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CHEATING AND ALTRUISM BY DISCIPLINE

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Abstract

We examine the influence of different rewards, cash penalties and altruistic donations on cheating behavior of university students by conducting four experiments with undergraduate students of business economics, psychology and IT engineering. They were asked to toss a coin in private and we randomly assigned participants to conditions in which we manipulated the reward for a winning toss and the penalty when losing. We found that business economics students were significantly more dishonest regardless of whether the reward was a chocolate truffle or cash, and no matter if there was a penalty involved when losing. However, if the penalty was a donation to a non-profit organization, business economics students had the highest level of altruism. We additionally observed changes in the likelihood of lying when reporting the donations by manipulating the prior notice, suggesting that prior notice decreases the tendency to lie.

Keywords: cheating, altruism, penalties, donation, lying, prior notice.

JEL classification: A12, D03, D64.

PsycINFO classification: 3120.

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1. Introduction

Not a single day goes by without a new case of accounting fraud, audit fraud, tax evasion or corruption on the news. What does this mean? That someone cheated again. The underlying conflict between self-interest and social interest can be attributed to individual decisions about being honest versus behaving advantageously. If you ask yourself "Have I ever told a lie, even a very innocent one?" The (honest) answer is likely to be, "Of course, maybe even daily". This implies that cheating is undoubtedly widespread and is damaging not only individuals' own trustworthiness but also the economic principles in general, causing extraordinary financial and social costs (Mazar and Ariely, 2006). Despite the substantial body of experimental studies in the economics and social psychology literature 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), there is still a need to study the intersection between the stream of research about dishonesty and the altruistic behavior.

In this paper we investigate whether different rewards, cash penalties and donations affect cheating behavior of university students. We focus our attention on individuals currently studying the bachelor degrees of business economics, psychology and IT engineering. In addition, we also examine lying behavior by testing the tendency to lie about their donations, and the effect of a prior notice –telling or not in advance that they had to report donations– on lying. To address these questions, we conducted four experiments using 540 students. In Experiments 1 and 2, participants were asked to flip a white/black coin in private, so they were given the opportunity to cheat because nobody could see the outcome. In the task of Experiments 3A and 3B, recipients decided about a cash donation. A summary of the four experiments appears in Table 1, containing their purposes, task, conditions, participants and location of each experiment.

[TABLE 1 HERE]

In Experiment 1, with a chocolate truffle reward when winning the task, we examine the effect of cash penalties and donations on cheating behavior by academic discipline. Previous literature has already suggested that there are differences in cheating behavior by academic disciplines (e.g., Bowers, 1964; Frank, Gilovich and Regan, 1993; McCabe and Treviño, 1993). Bowers (1964) found that business students and engineers were among those with the lowest rates of truth-telling, perhaps due to more demanding performance goals. Frank et al. (1993) stated that the self-interest model persuade economists to be less generous than others due to their training in profit maximizing. They argued that economists act uncooperatively in social dilemmas as a result of their training, and that economists expect others to cheat as well. Similarly, McCabe and Treviño (1993) concluded that there are significant differences in cheating behavior among students from several degrees. Concretely, they found the highest level of cheating on economists,

followed by engineers, science and humanities students. All these findings go in line with the classic approach of the standard economic model. According to this model, individuals behave as *homo economicus* (Becker, 1968; Hill and Kochendorfer, 1969; Michales and Miethe, 1989), which implies that dishonest actions are based on a simple cost-benefit analysis that depends only on two inputs: the amount to be gained and the expected punishment of being caught (Gino et al. 2009). Thus, in agreement with proponents of the standard economic model, we expect business economics students to cheat more than other students as they have paid more attention to economic models in their studies. More precisely, to add to this line of inquiry, we theorize that business economics students may cheat more than non-economics either including or not a cash penalty when losing the task.

In addition, in Experiment 1 and regarding the effect of donations on cheating behavior, we follow the proponents of the self-concept maintenance approach. The proponents of this approach agree on the fact that business economics students are likely to cooperate in altruistic activities due to their desire to maintain a positive self-concept. Frank et al. (1993) stated that economists might be more altruistic as they have been trained in traditional communitarian ways developing voluntary support activities. Later, Yezer, Goldfarb and Poppen (1996) found evidence of altruistic tendencies in economists in an experiment where students in upper level classes were more likely to return money unfairly awarded. When analyzing dues payments to professional organizations, Laband and Beil (1999) suggested that professional economists are significantly more cooperative than political scientists and sociologists. Also, Hu and Liu (2003) showed that economics degrees tend to behave more altruistically and cooperatively than non-economics. However, other prior research supports the idea that economics students might donate less to charities (Bauman and Rose, 2011; Carter and Irons, 1991; Marwell and Ames, 1981) in accordance with the rational self-interest model, which predicts their lack of generosity and their selfishness. These mixed findings have inspired us to test how different students react when losing a task conducted in private implies the payment of an out-of-pocket donation to a non-profit organization. As previously stated, following the most popular approach of the self-concept maintenance theory, we propose that business economics students are more altruistic than other students.

Further, we also add evidence to the core studies of the interconnection between cheating behavior and altruism with our Experiment 1based on the self-concept maintenance approach (Gneezy, Imas and Madarász, 2014; Mazar and Ariely, 2006; Mazar et al., 2008). Individuals try to find internal psychological reward mechanisms to self-justify unethical behaviors (Mazar and Ariely, 2006; Mazar et al., 2008). In addition, as per Gneezy et al. (2014), greater levels of altruism have a dampening effect on cheating because subjects become aware of behaving more ethically and cooperatively with others. They found that donations to charity increase after an

immoral choice, so that when feelings of guilt are emphasized, individuals might refrain from breaking internal moral constraints. Gino, Ayal and Ariely (2013) even suggested that individuals cheat more if the unethical action increased the benefits to others, creating a situation in which dishonesty can be viewed as morally acceptable. These results suggest that when altruism is made salient, individuals pay attention to their own moral standards and their self-concepts, decreasing their tendencies to engage in dishonest actions. Accordingly, we expect cheating behavior to decrease in all majors when altruism plays a role in the task performed.

We conduct Experiment 2 for various purposes. First, we verify the altruistic findings of Experiment 1 with a cash reward instead of a chocolate truffle. Second, we also add evidence to the literature about lying behavior. In line with the cost-benefit approach or standard economic model, the opinion of Lundquist et al. (2009) is that economics degrees are more likely to lie than non-economics because economic models learned at university lead them to behave as *homo economicus*. Similarly, Lewis et al. (2012) showed that economics students are more apt to lie than non-economics, and López-Pérez and Spiegelman (2019) indicated that business students are significantly less lie averse than those in other disciplines, as they probably expect others to lie as well because they deal with competitive environments. Following this reasoning, it is rational to believe that business economics students are going to be the group that lie the most. To the best of our knowledge, scholars have apparently ignored the connection between cheating, altruism and lying, so this lack of explanation has inspired this study to test how these three behaviors interact in different students.

Finally, our Experiments 3A and 3B contribute to understanding the ethical dilemma of lying. With their designs we study the tendency to lie about cash donations made manipulating the prior notice (not telling recipients in advance that they are going to be asked for the amount donated). Whereas in Experiment 3A the experimenter did not warn participants about the fact that they were going to be asked about the cash donated at the end, in Experiment 3B participants were aware of it before performing the task. There is recent evidence based on the self-concept maintenance approach that supports the idea that subjects are more likely to report higher private donations to charities after a lying decision (Maggian, 2019). Also, respondents are concerned about their social image, so they are more likely to behave altruistically if they know that they are going to be asked about their actions (Dellavigna et al., 2016). Thus, we expect participants to donate more when recipients know in advance that their donations are going to be questioned. In order to maintain the self-image, we also expect a tendency to lie and over report the donations when participants do not receive a prior notice.

2. Experiment 1: Effects of cash penalties and altruism on cheating

In the first experiment we studied the effect of cash penalties and donations on cheating behavior. Our participants were students from three different bachelor degrees. It seems that university students represent a relevant sample to analyze because cheating in educational environments, such as colleges and universities, is a widespread and growing phenomenon (Bucciol, Cicognani & Montinari, 2017). Our experiment consisted of three conditions. The control condition or no penalty condition (NP) served as a baseline for the performance of the task –to flip a white/black coin in private– and for the magnitude of cheating, as participants were not punished for getting the bad outcome. In the second condition –penalty condition (P)–, the experimenter clearly explained to participants at the onset of the experiment that, in case of losing, an out-of-pocket cash penalty had to be paid. In the final condition –altruistic penalty condition (AP)–, the experimenter made it clear to participants that the cash penalty paid if losing represented a donation to a non-profit organization. In the three conditions, participants performed the coin-toss task in private, so they had the opportunity to cheat without being exposed to anyone. Thus, for our analyses, cheating could not be determined on an individual level.

By comparing the results of the three conditions, we were able to examine the influence of two effects on cheating: cash penalties and altruism. On one hand, according to the cost-benefit approach, cheating with the exposure to a cash penalty in case of losing should have increased the tendency to behave unethical. Therefore, cheating should be higher in the penalty condition (P) than in the no penalty condition (NP). On the other hand, according to the self-concept maintenance approach, we expect lower cheating behavior after knowing that the penalty represented a donation to a non-profit organization, in order to maintain people's self-image. Although the general behavior is to avoid cash penalties, when payments represent donations the ethical threshold gets more restrictive and people tend to be more generous. Thus, cheating should be higher in the penalty condition (P) than in the altruistic penalty condition (AP).

Method

Participants

Two hundred and seventy students (52% female; N=141/270) from public universities in Madrid participated in the study. They were students of three bachelor degrees: business economics (N = 90), psychology (N = 90) and IT engineering (N = 90). Participants were randomly assigned to one of three conditions: control or no penalty condition (NP), penalty condition (P), and altruistic penalty condition (AP). Participants joined the experiment voluntarily and they were tempted to enroll by a visible poster which explicitly announced "Is this your lucky day? Flip a coin and win a chocolate!"

Design and procedure

The experiment consisted of a coin task replication in which every participant tossed a white/black coin in private (Pascual-Ezama et al., 2015). The ones who reported the prize-winning side (the white side) earned prize: a chocolate truffle. Since the experimenter was unable to see the toss, participants had an embedded incentive to cheat if the outcome was black. We ran the task on campus, outside the lab, on a side of the main hallway or in a corner of the cafeteria, where many students were passing nearby. The surroundings were the same in the three conditions and the answers were not distorted because participants did not perceive the task as an experiment, but more as a game or a marketing strategy for the chocolate truffles' brand.

The experimenter was located behind a desk with the poster announcing the game and he/she explained the task to students who agreed to participate. Once the experiment started, each participant (one-by-one) walked to a second desk fifteen feet away to toss a white/black coin inside an empty recycling box. Thus, nobody could see the outcome. In the three conditions, if the outcome was white (the prize-winning side), the participant grabbed a chocolate truffle from another box placed in a third desk situated six feet further, and the experiment ended. If the outcome was black (the price-losing side), the task finished in the no penalty condition (NP). In the penalty condition (P), the participant left an out-of-pocket cash penalty of any value in a recycling box placed in the same desk as the chocolate truffles' box. Finally, in the altruistic penalty condition (AP) the out-of-pocket cash penalty was a donation to a non-profit organization.

Results

Pure cheating with a chocolate truffle reward

We present the results of Experiment 1 in Figure 1. In the no penalty condition (NP), we expected participants to over-report white coin-toss results, as they had an incentive (a chocolate truffle) to cheat and the impossibility of being caught. The null hypothesis of honest behavior is rejected at $p = .008$ (dotted line) only for the bachelor degree in business economics. The anomalous percentage of the prize-winning side (or, as a result, the percentage of chocolate truffles taken) in business economics' students (77%; N=69/90) suggests that they cheat more often than non-economics –psychologists (53%; N=48/90) and IT engineering students (60%; N=54/90)–. In this condition (NP), participants faced a trade-off between the joy of eating a chocolate truffle and the disutility of having a threatened self-concept because of cheating. While our evidence indicates that the honesty of psychology and IT engineering' students is not affected by this trade-off, the honesty of business economics students is; thus, business economics students cheat more than the others. In addition, we have examined gender differences and the results are not statistically significant[1].

[1] There are no significant differences in gender in the four experiments of the paper; thus, men and women behave similarly according to our evidence.

Cash penalties

In the penalty condition (P), where we included the effect of cash penalties on cheating behavior, the null hypothesis of honesty is rejected for all bachelor degrees and results are statistically significant: students of business economics degree at p = .008 (dotted line), and psychology and IT engineering degrees at p = .049 (dashed line), as illustrated in Figure 1. We consider the percentage of chocolates takes in all academic degrees is abnormally high, meaning that participants probably cheated. The difference of white-toss outcomes between the three different groups (business economics, psychologists and IT engineers) is not statistically significant (X^2 = .000; p = 1). Thus, when participants obtained the prize-losing outcome (black), many of them acted like winners, taking the chocolate truffle rather than paying for losing, no matter the bachelor degree. This finding shows that cash penalties persuade students to cheat.

Altruism

In the altruistic penalty condition (AP), we added the effect of altruism on cheating behavior to the experiment. The null hypothesis of behaving honestly is rejected at p = 0.049 (dashed line) only for IT engineering students, as shown in Figure 1. While business economics and psychology students decreased the percentage of chocolate truffles grabbed (50% or N=45/90, and 57% or N=51/90, respectively), IT engineering' students did not (67%; N=60/90). This result implies that the altruistic instincts of business economics and psychology students show up. Meanwhile, the behavior of IT engineers was not affected by the donation, ignoring the moral compass of helping a non-profit organization.

[FIGURE 1 HERE]

3. Experiment 2: Effects of lying and altruistic donations

Considering only the results of Experiment 1, it seems premature to affirm that in a real-world situation cheating and altruistic behaviors are more remarkable in students in business economics than in the other students because they had the incentive of a chocolate truffle instead of real money. To ensure the reliability of the results of Experiment 1, we conducted a second experiment.

The purpose of Experiment 2 is to verify if business economics students cheat more than psychology and IT engineering students when cash incentives play a role in the design (instead of the incentive of a chocolate truffle), and if their donations are the most salient. In addition, we also compare the tendency to lie among the three academic degrees. We test the lying behavior asking participants about their donations a posteriori (at the end of the experiment).

Experiment 2 was conducted in the lab and the task was the same as in Experiment 1: to flip a white/black coin in private. Only when winning, the participants received a cash prize that they could donate afterwards. However, in the design of this experiment, we were able to determine if participants actually cheated in the toss and the exact money they donated. This is because they had to report the outcome on a computer and they deposited their donations inside envelopes marked with invisible ink. If the findings are consistent with our Experiment 1, we expect donations from students in business economics and psychology to be higher than donations from IT engineers. In addition, it is rational to believe that the tendency to lie will go in line with the cheating behavior. Therefore, we expect lying to be higher in students in business economics, followed by psychologists and IT engineers.

Method

Participants

Ninety students (59% female; N=53/90) from public universities in Madrid joined the experiment. They were studying the bachelor degrees of business economics (N = 30), psychology (N = 30) and IT engineering (N = 30). Participants enrolled in the task voluntarily, and they were paid one euro for participation.

Design and procedure

Participants received an envelope with money based on their outcome in the task, receiving the full amount when reporting the prize-winning result and no money for the prize-losing option.

Once the experimenter explained the task, each participant went to a stall (similar to a voting booth) six feet from the experimenter's desk, where there was a computer and a recycling box on a table. The computer screen presented the following message: “With your own cell phone, log in to www.rollandflip.com and flip a white/black coin. Did you get black or white?” The reason for using the participant's phone was to assure that the toss was completely private and was not registered in the computer. If the outcome was black (the price-losing side), the task ended. If the outcome was white (the prize-winning side), the participant took an envelope containing five-euro coins from the recycling box and decided how much to donate to a non-profit organization and how much to keep. The participant left the stall, went back to the experimenter's desk and placed the envelope with the donation in a cardboard box. Finally, the participant was asked to come back to the stall and answer another question that appeared on the screen: “How many coins did you donate?” The participant was not warned about that question before performing the task. This mechanism allows us to test the lying behavior of students because their responses would be matched with their donations, as the envelopes were marked with invisible ink.

Results

Pure cheating with a cash reward

In Figure 2, we provide a summary of the results of Experiment 2. The null hypothesis of honest behavior is rejected at $p = .008$ (dotted line) for the business economics students. They over-reported white outcomes (the prize-winning side) because the percentage of chocolates taken (70%; N=63/90) was too high, contrary to non-economics –psychologists (54%; N=49/90) and IT engineers (52%; N=47/90)–. This finding goes in agreement with the evidence of Experiment 1, suggesting that business economics students tend to cheat more that non-economics, regardless of the type of earnings (non-monetary, such as a chocolate truffle, or monetary). The honesty of psychology and IT engineering students seems not to get affected by any rewards.

[FIGURE 2 HERE]

Altruism

Donations by participants in Experiment 2 are shown in Figure 3. This analysis only contains the winners of the task, as the cash to be donated (five one-euro coins) represented the prize for winning. Business economics students donated 73% of the cash (an average of 3.67 euros) while psychology students donated 64% (3.21 euros) and IT engineering students 60% (3.01 euros). Thus, we verify that business economics students have the highest altruistic instincts, followed by psychologists and IT engineers, in agreement with the results of Experiment 1. The difference between business economics students and non-economics is statistically significant ($X^2 = 3.617$; $p = .038$).

[FIGURE 3 HERE]

Lying behavior

To examine the tendency of participants to lie, we analyzed the responses to the unexpected question regarding the cash donated. For this test, we only include the winners of the task (the ones who obtained the reward, made the donation and were questioned about the cash donated). We found that 6% of both business economics (N=5/90) and psychology students (N=5/90) reported more than what they had actually donated, while the IT engineering degree did not lie at all. Interestingly, this result validates the expectation that the degree of business economics contained the highest number of liars, although the same behavior is found in psychology students.

4. Experiment 3A: Effects of pure altruism and lying behavior

To take a more in-depth look at both the altruistic and the lying behavior of individuals, and based on the interesting results found in Experiment 2, we conducted Experiments 3A and 3B. The purpose of Experiment 3A is to investigate the altruistic behavior (donations) of students enrolled in different bachelor degrees and to test their tendency to lie about their donations without any prior notice, which means without telling individuals that they will have to report the cash donated.

In Experiment 3A, there is no coin toss task so that we test altruism for all participants (not only for the task winners, as in Experiments 1 and 2). Cash was given to recipients at the beginning of the task and they decided how much to donate. If the evidence is consistent with Experiment 2, we predict that business economics students would present a stronger altruistic profile than non-economics.

Method

Participants

Similar to Experiment 2, 90 students (62% female; N=56/90) from public universities in Madrid enrolled in business economics (N = 30), psychology (N = 30) and IT engineering (N = 30) participated voluntarily.

Design and procedure

The participant received an envelope with the five one-euro coins for the donations at the beginning of the task so they do not need to leave the stall at any time. Thus, the participant decided how many coins to donate, deposited the donation inside the envelope marked with invisible ink in the box right next to the computer and answered the question about the money donated that appeared on the computer's screen at that moment without any prior awareness.

Results

Altruism

Cash donated by participants in Experiment 3A appears in Figure 4. Results are similar to Experiment 2, including all individuals in this design (the honest and dishonest ones). The percentage of cash donated is higher for the business economics students than for the non-economics, and the difference is statistically significant ($X^2 = 4.08$; $p = .029$). Business economics students donated 76% (3.8 euros on average) while 68% (3.4 euros) was donated by psychologists, and donations of IT engineers decreased to 59% (2.9 euros).

[FIGURE 4 HERE]

Lying behavior

Consistent with the lying results of Experiment 2, in response to the question about their donations, 7% (N=6/90) of students of the degree in business economics reported more than the amount they had really donated, 6% (N=5/90) of psychology students, whereas only 2% (N=2/90) of IT engineers lied.

5. Experiment 3B: Effects of prior notice on lying behavior

The aim of Experiment 3B is to study the altruistic behavior (donations) of students enrolled in different bachelor degrees and to test their tendency to lie about their donations with a prior notice, which is telling participants in advance that they will have to report the cash donated.

Experiment 3B is similar to Experiment 3A with the exception of the prior notice. In Experiment 3B, the experimenter warned each participant at the beginning of the task that a question about the cash donated would appear on the computer after the donation. According to Dellavigna et al. (2016), respondents are concerned about their social image, so they are more likely to behave altruistically if they know that they are going to be asked to report their actions later. In line with this, we expect that the mechanism of the prior notice will increase donations. In addition, due to our results of prior experiments, we also predict that the highest donations would be granted by economists.

Method

Participants

Similar to Experiment 3A, 90 participants (63% female; N=57/90) from public universities in Madrid studying bachelor degrees in business economics (N = 30), psychology (N = 30) and IT engineering (N = 30) participated voluntarily.

Design and procedure

The design of Experiments 3B and 3A matched, with one difference: in Experiment 3B, in the instructions to participants we include the question about reporting the cash donated. Therefore, participants received the envelope, performed the task in the stall, donated the cash considered and reported the donation.

Results

Altruism

In Figure 5 we illustrate the cash donated by participants in Experiment 3B. The percentage of cash was higher for business economics students than for non-economics with statistically significant difference ($X^2 = 13.8$; $p < .001$). Business economics students donated 89%

of the cash earned (4.4 euros on average) while psychology students donated 73% (3.7 euros) and IT engineers 59% (3 euros). Results are consistent with Experiment 3A. Participants donate slightly more in Experiment 3B, with no significant differences ($X^2 = 6.0$; $p = .199$). In addition, as expected, the prior notice increased donations notably for business economics students and psychologists.

[FIGURE 5 HERE]

Lying behavior

The prior notice not only increased donations but also decreased the tendency to lie. Only 2% (N=2/90) of business economics students and 1% (N=1/90) of psychologists reported more than the amount donated whereas IT engineers did not lie, as in Experiment 2.

6. Discussion and general conclusion

The aim of this paper is to examine cheating and altruistic behaviors of university students enrolled in several bachelor degrees, namely, business economics, psychology and IT engineering. More precisely, we study the effects of different rewards (monetary and non-monetary) and different penalties (cash penalties or penalties that represent donations to a non-profit organization) on cheating behavior. Additionally, we also test the connection of altruistic and lying behaviors of individuals, by analyzing the tendency to lie about their donations. For these purposes, we ran four experiments using a total of 540 participants. Our results are consistent among the experiments conducted. In summary, our evidence suggests that business economics students cheat more than other individuals regardless of the rewards or the penalties, behave more altruistically donating more than others, and do not lie in general about their donations (although, if they do, they lie more than others).

Our evidence in Experiment 1 agrees with prior research that stated that individuals tend to cheat (Jacobsen, Fosgaard and Pascual-Ezama, 2018), and this behavior is influenced by traditional economic models, based on the cost-benefit approach. The cost-benefit aspect posits that when any gain from cheating is high compared to the expected punishment, the propensity to behave dishonestly increases. Similar arguments are consistent with traditional models of agency theory in economics, which suggest that people make rational, self-interested decisions to cheat depending on incentives (Jensen and Meckling, 1976; Gino and Pierce, 2009). Accordingly, each individual is more likely to act unethically if it results in financial benefits. Business students could be more influenced by these models as they have studied them deeply in their university readings and lectures. Thus, business economics students are more academically oriented to find

an equilibrium between the cost of any decision or investment and its return, and the results of Experiment 1 verify this statement.

Prior research suggested that the self-maintenance concept can lead individuals to behave more ethically (Fischbacher and Heusi, 2013; Kunda, 1990; Mazar et al., 2008; Shalvi et al., 2011) and internalized social norms could guide respondents to a preference for honesty (Pruckner and Sausgruber, 2013). 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 (Gneezy et al., 2012; Grossman, 2014; Lazear, Malmendier and Weber, 2012). In general, altruism encourages people to become more unselfish due to the self-concept maintenance theory because the possibility of donating will decrease the magnitude of cheating and increase the likelihood of altruistic behavior. This mechanism is more salient when an individual's academic background emphasizes organizational and cooperative feelings and also self-interest, profit maximizing and maintenance of self-image in front of others, such as in the case of business economics students, as per the evidence of Experiment 1. Thus, this perspective predicts that socially-oriented people or individuals who work in teams and organizations should donate more than others, and we corroborate this prediction. Altruism clearly diminishes the impact of cheating for business economics and psychology participants and enlarges donations to charity from them. This last effect is in line with Gneezy et al.'s conclusions (2014), who found 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. In the case of IT engineering students, the results suggest that the altruism effect does not incentivize them to behave more ethically. This could be due to their focus in more analytical tasks, less cooperative projects or training with less attention to profit maximization. However, this result could also be driven by self-selected groups of marginal subjects in each academic degree that may not behave in the same way as average people (Houdek, 2017). Last, we corroborate these findings in Experiment 2 using different rewards when reporting the price-winning option of the task (a chocolate truffle versus a cash reward).

We also studied the likelihood of lying in Experiments 3A and 3B. By manipulating the prior notice given to participants –telling or not telling them in advance that they had to report the cash donated– we showed that a prior notice increased participants' likelihood of acting ethically. That is, individuals lie less frequently when they will be asked later about their acts. According to Dellavigna et al. (2016), respondents are concerned about their social image, so they are more likely to behave altruistically if they know that they are going to be asked to report their actions later. In addition, lying to maintain the self-image goes in line with the probability of cheating and the altruistic behavior, so that business economics students lied more than psychology and IT

engineering students. Nevertheless, their altruistic behavior is stronger than that of the other groups.

The implications of these results are relevant for university staff and managers because we indicate whether or not different individuals (university students) react ethically or unethically to several situations. This work could be of interest not only for identifying unethical behaviors at the university level, but also for anticipating how to avoid unethical behaviors in the workplace, as the job market is the next step of university students' career.

Finally, the findings of our study may have implications for researchers examining ethical and unethical behaviors in individuals with different academic backgrounds. We obtain valuable evidence that business economics students seem to cheat more but behave more altruistically than psychology and IT engineering students. This may have important consequences in the real world because most of international decisions are based on a financial reasoning and made by individuals with business backgrounds. However, some economists have been criticized by social organizations for different cases of fraud or corruption, specifically salient during the global financial crisis. In this sense, our evidence might shed light on the need for studies regarding alternative models in society not only based on financial aspects but also on sociological and analytical decisions. Due to the complexity of the current economic context, the political environment and the territorial conflicts worldwide, a broader picture offered by decision-makers from different backgrounds may help to clarify the various facets of international affairs. For instance, the development of more collaborative organizations, altruistically oriented and managed by sociologists, such as the “Sharing Economy” (Schor, 2016), could notably assist in solving financial and political issues among territories.

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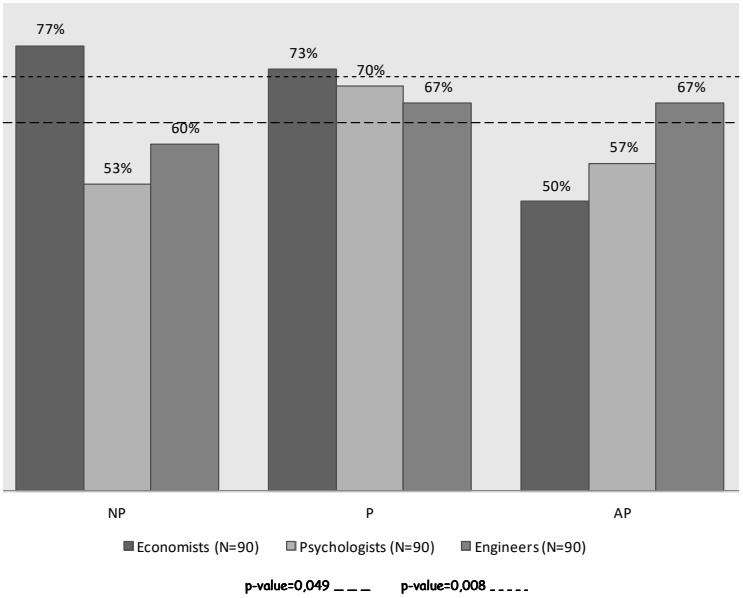
Table 1. Experiment summary table. Summary of all experiments, including experiment number, purpose, task and conditions, participants and location.

Experiment	Purpose	Experiment task and conditions	Participants and location
1	With the possibility of earning one chocolate truffle, examine the effect of cash penalties and donations on cheating behavior of students with different academic backgrounds.	Flip a white/black coin in private (white: prize-winning side; black: prize-losing side). A chocolate truffle earned when winning, and task finished. 3 conditions when losing: - No penalty condition (NP) or control condition: when losing, no penalty and task finished. - Penalty condition (P): when losing, a cash penalty was requested (out-of-pocket and participant was warned about it before performing the task). - Altruistic penalty condition (AP): when losing, a donation was requested (out-of-pocket and participant was warned about it before performing the task).	270 students randomly assigned (90 business economics; 90 psychologists; 90 IT engineers). In the university campus (outside the lab).
2	With the possibility of earning 5 euros, examine: - The effect of donations on cheating behavior of students with different academic backgrounds. - Their tendency to lie about their donations.	Flip a white/black coin in private. When losing, the task finished. When winning, the participant received 5-euro coins, a voluntary donation of those coins was requested and participant was asked about the money donated (participant was NOT warned about it before performing the task).	90 students randomly assigned (30 business economics; 30 psychologists; 30 IT engineers). In the lab.
3A	- Examine the altruistic behavior (donations) of students with different academic backgrounds. - Test their tendency to lie about their donations WITHOUT a prior notice.	The participant received 5-euro coins, a voluntary donation of those coins was requested and participant was asked about the money donated (participant was NOT aware of it before performing the task).	90 students randomly assigned (30 business economics; 30 psychologists; 30 IT engineers). In the lab.
3B	- Examine the altruistic behavior (donations) of students with different academic backgrounds. - Test their tendency to lie about their donations WITH a prior notice.	The participant received 5-euro coins, a voluntary donation of those coins was requested and participant was asked about the money donated (participant was aware of it before performing the task).	90 students randomly assigned (30 business economics; 30 psychologists; 30 IT engineers). In the lab.

Figure 1. Percentage of chocolate truffles taken (prize-winning outcome) per condition and bachelor degree in Experiment 1 (Binomial significant differences)



In Figure 1, the cheating results of Experiment 1 appears. The X axis shows the three different conditions run in the experiment: NP = No penalty; P = Penalty; AP = Altruistic penalty; and the three types of participants: business economics, psychology and IT engineering students. The Y axis indicates the percentage of chocolate truffles taken, that is, the number of times that participants reported the white outcome (prize-winning outcome).

Figure 2. Percentage of coins taken (prize-winning outcome) by bachelor degree in Experiment 2 (Binomial significant differences)

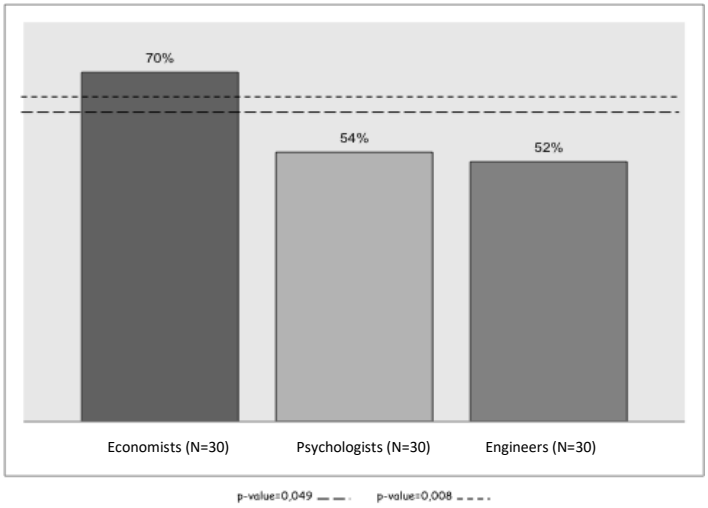


Figure 2 shows the cheating results of Experiment 2. The X axis shows the three different types of participants: business economics, psychology and IT engineering students. The Y axis indicates the percentage of rewards (cash) taken, that is, the number of times that participants reported the white outcome (prize-winning outcome).

Figure 3. Money Donated (percentage) in Experiment 2

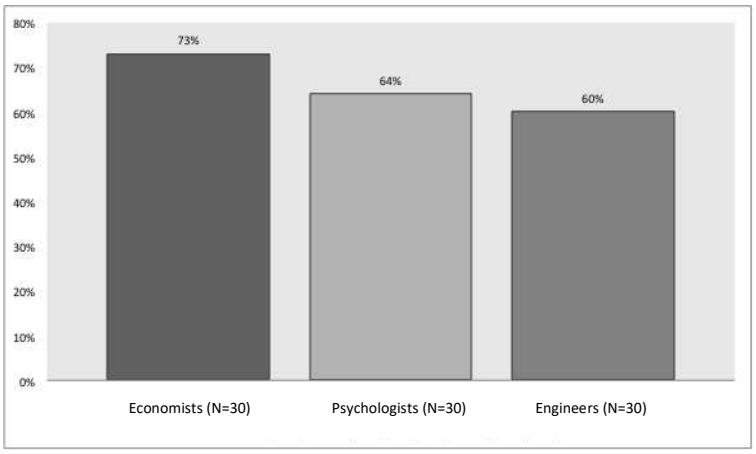
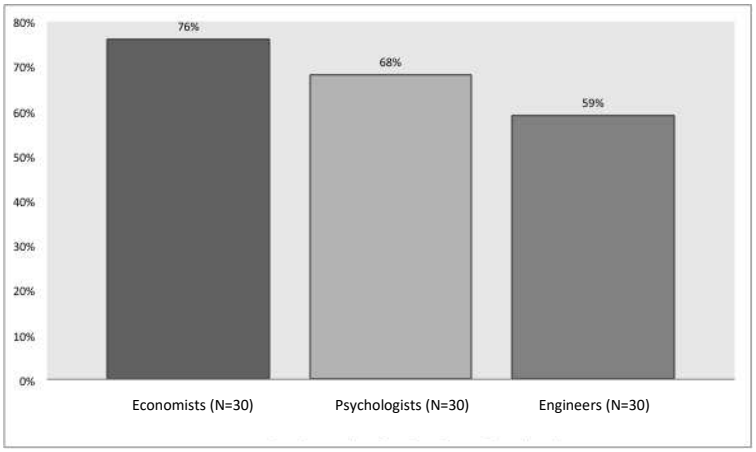


Figure 3 shows a graph with the percentage of cash donated (out of five euros) per group of participants (business economics, psychology and IT engineering students) in Experiment 2.

Figure 4. Money Donated (in percentage) in Experiment 3A



The graph in Figure 4 includes cash donated (in percentage, out of five euros) per group of participants (business economics, psychology and IT engineering students) in Experiment 3A.

Figure 5. Money Donated (in percentage) in Experiment 3B

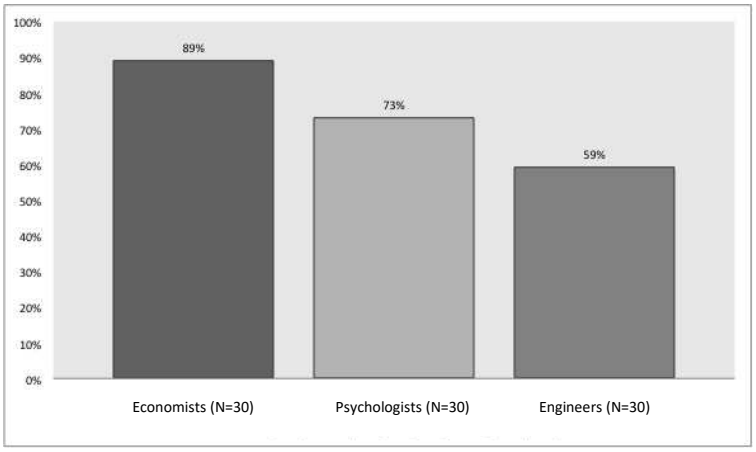


Figure 5 illustrates the percentage of cash donated (out of five euros) per group of participants (business economics, psychology and IT engineering students) in Experiment 3B.