additionally, Gurung, Wilhelm and Filz (2012) suggested that longer honor codes derive in lower likelihood to cheat.

Finally, it is worth indicating some limitations of our methodology and results. The experimental design has an indisputable disadvantage: it does not allow to misreport various outcomes. Participants have to choose between full-truth and full-lie, they cannot lie a little. This relates to the widely studied concept of incomplete cheating (Fischbacher and Heusi, 2013), theoretically explained by the self-concept maintenance theory (Mazar et al., 2008). According to this behavior, many respondents normally lie without maximizing their payoffs, but instead trying to find a balance between benefits and self-image. Moreover, lying in the experiment was encouraged by a chocolate truffle, which is a low behavioral incentive. How confident should we be that lying to obtain a Lindt

Lindor chocolate truffle is informative about lying for larger financial (or non-financial) rewards? Experimental economists normally go for monetary payments where the assumption of universal desirability is met. However, we decided to use chocolates because, although a truffle for one person may not be as tempting as for another one, it is easier to maintain a positive self-image when cheating for a chocolate (or another low-value noneconomic reward) rather than doing it for money. This idea is supported by the results from Ariely (2008), who has found that we are willing to cheat for poker chips convertible into cash but less willing to be dishonest for naked cash itself. If the payment was given in poker chips, which were exchanged for cash a few seconds later, the average level of cheating is more than double. Another limitation is that we have focused on one specific feature throughout this work: major. Obviously, there are other factors and individual characteristics that may affect the link between cheating and altruism, which could represent a path for future research.

Therefore, further research on dishonesty is still needed, until new findings of lowering the existed levels of cheating will be found. The relationship between cheating, penalties and altruism could be a continuous topic for future research, both on how different penalties and how diversity of donations might impact dishonesty. A possibility could be the use of different levels of penalties (fixed amounts instead of voluntary) or a comparison between diverse nonprofit organizations of several purposes.

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