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It's Time to Cheat!

Alessandro Bucciol, Simona Cicognani, Natalia Montinari

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It's Time to Cheat![*]

Alessandro Bucciol
University of Verona

Simona Cicognani
Free University of Bozen

Natalia Montinari[†]
University of Bologna

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Abstract

We run a lab experiment testing the correlation between time preferences and cheating at the individual level, controlling for individuals' risk attitude. In our experiment cheating only entails a moral cost for the decision maker, while it imposes no externalities on others, and it is not associated to the risk of being detected and sanctioned. Our hypothesis is that cheating is higher among individuals who attribute more importance to the present. Our experiment also allows to record socio-demographic details and information on cognitive abilities of participants. We observe widespread cheating, and statistical evidence that cheating prevails among subjects who display present bias and over-confidence. Cheating also turns out to be negatively correlated with risk aversion and the discount factor, but only for men, while the impact of present bias seems to be stronger for women.

Keywords: Cheating; Time Discounting; Quasi-hyperbolic preferences.

JEL Classification: D91; C91; D81.

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[†] Corresponding author: Natalia Montinari. Postal address: University of Bologna, Dept. of Economics, Piazza Scaravilli 2, 40126 Bologna, Italy. Email: natalia.montinari2@unibo.it.

1. Introduction

Understanding the determinants of dishonesty is the pre-requisite for designing effective policies aimed at limiting the negative effects of misbehaviors in our societies. However, observing real-life situations is complicated since people typically try to hide their dishonest behavior, which makes even more difficult to identify the causal influence of specific factors. An alternative approach relies on the methodology of controlled experiments conducted in the lab, where participants are confronted with (cheating) games characterized by the possibility of acting dishonestly (and typically at the expenses of the experimenters). On the one hand, laboratory experiments have the main limitation of imposing experimental demand to the participants, but on the other hand they allow a cleaner identification of the factors affecting dishonest behavior.

In the last few years scholars in economics, psychology and sociology have devoted increasing effort in studying dishonesty using this methodology, in the attempt to characterize the identikit of the individuals who are most likely to act dishonestly and to isolate the features that make some environments particularly vulnerable to opportunistic behaviors. While some studies have focused on the identification of features of the decision context that can affect dishonesty, by encouraging or discouraging it – such as for example the frequency of monitoring, the presence and magnitude of sanctions, the availability of information about others' behavior, the presence of negative consequences imposed by the dishonest behaviors on others – other studies have focused on the determinants of dishonesty at the individual level, looking for demographic and personal characteristics associated with the display of dishonest behavior (for a review see Rosenbaum et al., 2014; Jacobsen et al., 2018).

To gain a broader understanding of the decision-making process when a cheating opportunity is available, in this study we focus on the correlation between cheating and time preferences, controlling for individual risk attitude. Surprisingly, no previous study has precisely focused on this association despite the fact that many of the cheating behaviors daily undertaken in our societies involve an intertemporal dimension. In fact, the act of cheating and its personal benefits often do not arise in the same moment and, when it is the case, individuals who cheated may still face the risk of being caught and sanctioned later in time.

The aim of this paper is to contribute to the study of two relevant domains of human behavior by linking two lines of research: one focusing on the estimation of individual time preferences and the other focusing on the individual tendency to cheat. In order to do so, our participants perform in the laboratory two tasks: a survey with a cheating opportunity and a time preference elicitation task. To control for spillover effects, we consider two treatments that only differ for the order in which the two tasks have been presented to the participants. We then measure, at the individual level, the correlation of the two measures obtained, controlling for individuals' risk attitude, in order to learn how dishonesty interacts with the different components of time preferences, such as the discount factor and the present bias parameter. Our hypothesis is that cheating (granting advantages in the present time) is more frequent among individuals who attribute more importance to the present, both displaying a lower discount factor and/or exhibiting stronger present-bias.

As in many laboratory experiments, in our study cheating only entails a moral cost for the decision maker: cheating grants a personal advantage to the cheaters at the expenses of the experimenters, but it does not impose externalities on other participants, and it is not associated to the risk of being detected and sanctioned. Specifically, our participants are confronted with a set of 10 multiple-choices trivia quiz and receive a bonus only if they report to have solved correctly 8 of them. Participants have to self-report their performance after having checked the solutions available on the back of the printed instruction sheet: the cheating opportunity arises in the moment of self-assessment, as in Mazar et al. (2008) and Gino et al. (2009). Differently from other cheating tasks where participants are asked to report the outcome of a coin toss (e.g., Bucciol and Piovesan, 2011) or a die roll (Fischbacher and Föllmi-Heusi, 2013), our task, which we borrow from Nagin and Pogarsky (2003) and Hugh-Jones (2016), is not based on luck but on participants' beliefs about their own ability. In our opinion this task has two main advantages: first, it imposes less experimental demands on participants and second, despite the fact that (as in the coin toss or die roll tasks) we cannot identify cheating at the individual level, still we can infer cheating behavior with higher precision compared to these other tasks. Indeed, by looking at a different set of individuals (drawn from the same subject pool of our participants) who were confronted with exactly the same questions (and an incentive structure) but had no possibility of cheating we found that the average number of correct answers to the 10 trivia quiz was equal to 2.63, with nobody being able to correctly answer to at least 8 questions.

Besides cheating, time preferences are also one of the fundamental elements in the study of decision-making as they determine choices which are relevant both at the individual and at the societal level, such as investment, savings, education, etc. Gaining a better understanding of their connection with the moral domain may also help to improve policy interventions and to better identify the groups to target. To estimate time preferences, we rely on the Convex Time Budget (CTB) method developed by Andreoni and Sprenger (2012) that use a single, relatively simple instrument to capture risk aversion, long-run discounting, and present bias in a utility function with quasi-hyperbolic discounting (Laibson, 1997; O'Donoghue and Rabin, 1999).

We observe widespread cheating, and statistical evidence that cheating prevails among subjects who display a present bias, but no overall evidence that cheating is correlated to the discount rate. Our experiment also allows us to record socio-demographic details and uses validated psychological scales to collect information on cognitive abilities, self-confidence and to measure personality traits such as self-control, IQ and how well people perform in overcoming cognitive biases. When controlling for this information, we find that cheating also turns out to be negatively correlated with risk aversion and with the discount factor, but only for men, while the impact of present bias seems to be stronger for women. Moreover, from an ex-post analysis focusing on gender differences, we find that self-confidence is strongly correlated with cheating but also with gender, with men displaying higher over-confidence compared to women, suggesting that gender differences in dishonesty reported in some studies (e.g., Dreber and Johannesson, 2008; Friesen and Gangadharan, 2012) may be mediated by gender differences in self-confidence.

We are aware of very few studies considering both cheating and dimensions related to time preferences. Ruffle and Tobol (2014) conducted a lab in the field experiment in which participants had to roll a six-sided die in private and report the outcome of the die; a larger benefit was associated to higher numbers reported. They find that distancing the time in which the die roll task was performed from the enjoyment of the reward obtained, increases honest behavior. However, despite the fact that participants' choices are consistent with temporal discounting, in this experiment authors do not estimate individual time preferences. Several studies established a link between dishonesty and self-control (e.g., Mead et al. 2009; Gino et al. 2011), suggesting that dishonesty tends to increase when people's self-control resources are depleted by an initial act of self-control. Self-control problems have been modelled in economics as time-inconsistent, present biased preferences, where present bias identifies the tendency of people to give stronger weight to payoffs that are closer to the present time when considering trade-offs between two future moments (O'Donoghue and Rabin, 1999). A present-biased individual would appear inconsistent when comparing his short-term preferences and long-term preferences only taking into account the discount rate. Other studies have investigated the link between other regarding concerns, social norms and cheating behavior in search of spillovers across different dimensions of moral reasoning (e.g., Cappelen et al., 2013; Maggian and Villeval, 2016; Kerschbamer et al., 2018).

Establishing a link between the tendency to cheat and other domains of individual preferences comes from the need to analyze the decision-making process leading to dishonesty adopting a broader perspective. However, most of the existing studies, as in Ruffle and Tobol (2014), modified the standard cheating games used in the lab by adding specific features related to the aspect they wanted to study, such as for example the timing of enjoyment of the benefits associated to cheating; the identity of the person who gets affected (positively or negatively) by the act of cheating; the risk of being detected and the visibility of individual actions, etc. The main consequence of this scattered approach is that it becomes difficult to draw general conclusions, since the results reported in each experimental study likely depend, to some extent, on the choice of the features and the parameters implemented in the specific games. In this respect, our main contribution is to establish a relationship between two domains of individual preferences represented by the willingness to cheat and time preferences while controlling for many relevant individual characteristics.

The remainder of the paper is organized as follows: in Section 2, we review the related literature on cheating and time preferences and formulate our research hypothesis. In Section 3 we describe the experimental design, the procedures and summary statistics. Section 4 reports and discusses our results, while Section 5 concludes. A separate Appendix reports details on the experiment and some robustness checks.

2. Relevant Literature

In this section we provide a selected review of the studies most related to ours. Based on that, we present our research hypotheses. For an overview of the most influential and recent studies conducted in the lab and in the field on cheating and dishonesty please refer to the reviews by Jacobsen et al. (2018) and Rosenbaum et al. (2014); for a comprehensive review on methods to measure time preferences see Cohen et al. (2019).

2.1. Cheating

The studies by Nagin and Pogarsky (2003) and Hugh-Jones (2012) inspired us in the choice of the cheating task. In Nagin and Pogarsky (2003), participants are asked to fill in a paper-based survey which contains eight multiple-choice trivia questions, each with five possible answers. Answering at least six questions correctly entitles them to a 10 USD bonus (in addition to a 10 USD payment for participating in the experiment). As in our experiment, the trivia questions are intended to be so difficult that it would be unlikely for participants to know six or more correct answers and therefore it would be virtually impossible to earn the bonus by guessing.[1] The authors then state that participants claiming a trivia bonus are "safely assumed to have cheated" (Nagin and Pogarsky, 2003, p.173). We replicate their approach with the difference that, in order to obtain the number of correct answers from the trivia quiz, in our task participants report the result in the computer screen after having self-assessed their performance and are then asked to shred the paper sheet with their answers. This feature of the experimental design is similar to the "matrix experiment" of Mazar et al. (2008) and Gino et al. (2009), where participants face for five minutes twenty simple math questions getting 1 USD reward per correct answer, report the number of correct answers to the experimenter and shred their answer sheet. More in general, Nagin and Pogarsky (2003) vary i) the probability of detection of cheating by manipulating the presence of the experimenter in the experimental room, and ii) the severity of penalty in case of detection.

[1] Some of the questions used by Nagin and Pogarsky (2003) are: 1) "Which country borders Tanzania? (a) Ethiopia; (b) Sudan: (c) Zambia; (d) Zimbabwe; (e) Angola."; 2) "Which film won the academy award for best picture in 1980? (a) The Deer Hunter; (b) Chariots of Fire; (c) Ghandi; (d) Ordinary People; (e) Kramer v. Kramer.

They find that cheating is lower when i) the probability of detection is perceived to be higher and ii) the severity of penalty is higher.

Hugh-Jones (2012) implements an online experiment where participants from different countries are confronted with a quiz on six open-ended questions on the topic of music[2] designed to be "very difficult for almost anyone to answer without cheating" (Hugh-Jones, 2012, p.102). Participants are asked not to look up the answers on the internet and declare, by ticking a box that they had answered on their own. However, being not monitored, they could cheat and check the answers online given that there was no monitoring. Participants were offered a monetary incentive (3 or 5 USD) if they answered all the questions correctly. In this experiment two measures of honesty (presented in a random order) were included: the quiz we just described and a coin flip task (as in Bucciol and Piovesan, 2011). In the coin flip task, respondents were asked to flip the coin and report the result. They were told that they would get the incentive if they reported "heads". When comparing the two tasks (and the self-reported unethical actions in the past year) the author finds that all the measures of dishonesty are positively related. Hugh-Jones (2012) finds large differences in honesty across countries, with average honesty being positively correlated with per capita GDP and with the proportion of its population being Protestant.

2.2. Time Preferences

Regarding time preferences, the paper most closely related to ours are Andreoni and Sprenger (2012) and Andreoni et al. (2015), introducing the Convex Time Budget (CTB, henceforth) method which we also use in our experiment. In CTB, quasi-hyperbolic time preferences are elicited in combination with constant relative risk aversion from variations in linear budget constraints over early and later incomes. Subjects choose a combination of rewards in two fixed delivery dates from a set of options. By varying the implied interest rate,

[2] The questions are: 1) Who wrote the composition "Für Elise"?; 2) What is Lady Gaga's real first name?; 3) Name the drummer of the rock group Nirvana; 4) In what year was Claude Debussy born? 5) How many valves are there on a standard modern trumpet? 6) Name the town and state of the US where Michael Jackson was born.

CTB can simultaneously elicit utility curvature and discounting[3]. Using the data collected in this way, the authors then employ nonlinear regression to estimate the discount rate, the curvature of the utility function and the present bias parameter.

The main alternative methodology to elicit time preferences in the laboratory is represented by the Double Multiple Price List (DMPL, henceforth) method, which employs one multiple price list for time and one for risk. This task has been introduced by Andersen et al. (2008)[4]. In a typical DMPL experiment, a subject chooses between an amount in a given moment and an ordered series of amounts in a later moment. In this task, consistent subjects should have a single crossover point as the value of the delayed reward monotonically rises. At this crossing point, the subject switches from preferring the smaller sooner reward to the larger, later reward. Such crossover points are used to estimate the required rate of return (or indifference points) between the two moments, from which it is then obtained the discount rate. The DMPL appears to be outperformed by the CTB-based in the out-of-sample estimates when predicting intertemporal choices (Andreoni et al. 2015).

2.3. Cheating and Time Preferences

To the best or our knowledge only three are the papers explicitly referring to the connection between cheating and a sort of time discounting: Nagin and Pogarsky (2003), Ruffle and Tobol (2014) and Alan et al. (2019).

Nagin and Pogarsky (2003), already cited in Subsection 2.1 for their cheating task, consider a measure of present orientation asking participants a hypothetical question in which, assuming they have been convicted for drunk driving and have been given a six-month suspension of the driver's license, they are asked whether they would prefer to get the suspension over with or to delay the suspension. Those participants who choose to delay the suspension are identified as displaying a preference for delay and are found to cheat more

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3 Under the assumption that payments are completely consumed when received or the assumption that income – and not consumption – is the argument of the utility function, as noted by Cohen et al. (2019).

4 A third variant is represented by the Matching paradigm (also called fill-in-the-blank). In this task participants are asked to give an open-ended response by reporting the amount (or time delay) that would make them indifferent between two options. This task is often used in psychology, when dealing with experiments involving hypothetical choices (e.g., Chapman, 1996); an incentive compatible version has been developed by Benhabib et al. (2010), among others.

frequently. However, the answer to this question is non-incentivized and the authors are unable to obtain participants' time preferences.

Ruffle and Tobol (2014) add a time preferences component in the "standard" die roll cheating game designed by Fischbacher and Föllmi-Heusi (2013). In this task cheating is detected at the group level by comparing the distribution of the die rolls reported by the participants to the theoretical distribution of outcomes obtained by a fair die roll. Ruffle and Tobol (2014) conduct a lab in the field experiment in which Israeli soldiers completing their mandatory military service had to roll a six-sided die in private and report the outcome to the unit's cadet coordinator. For every point reported, the soldier received an additional half-hour early release from the army base on Thursday afternoon. The authors find that soldiers who participated on Sunday (the first work day of the week) were significantly more honest than those who participated later in the week, suggesting that temporally distancing the decision task from the payment of the reward increases honest behavior. However, despite the fact that soldiers' choices are consistent with temporal discounting, in this experiment the authors do not estimate the time preferences of the participants.

Alan et al. (2019) study cheating behavior among a sample of elementary school children. In their study, participants are confronted with a creative performance task where it is easy to imitate others' work. In this context, cheating is defined as presenting output that is not one's own. In addition to the cheating task, the authors collect data on several student characteristics, including risk and time preferences and IQ. In order to elicit time preferences, they use an allocation task based on a simplified version of Andreoni and Sprenger (2012).[5] They find that children with higher IQ and higher socioeconomic status have a higher likelihood to cheat, while risk and time preferences have no robust direct effect.

Time preferences are strictly related to self-control. Self-control is described as the psychological capacity that enables people to enact behaviors that are consistent with their long-term goals (e.g., of being an ethical person) and refrain from engaging in behaviors that

[5] Children were given an endowment of 5 tokens, and they were asked to decide how to allocate their endowment between today and 1 week later, described to children as putting tokens in the "today bowl" versus the "one week later bowl". Waiting has a return: each token placed in the "one week later bowl" brings an extra half token, so a child who wants to invest all of his/her endowment will be able to get 7.5 tokens one week later. Children were asked to make a choice between six possible allocations.

are driven by short-term, selfish motives. In economics, self-control problems have been modelled as time-inconsistent, present biased preferences, where present bias identifies the tendency of people to give stronger weight to payoffs that are closer to the present time when considering trade-offs between two future moments (O'Donoghue and Rabin, 1999). Mead et al. (2009) and Gino et al. (2011) find that dishonesty tends to increase when people's self-control resources are depleted by an initial act of self-control. Specifically, Mead et al. (2009) find that participants whose self-control was depleted are more likely to misrepresent their performance for monetary gain compared to non-depleted participants and that depleted participants are also more likely than non-depleted participants to expose themselves to the temptation to cheat, thereby aggravating the effects of depletion on cheating. Gino et al. (2011) show that resisting unethical behavior both requires and depletes self-control resources. They find that individuals who were depleted of their self-regulatory resources by an initial act of self-control are more likely to ''impulsively cheat'' than individuals whose self-regulatory resources were intact. Moreover, depletion reduces people's moral awareness when they face the opportunity to cheat which, in turn, is responsible for higher cheating.

Since both time discounting and self-control may (at least in principle) matter as determinants of cheating, in our analysis we consider a framework allowing to elicit both dimensions.

2.4. Hypothesis

We formulate two main hypotheses to be tested in our experiment: the first one refers to the association between the time discount factor and the likelihood of cheating; the second one refers to the association between the present bias and the likelihood of cheating.

Hypothesis 1.

There exists a negative correlation, at the individual level, between the time discount factor and the likelihood of cheating.

Hypothesis 2.

There exists a negative correlation, at the individual level, between the present bias and the likelihood of cheating.

Both Hypothesis 1 and Hypothesis 2 are based on the idea that those individuals who give more importance to the present compared to the future are more likely to engage in cheating. However, the two hypotheses refer to different dimensions of individual time preferences. Specifically, Hypothesis 1 postulates an effect of the discount factor placed on returns receivable (or costs payable) in the future and it is consistent with (time-constant) exponential discounting models of time preferences. The classical discounted utility model implies that choices are time-consistent, that is, individuals will make the same utility trade-off between two periods regardless of when they make the allocation (Strotz, 1955). According to this hypothesis, the tendency to act dishonestly should not necessarily be associated with a lack of self-control (or higher present bias), but it could reflect a different weight given to gain and costs occurring at different point in time, as for example in Ruffle and Tobol (2014) and Nagin and Pogarsky (2003),

Hypothesis 2 specifically refers to the role of present bias, which describes inconsistencies (or preferences reversal) arising when comparing short-term preferences with long-term preferences[6] only taking into account the discount rate, while it becomes consistent when (quasi) hyperbolic discounting models of time preferences are used. According to this hypothesis individuals who have a stronger present bias are more likely to encounter self-control problems and should also display a higher likelihood of cheating, coherently with the results reported by Mead et al. (2009) and Gino et al. (2011).

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[6] An example of inconsistency coherent with present-bias is observed when, for example, a subject prefers 10 USD now rather than 12 USD in a day, but he/she prefers 12 USD in a year plus a day rather than 10 USD in a year.

3. Experimental Design

Our experiment is composed of two main parts: a paper-based survey with a cheating opportunity (C), and a computerized task aimed at measuring time preferences (T). Participants in the CT treatment encounter first the survey with cheating opportunity and then the time preferences elicitation, while participants in the TC treatment face the two tasks in reverse order. In what follows we provide a detailed description of our tasks.

In the experiment we also implemented a third part consisting in the Bomb Risk Elicitation task to further control for individual risk preferences (Crosetto and Filippin, 2013). This information is not used in our benchmark results but adding it to the analysis does not affect the results.

3.1 Survey with cheating opportunity

Participants receive 8 EUR flat payment to complete the survey. The survey, reproduced in the Appendix in its English translation (the experiment was conducted in Italian), is paper-based, identified by an ID number assigned to each participant and made of three sections: the first one aims at collecting personal information about the participants (such as number of siblings, gender, age, field of study, city of origin, etc); the second one aims at gathering information on the socio-economic status of the participant's household (such as after-tax average income of parents, education and employment status of both parents, etc). The third section aims at measuring individual attitudes and personality traits using validated scales from economics and psychology. In particular, we include a 9-item measure of fluid intelligence based on a selection of the Raven's matrices[7] (IQ test, henceforth) elaborated by Bilker et al. (2012) and a measure of self-confidence, obtained as the difference between the expected and actual number of correct answers in the IQ test. The section also includes further questions that we do not use in this work.[8]

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7 The original Raven's test consisted of 60 items. The 9 items selected by Bilker et al. (2012) guarantee administration time savings and, at the same time, high predictive power as in the original scale. Bilker et al. (2012) find a 0.98 correlation between the original scale and this reduced form, which however takes only 15% of the administration time of the original scale.

8 Specifically, we included the SOEP question on self-reported risk attitude, two questions on generalized trust taken from the World Value Survey and from the US General Social Survey, a question on the self-

At the end of the survey, on a separate sheet with no ID number on it, participants are confronted with a trivia quiz composed of ten multiple-choice questions. Subjects are requested to first answer the questions and then check the number of correct answers in the back of the instruction sheet, in order to report it on the computer screen with the goal of speeding up calculation of the earnings for that task. Letting subjects self-assess their performance has been used in other studies, such as in Mazar et al. (2008) and Gino et al. (2009).

The ten questions, shown in the Appendix, are taken from the Italian website www.lasailunga.it. We selected the ten questions as those with fewer correct answers from a pool of 20 difficult questions.[9] For the trivia quiz, subjects are told that they will earn additional eight EUR only if they report eight or more correct answers out of ten questions. The paper-based survey is collected by the experimenter at the end of the task, while the sheet with the trivia quiz is left on each participant's desk together with the instructions. Participants are told that they can shred their answer sheet and that, if they do not do so, we will do it for them. The time employed should guarantee good quality of the answers.

Participants are given 30 minutes to answer the survey and the trivia quiz; the time assigned was enough since all participants insert the number of correct answers (together with the personal ID) on the computer in due time.

In the trivia quiz, asking participants to self-report the number of correct answers offers an opportunity for cheating. The probability (from a binomial distribution) to correctly answer by chance to eight or more of these questions, where each question presents four alternatives, is tiny and equal to 0.000416. In a preliminary incentivized task, with the same characteristics as our study but without the possibility to cheat, 96 subjects reported on

reported level of patience, the Brief Self-Control Scale (BSCS; Tangney et al. 2004), the Ten Item Personality Inventory (TIPI; Gosling et al., 2003), and the cognitive reflection test (Frederick, 2005).

9 We ran a preliminary study at the University of Bologna on 125 subjects starting from a pool of 20 questions taken from the website www.lasailunga.it. The study was run in a classroom and subjects were not incentivized. In the end we picked the 10 questions that were less frequently answered. Specifically, nobody in the pilot study answered correctly to 8 of these 10 questions (average number of correct answers: 2.056). We took care of excluding these students from the pool of subjects who got the invitation to the experiment. Later on, we invited at the lab 96 subjects who faced the same incentive structure of the main experiment but were given no cheating opportunity. They reported on average 2.625 correct answers (maximum 6) to the same 10 questions, and 4.76 correct answers to the other 10 questions.

average 2.625 correct answers out of 10. Based on this, even if each subject is assumed to know 3 correct answers, the probability to randomly answer to the other questions and earn the bonus is as small as 0.0129. Due to the fact that the questions are difficult, and it is virtually impossible to correctly answer by chance, we assume that those who report eight or more correct answers are actually cheating.[10] This does not exclude that those who report seven or less correct answers are also cheating, though.

A similar task was used by Nagin and Pogarsky (2003)[11] and Hugh-Jones (2016) in an online experiment. The reason why we prefer this cheating task compared to other tasks which are often used to elicit cheating in the lab, such as the coin flip task (Bucciol and Piovesan, 2011) or the die roll task (Fischbacher and Föllmi-Heusi, 2013) is that we feel that alternative tasks may have a stronger demand effect compared to ours. In contrast, in our task participants may feel that their cheating behavior is more difficult to identify. Moreover, this task requires ability and not luck, differently from the coin flip and the die roll task. However, Hugh-Jones (2016) reports results from an online experiment where participants had to indicate the outcome of both a coin flip task and the answer to some open questions for which they could consult the web. He finds that individuals' dishonesty in the coin flip and in the quiz are positively related.

Finally, in this task we take care of guaranteeing a high level of anonymity to participants. Subjects report the number of correct answers on the computer screen together with an ID number randomly assigned at the beginning of the session, rather than directly to the experimenter in the attempt to minimize the contact with the experimenters.

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[10] In this context, there are several ways to make cheating. One could try answer, check which answers are correct, and then decide to report eight or more correct answers. One could do the same without the intermediate step of checking the correct answers. It could also be possible to first check the correct answers and then report them in the answer sheet, or to totally skip any attempt to answer the questions. We have no control on the way subjects cheat. Whatever the method chosen however, the purpose is identical: making a false claim, which is the focus of our study.

[11] In contrast to them, we design 10 questions (rather than 8) with 4 possible outcomes (rather than 5), and we give the bonus earnings with 8 correct answers (rather than 6). This slightly reduces the probability to earn the bonus by chance. Moreover, to preserve anonymity our subjects report the number of correct answers on the computer screen rather than to the experimenter.

3.2 Time preferences elicitation

In order to elicit time preferences, we implement a computer-based task drawn from Andreoni et al. (2015) and inspired by Andreoni and Sprenger (2012): the so called "Convex Time Budget" (CTB) task. In this task, quasi-hyperbolic time preferences are elicited in combination with constant relative risk aversion from variations in linear budget constraints over early and later incomes. Specifically, we empirically estimate the discount factor parameter δ, the present-bias parameter β, and the risk aversion parameter α with a non-linear least squares method from the following intertemporal utility function $U(.,.)$ with argument x at time t and time $t+k$:

$$U(x_t, x_{t+k}) = \begin{cases} \frac{1}{1-\alpha}\left(x_t^{(1-\alpha)} + \beta\delta^k x_{t+k}^{(1-\alpha)}\right) & \text{if } t = 0 \\ \frac{1}{1-\alpha}\left(x_t^{(1-\alpha)} + \delta^k x_{t+k}^{(1-\alpha)}\right) & \text{if } t > 0 \end{cases}$$

The CTB in Andreoni et al. (2015) consists of 24 choices. Each choice involves 6 options, where each option is made of two amounts paid at two different points in time. Specifically:

- for choices 1-6: payments are split between today (i.e., the day of the experiment) and in 5 weeks (from the day of the experiment);
- for choices 7-12: payments are split between today (i.e., the day of the experiment) and in 9 weeks (from the day of the experiment);
- for choices 13-18: payments are split between 5 weeks (from the day of the experiment) and 10 weeks (from the day of the experiment);
- for choices 19-24: payments are split between in 5 weeks (from the day of the experiment) and in 14 weeks (from the day of the experiment).

A choice may be inconsistent when allocating a smaller budget share to the future payment date than in the previous choice (Giné et al., 2018). In our experiment we rescaled the payoff of Andreoni et al. (2015) by 50%; therefore, our participants were confronted with allocations of 10 EUR. An example of the decision screen is reproduced in Figure 1.

FIGURE 1 ABOUT HERE

3.3 Experimental procedures

The experiment is conducted using z-Tree (Fischbacher, 2007) at BLESS, the experimental laboratory of the University of Bologna, Italy. Subjects are undergraduate students from different fields of study, recruited using the Orsee software (Grainer et al., 2014). In June 2018, 178 subjects participated, divided in 6 sessions of up to 30 subjects per treatment. All treatments are run in a between-subjects design and none participated in more than one treatment. Subjects are randomly assigned to treatments. The duration of each session is about 60 minutes and the average and median payment was 17 EUR, with a range from 10.5 to 26.5 EUR including a show-up and participation fee of 2.5 EUR[12]. In order to avoid wealth effects, one part between the survey (C) and the time preference elicitation task (T) is randomly selected for payment at the end of the experiment. In case the elicitation task is chosen for payment, one of the 24 choices is randomly selected and subjects received the option they preferred. This means that they may receive immediate payments (by cash), delayed payments (by wire transfer) or a combination of the two.[13]

When designing the experiment, we worked to minimize any contact with the experimenter and this way preserve anonymity. For this purpose, subjects are associated with an ID that they found on a sealed envelope when entering in the lab. All their interactions during the experiment are mediated by the use of this ID.

[12] In June 2019, 96 subjects participated in a study where the same trivia quiz used in the cheating task used were proposed, but with no possibility to cheat. We ran 3 sessions of 32 subjects each. Beside the 10 trivia questions the experiments had other parts which are not considered in this study. The duration of each session was about 75 minutes and the average and median payment was 12 EUR, with a range from 8 to 15 EUR including a show-up and participation fee of 2.5 EUR. The recruitment procedures of this second experiment were the same of the main one, participants who already took part in the first experiment were excluded from the invitation.

[13] All the students are required to have a bank account in order to interact with the university. Usually they also have familiarity with online banking and debit cards, which makes a bank account as liquid as cash. For them, the difference between the two available methods of payment (cash and wire transfers) is small. However, we are aware that few subjects may choose between the two options also based on their preference for the method of payment.

3.4 Summary statistics

Over the 178 potential participants, one skipped some answers in the paper-and-pencil questionnaire. Moreover, we do not have estimates on time and risk preferences for six subjects. These individuals reported inconsistent answers in the time discounting task, indicating the most present-oriented option almost always, and the most future-oriented option occasionally. We also exclude six further observations reporting outlier values for one or more preference parameters. Episodes of inconsistent or strange answers arise commonly in tasks meant to measure time preferences (Andreoni and Sprenger, 2012). Our final sample is then made of 165 observations that we use throughout the analysis.

Table 1 reports summary statistics on the variables under investigation in this study. The key variable is the self-reported number of correct answers that on average is 7.54 out of 10 (with a median of 8, i.e., the minimum level necessary to get the reward). We can split the remaining variables into explanatory and control variables. The explanatory variables are about time and risk preferences, IQ test and over-confidence. We observe on average a risk aversion of 0.91, a discount factor of 0.93, not significantly different from 1 (t-test: -3.60; p-value <0.01), and a present bias equal to 0.801, also significantly different from 1 (t-test: -7.77; p-value <0.01), with 78% of the subjects identified as present-biased (that is, they are associated with a quasi-hyperbolic discount factor below 1).[14] Average statistics are in line with Andreoni and Sprenger (2012) and the micro-based literature on risk aversion and time preferences (for a review respectively see Dohmen et al., 2011; Cohen et al., 2019).

Moreover, on average subjects respond correctly to 5.79 out of the 9 questions in the IQ test, and they tend to over-estimate their performance by 0.81 more correct answers. We see this variable as a measure of over-confidence, defined as the difference between the participant's own opinion and the actual outcome in the IQ test.

The control variables are standard socio-demographics. The average subject is female (in 55% of the cases), 23 years old (with age comprised between 19 and 36), born outside from Italy,[15] has siblings (in 92% of the cases) and comes from a middle-income household (we

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[14] Repeating our benchmark analysis with a dummy equal to one if the present bias parameter is below one, rather than the point estimate, confirms our findings. Results are available upon request.

[15] The popularity of the University of Bologna makes it attractive also for individuals from abroad.

define low-income and high-income households earning respectively up to 1,000 euros and at least 4,000 euros per month, net of taxes). As a further control variable, we take into account the order of the tasks in the experiment, with a dummy equal to one when the time discounting task comes after the questionnaire task (i.e., treatment CT), and equal to zero otherwise (i.e., treatment TC).

TABLE 1 ABOUT HERE

It is interesting to take a closer look at our key variables. Figure 2 plots the distribution of the self-reported number of correct answers. It turns out that 69% of the participants declare 8 or more correct answers, this way earning the monetary reward. In contrast, in two preliminary studies the average was 2.056 (non-incentivized study) and 2.625 (incentivized study) out of 10, and nobody reported 8 or more correct answers; the distributions for both the non-incentivized and the incentivized studies are shown in Appendix Figure A1 and it can be seen that they are clearly different from the one reproduced in Figure 2. This evidence is supported by a Kolmogor-Smirnov test of equality of the distributions.

FIGURE 2 ABOUT HERE

With an abuse of terminology, throughout our analysis we label as "no cheaters" all those who declared answers between 0 and 7 and "cheaters" all those who declared answers between 8 and 10. In reality, based on our preliminary evidence it is very unlikely that subjects who reported 7 or 6 did not cheat and actually answered correctly to such a large number of questions. We believe there are two main reasons for cheating in this setting: the *monetary reward* (I get extra money if I report 8 or more) and the *intrinsic motivation* (I feel better if I report a higher number). Subjects who report 8 or more may have a combination of the two reasons for cheating, while subjects who report 7 or less may cheat only for their intrinsic motivation and to signal us that they did not want to cheat at our expenses. Our setting makes only the monetary reward salient and, consistently, we pay attention to the cheating made for monetary rewards. However, we notice that intrinsic motivation may explain why some subjects report 9 or 10 rather than 8, i.e., the minimum amount needed to obtain the reward. Moreover, we believe it is particularly interesting the case of those participants who report 7 correct answers in our incentivized task. They probably lied, but they restrained themselves from lying more and earning the monetary reward. In their case, the sense of guilt may have prevailed over the potential benefit resulting from declaring 8 or more correct answers.

Table 2 compares the average of the observed explanatory and control variables in the two groups of cheaters and non-cheaters; the last column shows the p-value from a Wilcoxon non-parametric rank-sum test on the equality of the averages in the two groups. The two groups are very similar, as we find evidence of a difference significant at 5% only in over-confidence, which is higher among cheaters. Although not significant, we also notice that cheaters show smaller values for the discount factor and the present bias. Importantly, the two groups do not differ in terms of socio-demographics.

TABLE 2 ABOUT HERE

Table 3 splits the subjects in four groups, depending on their self-reported number of correct answers: less than 8 (i.e., no monetary reward), 8, 9 and 10. This way, we take a closer look at the different outcomes for the self-reported number of correct answers leading to the same monetary reward. We compare these groups in terms of their average in the explanatory variables, with a Kruskal-Wallis non-parametric rank test on the equality of the averages among the four groups. The p-value of the test is reported in the last column of Table 3. We now find evidence of a statistical difference in the present bias, which tends to be smaller as the self-reported number of correct answers increases. Moreover, we notice that subjects who report 10 correct answers have the lowest average performance in the IQ test, but rank high in over-confidence. This evidence is in line with the so-called Dunning-Kruger effect, in which the least intelligent believe to be smarter.

The preliminary results in this section may be biased because they do not control for the other characteristics of each subject in the sample. Our analysis in Section 4 is meant to address this issue in a multivariate setting.

TABLE 3 ABOUT HERE

4. Results

In this section we perform multivariate non-linear regression analyses to study the correlation between the self-reported number of correct answers and our explanatory variables on time and risk preferences, IQ test and over-confidence. All the models use standard errors clustered by experimental session. In what follows, we take the convention to consider significant only the coefficients reporting a p-value below 5%.

Table 4 shows average marginal effects from probit regressions where the dependent variable is a dummy equal to one if the self-reported number of correct answers is 8 or more, and zero otherwise. In so doing, we compare subjects who cheated because of the monetary incentive from those who did not cheat. Column 1 of Table 4 includes in the specification only the control variables, finding no significant effects. Among others, a non-significant coefficient is the one on the ordering of the tasks in the experiment. It suggests that starting the experiment with the questionnaire including the cheating task, and then eliciting time preferences, or vice versa, makes no difference. That is, the decision to report a high number of correct answers is influenced neither by an earlier task focusing on time preferences, nor by monetary rewards received in earlier stages.

In Column 2 we introduce in the specification the preference parameters. We find a significantly negative effect for present bias, supporting Hypothesis 2. This means that subjects that have a more pronounced bias toward the present are more likely to cheat. For instance, a one standard deviation (0.328) drop in the present bias parameter reduces the probability by 0.233*0.328=7.64%. Interestingly, we find no significant effect for the discount factor, which suggests that being short-sighted or forward-looking does not correlate with the probability to cheat. Among the control variables, we now find a significantly positive effect on cheating of being born abroad (+15.5%).

In Column 3 we also add the variables on IQ test and over-confidence. The introduction of the new variables does not modify our previous findings, and in addition we now find a positive effect of being over-confident: people who believe they solved correctly one more matrix than they actually did in the IQ test are 6% more likely to cheat.

In an ex-post analysis, we explore the moderating role of gender on our key effects. The motivation is that we find large changes on the descriptive statistics, with females on average more future oriented (in terms of both discount factor and present bias) and less self-confident. Therefore, even if in the previous analyses we did not find a significant effect for being a female, it could be that gender plays a role through other dimensions. For this reason, in Column 4 we repeat the analysis in Column 3 but replacing the variables on preferences, IQ test and over-confidence with their interactions with gender. We introduce one set of interactions with being male, and one set of interactions with being female. This specification is as informative as the one in Column 3 with the inclusion of one single set of interactions but has the advantage of directly providing separate effects on males and females. Estimates show interesting results which we discuss in light of the existing evidence.

First, the present bias acts only through females displaying a negative association with the likelihood of cheating. This difference may be related to the overall finding that females display greater patience than males (McLeish and Oxoby, 2007; Castillo et al. 2011), with impatient females representing an exception with respect to the average trait in their group.

Second, over-confidence matters for both genders. Previous studies documented gender difference in self-confidence, with males displaying more overconfidence than females, (Lundeberg et al., 1994; Niederle and Vesterlund, 2007). To the best of our knowledge there is no evidence supporting an association between overconfidence and cheating (for both genders) with the exception of Adams et al. (2018) who find that cheaters have both higher stated beliefs in their ability and will reveal themselves to be more confident in their ability even when they cannot cheat again. In light of our result we speculate that overconfident individuals may assign higher probability to the fact that the experimenter truly believe they actually reached the threshold in the trivia quiz, with the consequence that for overconfident individuals there is a lower cost (in terms of social image) of being perceived as cheaters by the experimenters.

Third, the probability to cheat among males is highly influenced by several other dimensions: the discount factor (negatively), the risk aversion (negatively) and IQ test (positively). When considering the discount factor, the literature provides mixed evidence on gender differences, therefore it is quite difficult to be conclusive when considering its association with the likelihood of cheating. Silverman (2003) concluded from a meta-analysis that women discount future rewards less than men, noting, however, that such differences are small and depend on measurement type. In contrast, Van Praag and Booij (2009) found that women have higher discount rates than men in a Dutch sample. Finally, Harrison et al. (2002) estimated identical discount rates for men and women in a Danish sample. When considering the association between risk aversion and gender, traditionally men have been found more risk prone than women (e.g., Eckel and Grossman, 2008; Croson and Gneezy, 2009)[16]. At the same time, women are found to be less dishonest than men (e.g., Dreber and Johannesson, 2008; Childs, 2012; Friesen and Gangadharan 2012). Bucciol et al. (2013) and Hübler et al. (2018) found a negative association between cheating and risk aversion irrespective of gender. Interestingly, Friesen and Gangadharan (2012) found that women were influenced by risk preferences, with risk averse females being less dishonest, suggesting that the association between gender and risk preference applied to decision making on the moral domain deserves to be studied with greater attention. Finally, the positive correlation between IQ and cheating is also found in Alan et al. (2019) for both genders: in their sample children with higher IQ (measured as the score higher scores in the Raven's progressive matrices test) are more likely to cheat. The authors argue that for these children achieving good performance is particularly important and that for this reason they are more willing to cheat (on a creative task) in order to maintain their high performance. These results are on the same line as the ones reported by Gino and Ariely (2012) who find that more creative individuals are also more likely to act dishonestly, and Fosgaard et al. (2013), who find that individuals who score better at the cognitive reflection test are also more likely to cheat.

We also ran two robustness checks around the benchmark analysis of Table 4. The preference variables may be estimated with error and, for this reason, in the first robustness check reported in Appendix Table A2 we replace each of them with an ordinal variable equal to 1, 2, …, 10 to indicate the decile of the sample distribution it belongs to. Our benchmark

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[16] A more recent review by Filippin and Crosetto (2016) points that such differences are smaller in magnitude than previously estimated and that they systematically correlate with the features of the risk preference elicitation method used.

results are mostly confirmed, with some exceptions in Column 4 where we find fewer significant effects (of the discount factor and over-confidence for males, the present bias and over-confidence for females). In the second robustness check, reported in Appendix Table A3, we change the definition of the dependent variable. We still take a dummy variable equal to 1 when the subject is considered a cheater, but we define cheaters all those reporting 6 or more correct answers, or 7 or more correct answers. One could view these two variables as trying to identify all likely cheaters (no matter for monetary rewards or not). In this case, we keep on finding strong effects of over-confidence, while we still observe the results in Column 4 only with respect to the present bias of females. Based on this evidence, we make the following speculation on cheating not necessarily driven by monetary rewards. First, the effect of the present bias is not as clear. Second, males are less stimulated to cheat. That is, males seem to cheat mostly for a monetary reward, whereas females may cheat also for other reasons. This issue deserves further investigation that we leave to future research.

To summarize, we find that cheating is correlated with over-confidence and, more interestingly for our research, present bias suggesting that individuals who are more likely to exhibit self-control problems are also more likely to cheat. We thus find support to Hypothesis 2, while we find no support to Hypothesis 1 on the effect of the discount factor. In an ex-post analysis on gender, however, present bias is relevant among females, whereas the discount factor matters more among males.

TABLE 4 ABOUT HERE

In Table 5 we consider the specification in Column 3 of Table 4 with one further dependent variable. The new variable is ordinal and makes a distinction between the group of subjects who did not cheat for the monetary reward (by reporting less than 8 correct answers) and, separately, each of the groups reporting 8, 9 and 10 correct answers. The purpose of looking at these four groups rather than just two and combining all those individuals receiving the monetary reward, is to pay special attention to "pathological" ways of cheating. In fact, the monetary reward is granted whenever the subject reports at least 8 correct answers, and there is no further reward in reporting 9 or 10 correct answers which –

presumably – are farther from the truth. Still, many individuals report 9 and 10. Table 5 then shows results from an ordered probit regression, where the three columns indicate average marginal effects on the probability that the self-reported outcome is 8, 9 or 10 respectively. Compared to Table 4, we find fewer significant effects, because each outcome of the dependent variable is associated to a smaller number of observations. However, we still find significant effects for present bias and over-confidence, but only when the outcome is 9 or more. The effect is also growing with the self-reported outcome. For instance, a 1 standard deviation raise in present bias increases the probability of reporting 9 by 3.59% and the probability of reporting 10 by 5.86%. It then seems that only those who make severe cheating differ from the others.

TABLE 5 ABOUT HERE

5. Conclusions

Research on cheating is growing fast, but much still has to be learnt about the mechanisms behind cheating and the relationship between cheating and other domains on individual preferences. Our research contributes to the literature by studying the correlation with time discounting. Specifically, we ran a lab experiment to explore the correlation between cheating and time preferences, and found evidence that cheating is more frequent among individuals who are biased toward the present. In addition, cheating is more likely among over-confident individuals. Our findings suggest that a way to indirectly contrast cheating is to promote a forward-looking behavior, or at least to make the long-term consequences of cheating more salient. With respect to the correlation between overconfidence and cheating, our study calls for more research on the mechanism behind this association as well as for the spillover effects aiming to limit overconfidence and the tendency to cheat.

Ex-post analysis on gender shows that the present bias seems to matter only among females, whereas males are more influenced by the discount factor (negatively), the risk aversion (negatively) and IQ test (positively). This evidence is interesting and opens new avenues for research on gender and cheating, where it is frequently found that females cheat less frequently (e.g., see the review in Jacobsen et al., 2018). We also found some evidence that the correlation between cheating, over-confidence and the present bias is more pronounced when the intensity of cheating is higher. This evidence, however, needs to be explored more in detail by means of an experimental design specifically aimed at detecting these mechanisms. We leave it as an interesting future avenue of research.

Link to the Appendix

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Table 1. Summary statistics (165 observations)

	Mean	Std. Dev.	Min.	Max.
Correct answers	7.539	2.199	0	10
Discount factor	0.930	0.250	0.000	1.054
Present bias	0.801	0.328	0.000	1.565
Risk aversion	0.912	3.091	0.000	12.423
IQ test	5.788	1.814	0	9
Over-confidence	0.806	1.984	-4	7
Female (d)	0.545	0.499	0	1
Age	23.303	2.473	19	36
Born abroad (d)	0.103	0.305	0	1
Siblings (d)	0.915	0.280	0	1
Low income (d)	0.200	0.401	0	1
High income (d)	0.200	0.401	0	1
Order (d)	0.497	0.502	0	1

Note. (d) indicates that the variable is a dummy.

Table 2. Cheaters and non-cheaters (means)

	Non-cheaters	Cheaters	Test
Discount factor	0.959	0.917	1.760*
Present bias	0.865	0.773	1.679*
Risk aversion	0.559	1.070	-1.055
IQ test	5.882	5.746	0.145
Over-confidence	0.275	1.044	-2.119**
Female (d)	0.569	0.535	0.399
Age	23.314	23.298	-0.162
Born abroad (d)	0.078	0.114	-0.693
Siblings (d)	0.882	0.930	-1.008
Low income (d)	0.235	0.184	0.756
High income (d)	0.176	0.211	-0.504
Order (d)	0.549	0.474	0.892
Observations	51	114	

*Note. The test is a Wilcoxon rank-sum test on the equality of the mean in the two groups. (d) indicates that the variable is a dummy. *** p<0.01, ** p<0.05, * p<0.1.*

Table 3. Intensity of cheating (means)

	Outcome <8	Outcome =8	Outcome =9	Outcome =10	Test
Discount factor	0.959	0.940	0.911	0.875	4.634
Present-bias	0.865	0.870	0.673	0.702	13.658***
Risk aversion	0.559	0.799	1.124	1.581	3.313
IQ test	5.882	5.796	5.971	5.320	1.887
Over-confidence	0.275	1.111	1.029	0.920	4.460
Observations	51	54	35	25	

*Note. The test is a Kruskal-Wallis rank test on the equality of the mean in the four groups. *** p<0.01, ** p<0.05, * p<0.1.*

Table 4. Probability to cheat (average marginal effects)

	(1) Prob. cheat	(2) Prob. cheat	(3) Prob. cheat	(4) Prob. cheat
Discount factor		-2.465	-2.779	
		(2.469)	(2.546)	
Present bias		-0.233***	-0.199**	
		(0.077)	(0.083)	
Risk aversion		-0.187	-0.208	
		(0.203)	(0.208)	
IQ test			0.016	
			(0.014)	
Over-confidence			0.060***	
			(0.015)	
Discount factor, males				-6.892**
				(3.369)
Present bias, males				-0.316*
				(0.182)
Risk aversion, males				-0.546**
				(0.274)
IQ test, males				0.042**
				(0.020)
Over-confidence, males				0.068***
				(0.024)
Discount factor, females				1.004
				(2.340)
Present bias, females				-0.203**
				(0.080)
Risk aversion, females				0.144
				(0.155)
IQ test, females				-0.005
				(0.013)
Over-confidence, females				0.057**
				(0.027)
Female	-0.039	0.002	0.020	-7.730*
	(0.072)	(0.072)	(0.071)	(4.637)
Age	0.002	0.007	0.006	0.009
	(0.022)	(0.019)	(0.019)	(0.019)
Born abroad	0.121	0.155**	0.170***	0.186***
	(0.081)	(0.067)	(0.050)	(0.054)
Siblings	0.108	0.137	0.181	0.180
	(0.120)	(0.122)	(0.115)	(0.116)
Low income	-0.089	-0.124	-0.151	-0.140
	(0.140)	(0.147)	(0.122)	(0.139)
High income	0.012	0.034	0.046	0.060
	(0.120)	(0.124)	(0.111)	(0.100)
Order	-0.070	-0.091	-0.104	-0.101
	(0.080)	(0.081)	(0.073)	(0.068)
Log-likelihood	-100.276	-97.199	-92.766	-89.282
Pseudo R^2	0.017	0.047	0.091	0.125
Observations	165	165	165	165

Note. Marginal effects are from a probit regression. Standard errors in parentheses.
**** p<0.01, ** p<0.05, * p<0.1.*

Table 5. Probability to cheat by intensity of cheating (average marginal effects x100)

	(1) **Prob =8**	(2) **Prob =9**	(3) **Prob =10**
Discount factor	19.682	-117.799	-192.245
	(18.232)	(76.795)	(134.591)
Present bias	1.828	-10.938**	-17.851***
	(1.805)	(4.758)	(6.494)
Risk aversion	1.513	-9.057	-14.781
	(1.398)	(6.172)	(10.556)
IQ test	0.024	-0.141	-0.230
	(0.052)	(0.374)	(0.568)
Over-confidence	-0.189	1.129***	1.842***
	(0.154)	(0.392)	(0.511)
Female	0.292	-1.750	-2.856
	(0.490)	(2.670)	(4.459)
Age	-0.105	0.629	1.026
	(0.099)	(0.394)	(0.729)
Born abroad	-0.888	5.316**	8.675***
	(0.629)	(2.691)	(3.314)
Siblings	-1.280	7.661*	12.502
	(1.195)	(3.986)	(9.242)
Low income	1.079	-6.460**	-10.542*
	(0.662)	(2.789)	(5.578)
High income	0.169	-1.011	-1.649
	(0.754)	(4.114)	(7.186)
Order	0.809	-4.843**	-7.904*
	(0.975)	(2.090)	(4.428)
Log-likelihood	-208.928	-208.928	-208.928
Pseudo R^2	0.057	0.057	0.057
Observations	165	165	165

*Note. Marginal effects are from an ordered probit regression. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

Figure 1. Screen shot of the first 6 choices in the CTB.

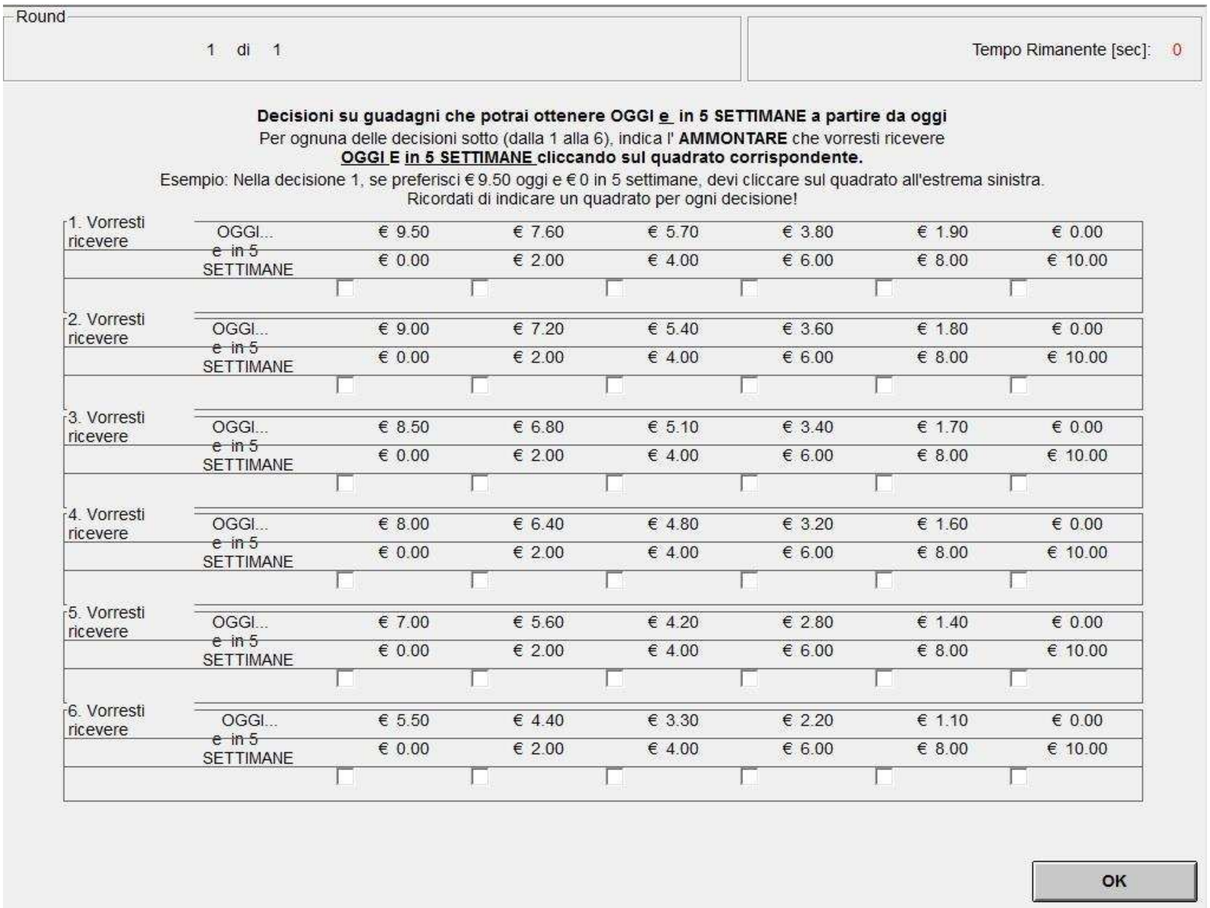

Figure 2. Distribution of correct answers (*N*=165)