Cheating in Academia: The Relevance of Social Factors

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Abstract

We implemented an online anonymous survey targeted to current and former university students, where the interviewed are asked to indicate whether and to what extent they cheated during written exams. We want to learn if cheating is widespread, and if it correlates with social factors such as the level of trust in others, the beliefs about the peers' dishonesty and perceived level of opportunism in the society. We find that 61% of the respondents report to have cheated once or more. Cheaters are more likely to report that their classmates and friends cheated, and that in general people can be trusted. In contrast, being aware of the sanction, earning top grades and thinking that people are willing to take advantage of others is negatively correlated with self-reported cheating. There is evidence of two different cheating styles: "social cheaters", who self-report mostly that they have violated the rules interacting with others; "individualistic" cheaters, who self-report mostly that they have used prohibited materials. Only social cheaters seem affected by social factors: they exhibit higher levels of trust and lower levels of perceived opportunism compared to individualistic cheaters, while no differences between the two groups are found when looking at other dimensions.

Keywords: Academic cheating; Honesty; Trust; Online survey.

JEL Classification: I21; D01.

PsycINFO Classification: 3550; 3560.

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1. Introduction

Many real-life situations involve some form of fraud, of which we constantly receive information from the media. These range from the financial sector and firms in general, to politics, public transport, sports and health sector, among others.

A relevant scenario for committing frauds, and currently under-investigated in the economics literature, is represented by academic cheating, which occurs in educational environments such as colleges and universities. Three main elements characterize academic cheating: the presence of young adults who consciously commit frauds; the presence of an educational environment which should also transfer ethical principles on top of mere knowledge; and the presence of a common social context and community, in which students have many chances to interplay and to observe peers acting dishonestly.

Academic cheating thus appears an important context worth investigating, due to its social and pedagogical character. It is indeed well-known that cheating presents social contagion effects (Carrell et al., 2008; Gino et al., 2009); therefore, colleges and universities, characterized by massive amounts of students who engage in daily, repeated social interactions, represent an ideal scenario for social contagion and peer effects to occur. Moreover, according to McCabe (2005), colleges are the last good chance to form honest young adults who will be future professionals and possibly role models in the society. In addition, not only cheating at university has been found to be positively correlated with cheating in earlier studies of a student career (Davis and Ludvigson, 1995), but a few works point out that it is also correlated with cheating in future life circumstances, especially at the workplace (Lovett-Hooper et al., 2007; Sims, 1993; Wowra, 2007). For instance, a large survey conducted in 2009 by the Josephson Institute of Ethics shows that students who cheat on high-school exams are three times more likely to lie to a customer or to overstate an insurance claim compared to students who never cheated. This implies that understanding and contrasting academic cheating may have beneficial effects for future work environments and society overall.

Prior studies show that in the last decades, academic cheating has been exhibiting increasing trends, both in frequency (Jones, 2011) and repertoire (Björklund and Wenestam, 1999; McCabe and Trevino, 1996). Several reasons have been put forward to explain such

increasing statistics (Ashworth et al., 1997): a growing mass enrollment of students at universities, with a consequent reduction in teacher-student ratio, and a growing competition on the job market, with a parallel sharpened pressure for high grades, are considered among the major determinants.

In this study, we investigate to which extent academic cheating is widespread, and if it correlates with social factors such as the level of generalized trust, the beliefs about peers' dishonesty and the perceived level of opportunism in the society. To this end, we collect information about self-reported academic cheating among a large sample of current and former students enrolled at Italian universities, who filled in an anonymous online survey.

Our contribution is threefold: first, we employ data on self-reported cheating of students from different universities, thus obtaining a heterogeneous sample in terms of geographical distribution but also type and quality of university attended by the respondents. This feature of our dataset departs from most prior contributions, which focus on case studies of single universities, with the notable exception of McCabe (2005) who investigates several universities in the US and Canada. Second, our online survey allows to elicit self-reported cheating in a completely anonymous setting detached from classroom, where the presence of fellow colleagues and professors when the data are collected may play a role. This feature of the data collection distinguishes our study from most of prior contributions, in which surveys were administered during ordinary university classes and therefore peer effects may have occurred. Third, we elicit not only individual and situational characteristics of respondents, but also variables related to their cultural and social context (e.g., the level of generalized trust, the beliefs about peers' dishonesty, the perceived importance of merit in life, the perceived degree of opportunism and inefficiency in the society, etc.). Having data on these characteristics of the respondent differentiates ours from prior studies, which mostly focus on individual characteristics, disregarding the factors related to the perception of the social context.

We define cheating as "breaking the rules of conduct during a written exam", for instance when copying from different sources, or speaking with other students during the exam. This definition has the advantage of being straightforward, allowing us to exclude other forms of academic cheating as, for example, plagiarism and cheating in home

assignments. We opted for this specific form of cheating for several reasons. First, it is easily identifiable. Other widespread forms of academic cheating, such as plagiarism, are much more complex phenomena, subject to different interpretations by students and, also, to different levels of consciousness. Second, using this definition, cheating can be observed in any academic discipline contemplating written examinations, while this is not the case for other forms of cheating, as for instance plagiarism. Indeed, the extent and nature of material subject to potential plagiarism varies substantially across disciplines: in humanities and social sciences plagiarism can be committed in the writing of master theses or essays, whereas in STEM (Science, Technology, Engineering and Mathematics) plagiarism may also involve the possibility to create or manipulate scientific data. Third, we choose a form of cheating which is taken more seriously by students with respect to cheating in home assignments, as evidenced by Ashworth et al. (1997) and Bjorlund and Wenestam (1999). Moreover, the saliency of committing something not allowed is more evident than in the case of plagiarism (Bjorlund and Wenestam, 1999; Newstead et al., 1996).

Our findings indicate that academic cheating is widespread: about half of the sample of our respondents (48%) self-report to have cheated in one or two exams; 13% of the respondents report that they cheated three or more times, while the remaining 39% report that they never cheated. Cheaters are more likely to report that their classmates and friends cheated, and that in general people can be trusted. In contrast, being aware of the sanction, earning top grades and thinking that people are willing to take advantage of others is negatively correlated with self-reported cheating. When looking at how cheating was implemented, two different types of cheaters can be identified: "individualistic" cheaters, who self-report that they have used prohibited materials and "social" cheaters, who self-report that they have interacted with others. Interestingly, only social cheaters seem to be affected by social factors: they exhibit higher levels of generalized trust compared to individualistic cheaters, as well as lower perception of opportunism in the society, while no other differences between the two groups are found when looking at other dimensions under investigation.

The remainder of the paper is organized as follows: in Section 2, we review the related literature on academic cheating and introduce our research hypotheses. In Section 3

we present the data and some descriptive statistics. Section 4 reports and discusses our results, while Section 5 concludes.

2. Related Literature and Research Hypotheses

In the past decades, dishonest behavior gathered massive attention in both the economics and psychology literature (Jacobsen et al., 2017). According to a 2004 Readers' Digest poll on 2624 subjects, 93% reported to engage in at least one form of dishonesty in their daily life, such as calling in sick at work, taking office supplies from work or lying on their CVs (Kalish, 2004). It is reasonable to expect that dishonest behaviors occurring in adulthood trace back to prior life episodes and educational environments. In this context, cheating at college represents an important and currently under-investigated topic, and we aim at contributing to this stream of research from several perspectives.

Research on academic cheating dates back to the first half of the last century (Drake, 1941) and mainly focuses on data from single-case US colleges, where researchers started being concerned about the reasons why students cheat and in the demographic characteristics of cheaters. Since the definition of cheating employed varies across studies (in some cases encompassing only cheating in written exams, in other cases also including plagiarism), comparisons of magnitudes of cheating rates across studies are not very informative, although magnitudes themselves are suggestive of a highly widespread phenomenon.[1]

Since dishonest behavior is difficult to observe and people try to conceal it, data used in the literature are self-reported, and they have been mainly gathered through surveys implemented in classrooms, at least until recently, when web-based surveys started being employed (McCabe, 2005). The methodology by which dishonest behavior is elicited is crucial as it affects the amount of dishonesty reported by respondents. The key issue is the perceived anonymity of the respondents. In classroom surveys Kervliet (1994) finds that when using direct questions (DQ), about 25% of cheating is reported, while when using

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[1] Most statistics show that more than half of students have engaged in academic cheating at least once (Haines et al., 1986; Jones, 2011; McCabe, 2005), but some studies report much higher peaks, around 75% (Baird, 1980).

randomized response (RR) surveys, a much higher self-reported cheating emerges (42%). This difference is explained by the fact that in the DQ methodology respondents are not entirely sure that the confidentiality of their answers is preserved, while anonymity is much higher in the RR approach. Our study overcomes this problem as it elicits self-reported cheating in a completely anonymous setting (online survey), in which respondents fill in the survey not in the classroom, where the presence of fellow colleagues and professors might exert an influence in the self-reported amount of cheating.

Researchers have been mainly interested in the reasons underlying academic cheating, in an effort to design targeted interventions aimed at eradicating the problem. In this regard, prior contributions show a distinction between individual characteristics (such as age, gender, GPA, field of study, extrinsic vs. intrinsic motivation) and situational or contextual factors, the latter being related to the institution or to a series of circumstances and features of the contexts where cheating takes place (McCabe, 1993). According to Bjorklund and Wenestam (1999), individual characteristics are the strongest factors affecting cheating, whereas contextual ones contribute to ease it.

According to Rettinger and Kramer (2009), knowledge of others' cheating is the biggest predictor of cheating. However, it is not easy to disentangle the reasons underlying this pattern. There may be three explanations for these correlations: the respondent self-reports to have cheated because he or she found an excuse to cheat in not being the only cheater (in line with the social contagion or neutralization explanation; see on this Gino et al., 2009; Haines et al, 1986; Naghdipour and Emeagwali, 2013); he or she is linked to classmates and friends with her same cheating attitude (homophily in the network of acquaintances and friendships; Currarini et al., 2009; McPherson et al., 2001); he or she cheated because of competitive pressure for marks in seeing others cheating (Atanasov and Dana, 2011; Haines et al., 1986).

Other contextual factors affecting cheating relate to the perception of the probability of detection (Corcoran and Rotter, 1987); to the presence of honor codes at the university; and more in general to the university climate and professors' attitude. Universities where an honor code is in place are characterized by lower rates of self-reported cheating (McCabe, 1993; McCabe and Trevino, 1996; McCabe et al., 2001; Shu et al., 2011). What seems to

matter is also the departmental climate (a more relaxed environment is correlated with more cheating, according to Jackson et al., 2002) and professors' attitudes and efforts in engaging students. For instance, students with professors who do not care about cheating report higher self-reported cheating levels (Iberahim et al., 2013).

Generalized trust towards others has received scant attention in the cheating literature so far. One interesting exception is the study by Neville (2012), who uses a novel source of dishonest data regarding academic cheating in the US: Google state-level queries searching for term-paper mills and help with cheating. He finds a positive correlation between the amount of dishonest queries and income inequality at the state level, advocating that the relation is fully mediated by generalized trust. The rationale is the following: a higher income inequality would entail reduced trust in others; consequently, when facing an opportunity to cheat, students with lower levels of generalized trust will be more tempted to assume that their colleagues are likely to cheat and, accordingly, in order to "level the playing field" (McCabe et al., 2011, p.220), they are more induced to cheat. In an environment characterized by high generalized and reciprocal trust, students feel to be considered trustworthy by other colleagues, and as a result, they would feel a weaker temptation of breaking this pervasive trust through academic misconduct. In contrast to Neville (2012), our study allows to investigate the relationship between generalized trust and academic dishonesty at the individual level, thus controlling for a set of individual characteristics.

2.1 Research Hypotheses

After controlling for the individual characteristics of the respondent, we test three main hypotheses, which are all focused on the relevance of social factors on the self-reported academic cheating. Trust in others, the beliefs about others' dishonesty and the perceived level of opportunism of the society in which students live and will find occupation, have been so far disregarded to a large extent in the literature, although they are likely to influence students' decisions of engaging in academic dishonesty. Specifically, our first hypothesis pertains to the correlations between the (self-reported) level of cheating and the beliefs about the frequency of dishonest behaviors by classmates and friends. Our second hypothesis deals with the relationship between the level of generalized trust and the (self-reported) level of

cheating. Our third hypothesis refers to the perceived level of opportunism in the society. Summing up, our first and second hypothesis suggest a role played by the existing social norms about cheating and its tolerance in the reference groups to which the respondents belong; the second and the third hypotheses also refer to the respondents' view about the society as a whole.

Hypothesis 1
Individuals who believe that friends and classmates engage in dishonest behaviors are more likely to self-report cheating.

Hypothesis 1 refers to the existing social norm about cheating in the reference group and to the presence of contagion effects operating through peers, and specifically friends and classmates (Gino et al., 2009; Haines et al., 1986; Naghdipour and Emeagwali, 2013). It is a robust result in the dishonesty literature that the extent to which individuals follow norms and engage in dishonest behavior is influenced by how widespread norm violations are considered (Gächter and Schulz, 2016; Keizer et al., 2008). If cheating is a common practice, then it could be considered as more acceptable (Lefebvre et al., 2015) and, as a consequence, if one indulges in cheating, this would occur without compromising the individual's self-image of honesty (Gino et al., 2009).

This hypothesis is compatible with a social contagion effect as well as with sorting according to homophily in the network of acquaintances and friendships (Currarini et al., 2009; McPherson et al., 2001). Moreover, it is also compatible with the existence of strong competition for marks: it could be the case that the cheating practice is exerted in order to level the playing field against fellow colleagues who are seen as competitors, especially if evaluations are implemented in a comparative fashion (Atanasov and Dana, 2011; Haines et al., 1986). In line with this reasoning, Hauk and Saez-Marti (2002) and Tabellini (2008) maintain that in contexts with endemic corruption, parents may recommend dishonest acts as a way to compete and succeed in this environment.

Hypothesis 2

Individuals who report a higher level of generalized trust are less likely to self-report cheating.

The intuition behind this hypothesis is that, if others are considered trustworthy, they will be also expected to behave honestly. Consequently, we formulate the hypothesis that, other things being equal, respondents who exhibit higher levels of generalized trust are less inclined to cheat as a reaction to others' dishonesty. As pointed out by Uslaner (1999, 2004), we are more inclined to behave morally, the more faith we have in others' morality, hence the more we trust others. Based on the evidences of a negative relationship between perceived corruption and generalized trust, we transfer this argument into the academic cheating context.

However, depending on the reference group that the participants have in mind when answering this question, an opposite relationship between trust and cheating can be observed: individuals who report higher levels of trust may also report more cheating based on the idea that they trust others' loyalty consisting in avoiding to report dishonest behaviors.

Hypothesis 3

Individuals who perceive a high level of opportunism in the society are more likely to self-report cheating compared to those who perceive a low level of opportunism.

Hypothesis 3 refers to how the perception of opportunism affects the probability of (self-report) cheating. In a society in which dishonest behaviors are widespread, it is likely that they will be considered less severe by those committing them. Along these lines, Magnus et al. (2002) study cheating attitudes across different countries, and relate them with a corruption index at the country level, suggesting that cheating and corruption both depend on similar cultural factors. In contrast, in our study we are able to relate academic cheating and individual perception of opportunism at the individual level. Also for this hypothesis, as for the first one, we base our third hypothesis on a documented relationship between individual behavior and the specific attitudes perceived at the societal level (Lefebvre et al., 2015).

3. Data

We implemented a non-incentivized web-based survey. The survey was accessible to everybody who wanted to fill it in through a link between May and June 2017. The link was advertised in the main student and former student associations of all Italian Universities, most of which operating through Facebook groups. More than 2,000 individuals completed the survey. The average respondent was 24 years old (with age ranging from 18 to 75). We are aware that this sample is not representative of the population as there might be some self-selection of the respondents, even considering that we have a quite even distribution of participants who report that they never cheated and participants who report that they behaved dishonestly at least once. For this reason, we will be cautious in drawing general conclusions. Still, we believe that our sample captures the target population relevant for our study.

The survey questionnaire (translated in English) is reported in Appendix A. The purpose of the survey was stated in the introduction of the questionnaire, where respondents learned that it consisted in investigating the practice of dishonesty during written exams at the university. Dishonesty was identified as "breaking the rules of conduct during a written exam". The survey was composed of 32 questions, divided in three main groups: questions about dishonest behavior during written exams (self-reported dishonest behavior: questions Q1-Q6; others' dishonest behavior: Q7-Q9; suggestions to limit dishonest behavior and sanctions: Q10-Q11), questions about preferences and beliefs (generalized trust: Q12-Q14; merit and risk attitude: Q15-Q17), questions about demographics and the social context (demographics: Q18-Q21; university attended: Q22-Q30: importance of religion: Q31-Q32).

3.1. Summary Statistics

Our dataset is composed of 2,157 observations. The key dimension we aim at investigating is captured by Q1, where we ask if the individual ever behaved dishonestly in a written exam and, if so, with which frequency. The answers are summarized in Figure 1: we learn that dishonest behavior in written exams is a widespread phenomenon. About half of the sample (48%) self-report to have cheated in one or two exams; 39% of the respondents report that they never cheated, while the remaining 13% reported that they cheated three or more times.

FIGURE 1 ABOUT HERE

Table 1 defines the variables we consider in our analysis, while Table 2 reports summary statistics. Our key variables are two dummies that we label "ever cheated", equal to 1 if the respondent declares to have cheated in one or more exams, and "frequently cheated", equal to 1 if the respondent declares to have cheated in three or more exams. In the full sample, 61.4% of the respondents ever cheated and 13.1% frequently cheated. We construct two more dummy variables to account for the type of dishonest behavior performed: "ever interacted" is equal to 1 if the respondent ever cheated either by interacting with others during the exam(s), while "ever used material" is equal to 1 if the respondent reports he used material not allowed. These two forms of cheating are the most frequently self-reported, and they arise in the sample with a frequency equal to 32.9% and 33.1%, respectively.[2]

TABLE 1 ABOUT HERE

We define a set of further dummy variables that we use as explanatory variables, namely: Classmates/Friends cheated (from Q7 and Q8); People can be trusted (from Q12); People take advantage (from Q14); Merit rewarded first job (from Q17); Aware of the sanction (from Q11); Not religious (from Q31). This way, we understand that 59.7% of the respondents believe that their classmates cheated, and a lower percentage (35.3%) believe that their friends cheated. Only 27.6% of the respondents believe that people can be trusted, and as many as 76.8% of the respondents believe that people are opportunist, i.e., that they try to take advantage if they have a chance. When looking for the first job, merit seems to be rewarded, indicating efficiency of the job market, although by a small majority of the respondents: 58.4%. Only a minority of the respondents (29.7%) are aware of the sanction in case of getting caught cheating.[3]

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[2] Note that the sum of the two frequencies is slightly higher than that of the variable "ever cheated" because in the questionnaire it was possible to report more than one way of cheating.

[3] The sanction is varying across universities and departments. Typical sanctions include automatic failure at the exam, skipping the following exam session, and a dishonorable mention to the faculty head.

Risk tolerance is a discrete, self-reported indicator from 0 to 10 (where 0 indicates maximum risk aversion and 10 maximum risk tolerance); the average in the sample is 5.936, slightly higher than the central value. The average age of the respondent is 24, while the average age at the time of the degree is 23, and it is retrieved as the age of the respondent minus the difference between the survey year (2017) and the year in which the degree was obtained. If the degree still has to be obtained, i.e., if the respondent is a student, we keep his or her current age. This change affects 21.19% of the respondents, that on average are 29 years old. Other statistics inform that the average respondent is female (in 61.1% of the cases), Italian (the foreign respondents are just 3.1%), slightly more likely to live in Northern Italy (51.5%) and study in the North (58.6%), and he or she moved to another region for studying (most typically, from South to North) in 31% of the cases. These statistics are in line with official data from Almalaurea, a cross-university association representing almost universally the population of Italian graduates.[4]

Respondents frequently hold or are studying for a bachelor degree (in 57.1% of the cases), study or studied in a public university (only 8.6% report a private university), and declare to earn top grades (20%, between 29 and 30 on a 30-point scale; it is equivalent to "A" in the ECTS grading system). Finally, fields of study are grouped in Social Sciences, STEM and Humanities, with respondents in the Social Sciences group being slightly more frequent (38.8%) than the other two groups (36.7% and 24.5%, respectively for STEM and Humanities).

To shed some light on our research hypotheses, we split the sample in two groups, cheaters and non-cheaters, according to the definition of the "ever cheated" dummy variable. The rest of Table 2 shows the average of the variables in the two sub-samples, together with the outcome of a test on the significance of the difference. The outcome of the test informs that, at the 5% significance level, cheaters are more likely to indicate that classmates and friends cheat, and they are less likely aware of the sanction if they get caught. More frequently they are also younger, come from and study in the North, study or studied in

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[4] For instance, in 2016, across all universities and fields, the average graduate was 26.1 years old, female in 59.2% of cases, and immigrate in 3.5%. Information retrieved on September 4 2017 from: http://www2.almalaurea.it/en/cgi-php/lau/sondaggi/intro.php?lang=en&config=profilo

public universities, earned lower grades and their field is more likely to be STEM and less likely to be Social Sciences.

This evidence is intuitive to a large extent. However, this preliminary exercise is univariate and does not take into account the correlation of all the dimensions at play. Section 4 is meant to provide a more accurate analysis, through the implementation of regression models.

TABLE 2 ABOUT HERE

4. Analysis

Table 3 reports average marginal effects from probit regressions on the same specification, using four different dependent variables. In the following, we use the general rule to comment only on effects that are significant at the 5% or lower level.

Starting from Column (1), where the dependent variable is the dummy "ever cheated", we see that the probability to self-report having ever cheated increases by about 15% if classmates or friends are believed to cheat, supporting our Hypothesis 1. Not surprisingly, awareness of the fine reduces the probability to cheat (by 7%). The output also shows that cheating is 5.7% more likely when the respondent believes that people can be trusted. This result does not support our Hypothesis 2 and may look counter-intuitive. A possible explanation is that many cheaters do not necessarily see their own dishonest behavior as going against trust, but as a method to "protect" themselves from an overwhelming situation. They then translate into the others their way to justify inappropriate behavior, which results in an average belief of more trust in others. We do not find support to Hypothesis 3 either.

Cheating is also significantly associated to the age at the time of the degree (Chi-squared test: 12.65; p-value: 0.002). This dimension is treated as a squared polynomial in the specification; the output informs that the probability to cheat increases with age up to $100*(0.039/(2*0.082)) = 23.78$, and decreases at later ages, in line with previous results in the literature (e.g., Haines et al., 1986; Kervlies and Sigmund, 1999). Cheating is more likely among those studying in the North of Italy (+8.6%), with a master's degree or studying for a master's degree (+5.7%), and is less likely among those earning top grades (-10.8%) and

studying Social Sciences rather than Humanities (-7.3%). The result concerning top graders corroborates several studies reporting a negative correlation between GPA and the extent of cheating (Kervliet and Sigmund, 1999; Jackson et al., 2002; Scheers and Dayton, 1987), perhaps because students with lower grades are the least affected by the threat of sanctions (Haines et al., 1986). However, it could also be the case that well-performing students feel a higher competitive pressure and this may translate into cheating (Iberahim et al., 2013). Along these lines, students in more competitive fields and with higher workloads could be more likely to self-report cheating, with performance being the most widespread reason for academic cheating (Baird, 1980; Iberahim et al., 2013; Marsden et al., 2005).

Columns (2) and (3) of Table 3 split cheating depending on the self-reported way of cheating. In Column (2) we identify as "social" cheating the cheating resulting from interaction with other students during the exam (captured by the dummy "ever interacted"). In Column (3) we define "individualistic" cheating the cheating resulting from the use of material not allowed during the exam(s) (captured by the dummy "ever used material").[5] Comparing the two columns we notice that "social" cheating (Column (2)) involves some form of self-justification, as only this form of cheating is correlated with the beliefs that classmates cheated (positively, +12.9%), supporting our Hypothesis 1, that people can be trusted (positively, +5.1%) and that people are opportunist, taking advantage when they can (negatively, -5.9%). In contrast, only "individualistic" cheating shows awareness of the sanction (negative effect, -6%) and this way possibly also consciousness of the morality of their actions. The probability of cheating by using prohibited material seems to change with age (Chi-squared test: 9.46; p-value: 0.009) and, in particular, the marginal effect is positive up to age 27.27, and tends to fall at higher ages. We explain these results with the fact that the varying implementation of cheating itself may attract individuals with different pro-social attitudes: "social" cheaters, who rely on others in their cheating episodes, are more inclined to trust others, and also to think that others do not want to take advantage. This is in contrast with a more self-centered and opportunistic attitude of "individualistic" cheaters, who do not count on their fellow colleagues when cheating.

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[5] The two types of cheating considered are not mutually exclusive. Each one occurs in about 33% of observations; overall, 13% of the respondents report to implement both types of cheating. We do not find different results when separately considering single-type cheaters.

Column (4) replicates the analysis of Column (1), considering a narrower definition of cheating, and using as dependent variable the dummy "frequently cheated". Several differences emerge when making a comparison with Column (1). First of all, there are no more significant effects of trust, age (the Chi-squared test of joint significance is 4.04, with p-value 0.132), area of study, degree and field of study. This indicates that frequent cheating is equally widespread across all these dimensions. All the other significant effects we found previously are preserved, with in addition the evidence that frequent cheating is less likely under the belief that people take advantage whenever they can (-5.5%) and among females (-5.7%). The former result could mirror our previous comment on trust: cheaters do not see their behavior as negative, i.e., they do not realize they are trying to take advantage of the situation, and they find it hard to also understand when the others try to take advantage. The latter result tells that, although in general females may be tempted to cheat as much as males (see Column (1)), they are much less prone to undertake serial cheating. This result is in line with most of prior literature (see, e.g., Baird, 1980; Crown and Spiller, 1998; Jackson et al., 2002; Whitley, 1998): not only males seem to be less committed to follow academic prescriptions with respect to their female colleagues, but they also feel less guilty after committing cheating.[6] Only in Column (4) we also find that frequent cheating is more likely for individuals who report higher risk tolerance (+8% going from totally risk averse to totally risk tolerant) and in private rather than public universities (+6.2%). It is not surprising that risk tolerant individuals are also frequent cheaters: individuals who engage in dishonest behavior also face the risk of being caught cheating.[7] The latter result may indicate that private universities either have more competitive environments that stimulate cheating, or they are more indulgent with respect to cheaters.

TABLE 3 ABOUT HERE

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[6] There are however few exceptions in the gendered pattern of academic cheating, pointing out no difference between males and females (Naghdipour and Emeagwali, 2013), or males cheating less than females (Kervliet, 1994).

[7] Further information, not used for this analysis refers to the frequency of detection of the dishonest behavior by the instructors: in 89% of the cases respondents report that the instructor(s) never noticed the dishonest behavior.

To summarize, our results support only Hypothesis 1, of a positive correlation between cheating and the dishonest behavior of classmates and friends. Our other hypotheses, on the link between cheating, trust and opportunism, do not find support. However, when dividing cheaters between social cheaters who interact with others and individualistic cheaters who used prohibited material, we learn that only the former exhibit some form of self-justification, with a perception of higher levels of trust and lower levels of opportunism in the society.

5. Concluding Remarks

Cheating in educational environments such as colleges and universities seems to be a widespread and growing phenomenon yet under-investigated in the economic literature, despite it represents a threat for the future of our educational institutions and societies. Colleges and universities are indeed the places where the adults and professionals of the future are formed, therefore being of crucial relevance to shape the features of our societies.

We designed an anonymous web-survey aimed at collecting information about academic cheating in the form of rule violations in written exams. Our aim was to isolate the relevance of social factors as the level of generalized trust, the beliefs about peers' dishonest behavior and the perception of opportunism in the society. More than 2,000 students from different Italian Universities completed the survey and about half of them reported to have cheated at least once.

Our results show that dishonest behavior in written exams is a widespread phenomenon. Cheaters are more likely to report that their classmates and friends cheated, and that in general people can be trusted. In contrast, being aware of the sanction, earning top grades and thinking that people are willing to take advantage of others is negatively correlated with self-reported cheating. Interestingly, two different styles of cheating can be identified: individualistic cheaters who self-report that they have used prohibited materials; social cheaters who self-report that they have interacted with others. Social factors seem to play a different role for the different types of cheaters: social cheaters exhibit higher levels of trust compared to individualistic cheaters and at the same time they perceive a lower level of

opportunism in the society, while no other differences between the two groups are found when looking at other dimensions.

Our results highlight that different types of cheating exist and each has its own features. In principle, an accurate understanding of the cheating types may allow to develop more targeted policies meant to limit their diffusion. An intervention aimed at discouraging social cheaters will be more likely to succeed if targeting the belief that others are willing to help in breaking the rules; while an intervention aimed at limiting individualistic cheating it is more likely to succeed if targeted at changing the perception and acceptance of the cheating behavior in the relevant reference groups.

For this reason, future research should try to detect the profile of the cheater outside from the academic domain. In addition, our analysis is potentially flawed by self-selection bias of our sample of respondents. Future research should then be also devoted to limit this problem by developing methodological refinements.

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Appendix A. Online Questionnaire

Here we present the English translation of the questionnaire. Text in Italics is not part of the questionnaire.

SURVEY ON DISHONESTY IN THE UNIVERSITY

The survey is addressed to current and former University students and is part of a research project being carried out by the Universities of Bologna and Verona in Italy.

Filling out the survey will take less than 10 minutes.

Please answer the questions honestly. Your answers will be anonymous and there is no way for us to trace your answers to your identity. The answers will be used for scientific research purposes only. They will be presented and discussed in an aggregate way.

If you have any doubts or questions, or you want to be updated on the results of this project, we invite you to contact *[Here the name and email address of one of the researchers was written.]*.

It is important that as many people as possible fill out this survey. Please, share the link with your friends!

THANK YOU FOR YOUR PARTICIPATION!

Our aim is to study the frequency of dishonest behavior at the University. In this survey, by dishonest behavior we mean breaking the rules of conduct during a written exam (i.e., copying from different sources, speaking with other students, etc.).

Q1. Have you ever behaved dishonestly during an exam?

   Never

   Once or twice

   Many times

   Regularly

[If "Never": go to Q7]

Q2. In which way did you behave dishonestly? (more than one answer is possible)

   I used materials which are not allowed (books, notes on paper or written on the body, cheat sheets)

   I used my phone to search for information

   I interacted with one or more classmates during the exam

   I asked another person to take the exam in my place

   Other: _____

Q3. Was your behavior of any help?

   No, I did not benefit from it eventually

   Yes, in this way I answered to what I did not know and I was thus able to pass the exam

   Yes, in this way I answered to what I did not know and I was able to obtain a higher grade

   Other: _____

Q4. Have the professors ever noticed your dishonest behavior?

   No, they never noticed it

   Yes, they noticed it sometimes

   Yes, they noticed it regularly

Q5. If the professors noticed it, what measure did they take?

   They never noticed it

They did not take any measures

I had to skip one or more exam session

I was summoned to the law office/ executive board/ dean

I got expelled from the University

Other: _____

Q6. Why did you behave dishonestly?

The course was too difficult

I did not have enough time to study everything

There was too much to study

I did not like the course/ I found it useless

I had studied but I did not feel self-confident

To improve my performance

Other: _____

Q7. Do you think that dishonest behavior during the exams is frequent among your classmates?

No, it happens rarely (I never noticed it or heard about it in fewer than three exams)

No, it happens quite rarely (I noticed it or heard about it in fewer than half of the exams)

Yes, it happens quite frequently (I noticed it or heard about it in more than half of the exams)

Yes, it happens frequently (I noticed it or heard about it in every exam or almost every exam)

Q8. Do you think that dishonest behavior during the exams is frequent among your friends?

No, it happens rarely (I never noticed it or heard about it in fewer than three exams)

No, it happens quite rarely (I noticed it or heard about it in fewer than half of the exams)

Yes, it happens quite frequently (I noticed it or heard about it in more than half of the exams)

Yes, it happens frequently (I noticed it or heard about it in every exam or almost every exam)

Q9. If you have ever witnessed dishonest behavior during the exams among your classmates, what was the effect on you?

None, I prefer to behave honestly regardless of the others

I was bothered but I did not report it to the professor

I was bothered and I reported it to the professor

Other: _____

Q10. How do you think the problem of dishonesty during the exams could be solved?

By increasing the punishment

By providing different versions of the text of the exam

By decreasing the material of the teaching program

By offering (or increasing the number of) practice exercises or mock examinations in class

By providing more information to the students regarding the immorality of this behavior

By introducing a compulsory oral exam after the written examination

By increasing the knowledge about the punishment

Other: _____

Q11. Do you know what the sanctions are for those who behave dishonestly during an exam?

Yes, I read them in the University rules

Yes, they were explained by the professors

No

I am not sure

Other: _____

In this section you will find questions about your view on several topics.

Q12. In general, do you think that you can trust most people?

    No, you always have to be careful

    No, you have to be careful most of the times

    Yes, you can trust most people most of the times

    Yes, you can always trust most people

Q13. How much do you trust these groups?

	Not at all	A little	Quite enough	A lot
Family				
Neighbors				
Acquaintances				
Church				
Political parties				
Institutions				

Q14. In general, do you think that most people try to take advantage of others when given the chance to do so?

    No, they always behave in a fair way

    No, they behave in a fair way most of the times

    Yes, they try to take advantage of others most of the times

    Yes, they always try to take advantage of others

Q15. Generally speaking, do you think that merit is rewarded in the public sector and in the private sector?

	Yes, always	Yes, most of the time	No, only some of the time	No, never
Public sector				
Private sector				

Q16. Do you consider yourself a person who is willing to take risks or a person that avoids taking risks? Mark one of the underlying numbers, where 0 means "absolutely not willing to take risks" and 10 means "totally willing to take risks".

Absolutely not   0   1   2   3   4   5   6   7   8   9   10   Totally
willing to take risks   willing to take risks

Q17. How much do you think merit matters for finding one's first job compared to other factors like references and recommendations? Mark one of the underlying numbers, where 0 means "Not at all" and 10 means "A lot".

0   1   2   3   4   5   6   7   8   9   10
Not at all   A lot

You are almost done with the questionnaire. Please answer some final socio-demographic questions.

Q18. How old are you?

Between 18 and 20

Between 21 and 23

Between 24 and 26

Between 27 and 29

Between 30 and 32

Between 33 and 35

Between 36 and 38

Between 39 and 41

Between 42 and 44

Between 45 and 47

Between 48 and 50

Between 51 and 53

Between 54 and 56

Between 57 and 59

Between 60 and 62

Between 63 and 65

Between 66 and 68

Between 69 and 71

Over 71

Q19. What is your gender?

Male

Female

Q20. What is your nationality?

Italian

foreign

Q21. What is your region of origin (where you lived most of your life)?

Abruzzo

Basilicata

Calabria

Campania

Emilia-Romagna

Friuli Venezia Giulia

Lazio

Liguria

Lombardia

Marche

Molise

Piemonte

Puglia

Sardegna

Sicilia

Toscana

Trentino-Alto Adige

Umbria

Valle d'Aosta

Veneto

Other: _____

Q22. What is the region where your university is based?

Abruzzo

Basilicata

Calabria

Campania

Emilia-Romagna

Friuli Venezia Giulia

Lazio

Liguria

Lombardia

Marche

Molise

Piemonte

Puglia

Sardegna

Sicilia

Toscana

Trentino-Alto Adige

Umbria

Veneto

Q23. Which year did you begin your University studies in?

Before 2010

2010

2011

2012

2013

2014

2015

2016

2017

Q24. What level is your current degree? If you are not currently studying, answer with the highest level you have obtained.

Bachelor's degree

Master's degree or Advanced degree

Single cycle degree (i.e., Med school or Law school)

Q25. When do you expect to finish/ did you finish your University studies?

Before 2000

Between 2000 and 2009

Between 2010 and 2016

2017

2018

2019

2020

2021

2022

Q26. Is the University that you are/were attending private or public?

Private

Public

Q27. What is/was your field of studies?

Agricultural

Architecture

Economics

Law

Engineering

Literature or History

Medicine

Psychology

Science or Biotechnology

Political Science

Mathematics or Physics

Foreign Languages

Other: _____

Q28. Why did you enroll in the course that you are attending/ attended?

Because I found it interesting

Because I thought it could increase the chance of finding a job after the graduation

I was driven by my family or friends

Other: _____

Q29. What is your average grade at the exams?

Between 18 and 20

Between 21 and 23

Between 24 and 26

Between 27 and 28

Between 29 and 30

Q30. Who finances/ financed your University studies?

Scholarship based on income and merit

Scholarship based on merit

My family

Myself working

Other: _____

Q31. Do you have a religious belief?

No, I am atheist/ agnostic

I am Catholic/ Christian

I am Muslim

I am Buddhist

Other: _____

Q32. How much does your religious belief influence your daily life? (mark 1 if you don't have a religious belief)

1 2 3 4 5 6 7 8 9 10

Not at all   Very much

Thank you for participating! Your contribution is really useful for our research!

We would be grateful if you could link the survey to your friends.

[At the end of the questionnaire, when all the answers are submitted, a confirmation message appears on the screen with this text:]

Thank you! We recorded all your answers. If you want to be informed on our research, please send an email to [Here the name and email address of one of the researcher was written.].

Table 1. Variable definition

Label	Definition
Ever cheated	Dummy =1 if ever cheated (once or more)
Frequently cheated	Dummy =1 if cheated frequently (several times or regularly)
Ever interacted	Dummy =1 if cheated by interacting with others
Ever used material	Dummy =1 if cheated by using material not allowed
Ever interacted and used material	Dummy =1 if cheated by interacting with others and using material not allowed
Classmates cheated	Dummy =1 if acquaintances frequently cheated
Friends cheated	Dummy =1 if friends frequently cheated
People can be trusted	Dummy =1 if believes most people can be trusted, always or most of the time
People take advantage	Dummy =1 if believes people try to take advantage, always or most of the time
Merit rewarded first job	Dummy =1 if believes skills are rewarded in the first job, always or most of the time
Aware of the sanction	Dummy =1 if aware of the sanction
Not religious	Dummy =1 if not religious
Risk tolerance	Risk tolerance index, from 0 to 10
Age	Age in years
Female	Dummy =1 if female
Foreign	Dummy =1 if foreign nationality
Lived in North	Dummy =1 if lived in the North
Studied in North	Dummy =1 if studied in the North
Moved to another region	Dummy =1 if moved to another region to study
Bachelor degree	Dummy =1 if bachelor degree
Private university	Dummy =1 if studied in a private university
Top grades	Dummy =1 if earned top grades (29-30 range)
Social sciences	Dummy =1 if studied Social Sciences
STEM	Dummy =1 if studied Hard Sciences

Table 2. Summary Statistics

Sample	Mean All	Mean Non-cheaters	Mean Cheaters	Test
Ever cheated (d)	0.614	0	1	
Frequently cheated (d)	0.131	0	0.214	
Ever interacted (d)	0.329	0	0.535	
Ever used material (d)	0.331	0	0.539	
Ever interacted and used material (d)	0.131	0	0.213	
Classmates cheated (d)	0.597	0.459	0.684	10.406***
Friends cheated (d)	0.353	0.218	0.437	10.355***
People can be trusted (d)	0.276	0.252	0.291	1.957*
People take advantage (d)	0.768	0.786	0.756	-1.621
Merit rewarded first job (d)	0.584	0.570	0.592	1.005
Aware of the sanction (d)	0.297	0.341	0.270	-3.528***
Not religious (d)	0.501	0.483	0.513	1.368
Risk tolerance	5.936	5.833	6.001	1.771*
Age	23.051	23.251	22.924	-2.030**
Female (d)	0.611	0.625	0.601	-1.124
Foreign (d)	0.031	0.038	0.026	-1.562
Lived in North (d)	0.515	0.471	0.543	3.279***
Studied in North (d)	0.586	0.532	0.621	4.088***
Moved to another region (d)	0.310	0.322	0.303	-0.922
Bachelor degree (d)	0.571	0.587	0.561	-1.181
Private university (d)	0.086	0.104	0.074	-2.457**
Top grades (d)	0.200	0.245	0.171	-4.154***
Social sciences (d)	0.388	0.433	0.359	-3.463***
STEM (d)	0.367	0.330	0.390	2.831***
Observations	2,157	833	1,324	

Note: dummy variables are marked with (d). The last column reports a test on the equality of the mean in the groups of cheaters and non-cheaters. For dummy variables, the test is a probability test. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3. Probability to cheat (probit average marginal effects)

VARIABLES	(1) Ever cheated	(2) Ever interacted	(3) Ever used material	(4) Frequently cheated
Classmates cheated	0.151***	0.129***	0.036	0.041**
	(0.022)	(0.023)	(0.024)	(0.018)
Friends cheated	0.155***	0.061***	0.075***	0.146***
	(0.024)	(0.023)	(0.024)	(0.016)
People can be trusted	0.057**	0.051**	0.013	-0.015
	(0.024)	(0.024)	(0.024)	(0.016)
People take advantage	-0.048*	-0.059**	-0.005	-0.055***
	(0.025)	(0.025)	(0.025)	(0.017)
Merit rewarded first job	0.022	0.037*	-0.008	-0.019
	(0.020)	(0.020)	(0.020)	(0.014)
Aware of the sanction	-0.070***	-0.018	-0.060***	-0.047***
	(0.022)	(0.022)	(0.023)	(0.016)
Not religious	0.018	-0.007	0.016	-0.000
	(0.020)	(0.020)	(0.020)	(0.014)
Risk	0.008*	-0.000	-0.001	0.008**
	(0.005)	(0.005)	(0.005)	(0.003)
Age	0.039**	0.007	0.066***	0.029*
	(0.016)	(0.015)	(0.022)	(0.016)
Age squared /100	-0.082***	-0.025	-0.121***	-0.049*
	(0.028)	(0.027)	(0.040)	(0.030)
Female	-0.020	0.048**	-0.032	-0.057***
	(0.021)	(0.021)	(0.021)	(0.014)
Foreign	-0.064	-0.023	-0.084	0.004
	(0.057)	(0.059)	(0.061)	(0.039)
Lived in North	-0.013	-0.012	0.020	-0.008
	(0.033)	(0.034)	(0.034)	(0.024)
Studied in North	0.086***	0.062*	0.012	0.023
	(0.033)	(0.035)	(0.035)	(0.025)
Moved to another region	-0.024	-0.041*	-0.007	-0.017
	(0.023)	(0.023)	(0.023)	(0.016)
Bachelor	-0.057**	-0.027	-0.078***	0.004
	(0.023)	(0.022)	(0.022)	(0.015)
Private	-0.038	-0.048	-0.000	0.062***
	(0.036)	(0.038)	(0.038)	(0.024)
Top grades	-0.108***	-0.011	-0.103***	-0.068***
	(0.025)	(0.026)	(0.026)	(0.019)
Social sciences	-0.073***	0.038	-0.047*	0.013
	(0.027)	(0.027)	(0.027)	(0.019)
STEM	-0.015	0.017	-0.022	0.010
	(0.027)	(0.027)	(0.027)	(0.019)
Pseudo-R^2	0.089	0.038	0.033	0.140
Observations	2,157	2,157	2,157	2,157

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Figure 1. Frequency of Cheating at the Exams