Attitudes and Causes of Cheating among Mexican College Students: *An Exploratory Research*

Actitudes y causas de fraude entre estudiantes universitarios en México: un estudio exploratorio

Attitudes et causes de fraude parmi les étudiants universitaires au Mexique: une étude exploratoire

Atitudes e causas de fraude entre os estudantes universitários do México: um estudo exploratório

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Abstract
This study extends the current state of literature on academic dishonesty, modeling the likelihood to engage in this practice in a private university in Mexico. Ten in-depth interviews with professors and college students were applied as a qualitative phase of the research in order to understand habits, experiences and perceptions about academic dishonesty. A survey with two hundred college students indicate that the number of incidents of cheating is significantly higher than standard estimations in the United States; the quality of students' social networks is the most important factor explaining cheating and honor codes, whose perceived enforcement does not deter cheating.

Key words author
Cheating, Academic Dishonesty, Mexican College Students, Social Networks.

Key words plus
Cheating (Education), Mexican College Students, Social Networks.

Transference to practice
Designing good policies against academic dishonesty requires good estimations of its incidence and main drivers. This study contributes in this line by demonstrating that cheating might be very high in a country such as Mexico and that cheating is determined by students' attitudes toward it as well as their perceptions of how generalized is. Thus, policies must start defining cheating very clearly for the institution, especially related to online assignments, reinforcing the honor codes and breaking the vicious cycle between students' networks and the individual likelihood of engaging in misconduct. Assignments that promote reflexive and critical thinking development should be considered in the design of online activities in order to diminish the cheating behavior.

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Palabras clave autor
Fraude, deshonestidad académica, estudiantes universitarios en México, entorno social.

Palabras clave descriptor
Fraude (educación), estudiantes universitarios mexicanos, redes sociales.

Resumen

Este estudio amplía la literatura existente sobre fraude académico y crea un modelo de la probabilidad de que los estudiantes incurran en estas prácticas en una universidad privada mexicana. Una fase cualitativa de la investigación incluyó diez entrevistas a profundidad con profesores y estudiantes, para comprender los hábitos, las experiencias y las percepciones sobre el fraude académico. Una encuesta realizada entre cien estudiantes de pregrado reveló que el número de casos de fraude es significativamente más alto que los estándares estimados en Estados Unidos. La calidad del entorno social de los estudiantes es el factor más importante para explicar por qué se percibe que los códigos de honor y deshonestidad no disuaden de cometer fraude académico.

Transferencia a la práctica

El diseño de buenas políticas en contra del fraude académico debe basarse en la comprensión de su incidencia y sus motivaciones. Este estudio hace una contribución en este sentido, al demostrar que tal fraude puede ser muy frecuente en un país como México y que es determinado por las actitudes de los estudiantes hacia él, además de sus percepciones sobre cuán generalizado está. Por consiguiente, las políticas deben partir de unas definiciones muy claras para la institución, sobre todo en lo referido a los trabajos en línea, para reforzar los códigos de honor y romper el círculo vicioso entre los entornos sociales de cada estudiante y la probabilidad de que un individuo lo cometa. Para el diseño de las actividades en línea, deberían tenerse en cuenta aquellos trabajos que promuevan el pensamiento crítico, con el fin de disminuir el comportamiento fraudulento.

Mots clés auteur
Fraude, malhonnête académique, étudiants universitaires au Mexique, entourage sociale.

Mots clés descripteur
Tricherie (education), étudiants mexicains, réseaux sociaux.

Résumé

Cette étude élargisse la littérature qui existe par rapport à la fraude académique et crée un modèle de la probabilité que les étudiants tombent dans ces pratiques dans une université privée mexicaine. Une phase qualitative de la recherche inclue dix entretiens en profondeur avec les professeurs et les étudiants, pour comprendre les habitudes, les expériences et les perceptions par rapport à la fraude académique. Une enquête réalisée parmi cents étudiants de niveau universitaire a montré que le numéro de cas de fraude est significativement plus haut que celui estimé dans les standards utilisés aux Etats-Unis. La qualité de l'entourage sociale des étudiants est le facteur le plus important pour expliquer pourquoi on perçoit que les codes d'honneur et malhonnête ne dissuadent pas de tomber dans la fraude académique.

Transfert á la practique

Pour dessiner les bonnes politiques contre la fraude académique il faut comprendre qu'elle est son incidence et motivations. Cette étude fait une contribution dans ce sens en montrant que la fraude académique peut être plus fréquente dans un pays comme le Mexique et qu'elle est déterminée par les attitudes qui y ont les étudiants, d'ailleurs ils ont des perceptions sur son usage courant. Donc, les politiques doivent partir des définitions très claires auprès des institutions, notamment dans ce qui concerne aux travaux en ligne, pour renforcer les codes d'honneur et casser le cercle vicieux parmi les entourages sociales de chaque étudiant et la probabilité de qu'un individu tombe dans la fraude. Pour le dessein des activités en ligne, on devrait avoir en compte les travaux qui encouragent la pensée critique, pour diminuer la conduite frauduleuse.

Palavras-chave autor
Fraude, desonestidade acadêmica, estudantes universitários no México, ambiente social.

Palavras-chave descritor
Engano (educação), estudantes mexicanos, redes sociais.

Resumo

Este estudo amplia a literatura existente sobre fraude acadêmica e cria um modelo de probabilidade sobre a participação dos estudantes em tais práticas numa universidade privada mexicana. Uma fase qualitativa da pesquisa incluiu dez entrevistas em profundidade com os professores e estudantes, para compreender os hábitos, as experiências e as percepções sobre a fraude acadêmica. Uma enquete realizada com cem estudantes de graduação revelou que o número de casos de fraude é significativamente mais alto que os padrões estimados nos Estados Unidos. A qualidade do ambiente social dos estudantes é o fator mais importante para explicar por que se percebe que os códigos de honra e desonestidade não dissuadem de cometer fraude acadêmica.

Transferência à prática

O desenho de boas políticas contra a fraude académica deve se basear na compreensão de sua incidência e motivações. Este estudo contribui nesta direção ao demonstrar que a fraude acadêmica pode ser muito frequente num país como México e é determinada pelas atitudes que têm os estudantes frente a ela, além de suas percepções sobre o quanto está disseminada. Portanto, as políticas devem partir de claras definições institucionais, especialmente no que se refere aos trabalhos on-line, com o objetivo de reforçar os códigos de honra e quebrar o círculo vicioso nos ambientes sociais de cada aluno e a probabilidade de que um indivíduo cometa a fraude. Para o desenho de atividades on-line devem ser considerados trabalhos que promovam o pensamento crítico para reduzir o comportamento fraudulento.

Introduction

Academic cheating among college students has serious consequences on the education and economic systems of the countries in which it occurs. Widespread academic cheating among students breaks the connection between effort, knowledge, and course grades, distorting the incentives students face and promoting the allocation of students' talent toward unproductive and illegal activities. Moreover, cheating is not contained within collegiate activities; evidence suggests that this misconduct is transferred to the workplace as the ethical behavior of the future professionals (Lawson, 2004; Nonis & Swift, 2001), thereby vitiating the business climate (Whilhem, 2002). Furthermore, attitudes toward cheating in college are closely correlated with countries' overall corruption indexes (Magnus, Polterovich, Danilov & Savvateev, 2002), suggesting an alarming two-way relationship between cheating and corruption: Students living in countries with widespread corruption levels might be more vulnerable to academic cheating whereas people accustomed to cheating and evading the rule of law since their youngster days are more likely to engage in corruption when they become adults. This situation provides powerful reasons to undertake research on cheating as well as it causes and consequences.

During the last four decades, academic dishonesty among college and graduate students has been extensively studied in the context of American universities as well as other developed countries. Mainstream research has explored the relevance of individual characteristics[1] in academic cheating, such as GPA, gender, age, alcohol consumption, and group characteristics such as membership in Greek fraternities and athletic teams, religious background, and school major (e. g., Becker, Connolly, Lentz & Morrison, 2006; Bispin, Patron & Roskelley, 2008; Brown & Emmet, 2001; Bunn, Caudill & Gropper, 1992; Burrus, McGoldrick & Schuhmann, 2007; Carpenter, Harding, Finelli, Montgomery & Passow, 2006; Herington & Weaven, 2007; Klein, Levengurg, McKendall & Mothersell, 2007; Rawwas et al., 2006; Rennie & Rudland, 2003; Rettinger & Jordan, 2005; Smith, Davy & Easterling, 2004). Research has also examined the role of attitudes and values in actual cheating practices (e. g., Bernardi, Metzger, Scofield Bruno, Wade Hoogkamp & Reyes, 2004; Kisamore, Stone & Jawahar, 2007; Staats, Hupp, Wallace & Gresley, 2009) and the effect of context —namely, the existence of honor codes and students' perception regarding their enforcement (e. g., McCabe, Treviño & Butterfield, 1999; McCabe, Treviño & Butterfield, 2001; McCabe & Treviño, 1993).

Only in the last decade has research about academically dishonest practices in developed nations in Asia, such as Japan, as well as some less developed countries been documented (Bernardi, Metzger et al., 2004). Researchers of these studies have tested the individual, attitudinal, and contextual determinants in specific Asian countries (Diekhoff, LaBeff, Shinohara & Yasukawa, 1999; McCabe, Feghali & Abdallah, 2008; Rawwas, Swaidan & Al-Khatib, 2006; Rawwas, Swaidan & Isakson, 2007). Although encouraging, to date, no study has approached the case of a Latin America country. The current research attempts to fill this gap by presenting a study of a Mexican university; as such, it is not immediately generalizable. However, the resulting insights will be valuable to other Mexican universities as well as Latin American countries.

Article description | Descripción del artículo | Description de l'article | Artigo descrição

This paper presents a research project that bears the title "A study of the Habits and Perception of Academic Dishonesty (Copying) in University Students". This empirical and exploratory study was carried out with Mexican students at University level. It aimed to identify the attitudes and causes in which the practices of academic dishonesty have their origins, related to such activities as assignments, examinations and the use of the Blackboard learning platform. The first qualitative phase of the project included in-depth interviews with students and faculty, in order to design a survey to be held among 200 students. The results show that the quality of social networks is the principal determining factor to be taken into account when explaining academic dishonesty, and that the code of honor does not dissuade students. The findings suggest that the impact is being reinforced through social networks.

1 Characteristics intrinsically related with the person.

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Mexico is an interesting setting because of its history. It is a country with a high level of corruption cultivated by predator institutions from colonial times, powerful leaders (*caudillos*), and discretional governments (Arruda, 1997). Indeed, Mexico ranks 75th out of 180 countries in the 2007 International Transparency Corruption Index, the most famous ranking in corruption. Hence, a high level of corruption might promote tolerance and even complicity toward academic dishonesty, suggesting that the incidence of cheating in college in these countries must be higher than in developed ones. In addition, Mexico—as many Latin American countries—shares a collectivistic culture[2] (Hofstede, 2001), which makes social networks of close friends and colleagues more influential than rules and codes, thereby producing a vicious cycle in which students might be locked up.

The current research extends the state of academic dishonesty by estimating a model of the likelihood for a student to cheat in a Mexican private university. Consistent with the stylized facts in this country (i. e., the high level of corruption and the collectivistic cultural features), the rate of cheating incidence in this sample is quite higher than usual estimations recorded in the United States[3]; the quality of students' social networks (e. g., the rate of cheating among students' close friends) is the most important factor in determining the likelihood of engaging in cheating. Furthermore, honor codes and their perceived enforcement do not deter cheating as they are expected to do in developed nations. The current study's results strongly suggest that the high level of cheating incidence in Mexico is reinforced by the students' social networks, locking students into a high level of academic dishonesty equilibrium.

This paper is organized as follows. The next section describes the main families of models explaining cheating. It further presents the methodological issues of the survey and a discussion of variables' measurement. Data were analyzed by first reducing the dimensions of the attitudinal variables, then estimating a probit regression model on the likelihood of engaging in cheating; the details are presented in the fourth and fifth sections of the paper. A discussion and conclusions are included in the final section of the paper.

Theoretical Framework

The amount of literature documenting students' dishonest behavior —primarily in developed countries— has grown extensively in the last 15 years. A review of the literature shows four main streams of research related to cheating behavior: (1) individual characteristics, (2) attitudes toward cheating, (3) contextual influences, and (4) international studies. Details of the main variables and types of studies conducted in these streams are presented in the following paragraphs.

Perhaps the only consistent finding in previous studies is that GPA is inversely associated with the level of dishonesty activity. A student with a higher GPA has a lower tendency to behave dishonestly in the academic context (Bunn et al., 1992). In addition, the higher students' consumption of alcoholic beverages and involvement in fraternity or sorority groups and athletic teams, the more likely they are to engage in cheating (Burrus et al., 2007). Regarding students' major area of study, several studies have

2 In collectivistic cultures, as defined by Hofstede, members of society are integrated into strong cohesive in-groups, sharing unquestionable loyalty among members.

3 Comparison is possible by reviewing previous research conducted in the United States, including the limitations of the samples used in the studies to generalize the results.

compared business students' level of tolerance toward cheating with those in other majors; the findings reveal no significant differences in practicing this behavior (Carpenter et al., 2006), although business students seems to share a more lax attitude toward cheating than those in other majors (Klein et al., 2007).

In addition to and in combination with individual characteristics, attitudinal models to explain cheating behavior have been developed and tested. Exploring the relationship between attitudes on cognitive moral development and cheating, Bernardi, Metzger et al. (2004) found that cheating is better explained by attitudinal variables than by background variables[4] —a conclusion first suggested by Graham, Monday, O'Brien & Steffen (1994).

Environmental and contextual factors have also been studied as possible determinants of cheating behavior; such factors include the size of campus, size of classes, and honor codes designed and enforced by professors. Meanwhile, peers might serve as deterrents of the misconduct behavior. Some evidence supports the finding that smaller classes generate lower levels of cheating (McCabe & Treviño, 1993). Moreover, campuses with honor codes seem to suffer from lower levels of cheating compared to those with no such codes (McCabe et al., 1999), presumably because students feel they are immersed in a moral community with responsibilities and mutual respect.

These context studies strongly imply that social influences upon students are an important variable for research and specifically students' social networks. An interesting study about peer effects presented by Carrel, Malmstrom & West (2005) identified that peer honesty influences cheating behavior. Authors have found that, when peers frequently cheat, the probability of any individual to become a cheater is higher. Meanwhile, the severity of penalty and expectation of punishment have no effect on cheating behavior (Bunn et al., 1992). In addition, evidence suggests that lower cheating levels are associated with higher levels of peer reporting (McCabe et al., 2001).

Finally, technological platforms present a challenge for research on cheating behavior due to the penetration of these platforms in the course organization, communication, and assessment of the students. Internet- and computer-based technologies available for students are also affecting cheating habits. As cited by Ma, Yong Lu, Turner & Wan (2007), a survey conducted among 50,000 undergraduates in 60 universities in the United States by the Center of Academy Integrity (2005) reported that students do not perceive plagiarism to include cutting and pasting two sentences from online sources in a student project without appropriate citation. Although evidence indicates that academic dishonesty is no more pervasive than in traditional classrooms (Grijalva, Nowell & Kerkvliet, 2006), considering the growing penetration of these technological resources in college education, it is imperative to assess cheating incidents and students' attitudes in online settings.

Research regarding cheating behavior in countries other than the United States recently emerged. Some studies have confirmed the relevance of attitudes toward cheating, including the ability to neutralize and the passivity to report it, in both Japan and the United States, although Japanese students presented a lower cheating rate than Americans (Bernardi, Guiliano, Komatsu, Potter & Yamamoto, 2004; Diekhoff et al., 1999). Rawwas et al. (2007) compared American and Hong Kong MBA students,

4 Background variables refer to gender, GPA, and alcohol consumption level, among others.

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finding that opportunism (i. e., the occasion to cheat) is an equal determinant for both groups, although Hong Kong MBA students are less sensitive to academic dishonesty than American students. Recently, McCabe et al. (2008) studied cheating behavior in Middle East universities —specifically, in Lebanon— finding that cheating is frequent and that the role of peer behavior is particularly important in Lebanon, which is considered to have a collectivistic culture. Finally, Magnus, Polterovich, Danilov & Savvateev (2002) clearly demonstrated through a simple scenario exercise that students' attitudes toward cheating are more lax in Russia and other countries compared with developed nations and the United States. Moreover, they found a strong positive attitude toward cheating with the overall corruption index for the countries considered in their sample.

Building on this previous research on cheating, the purpose of the current paper is to contribute to understanding the attitudes and academic cheating behavior, determining which technologies, applications, and devices students use in the academic context and how do they perceive their usage for cheating. The current paper further examines students' perception of technology in connection with cheating and tests the main causes of academic dishonesty behavior reviewed in this section —namely, students' attitudes, individual characteristics, and contextual variables.

Methodological Issues and Data Collection

Research Context

Most courses taught in the university studied employ the face-to-face format and intensively use the Blackboard (BB) technological platform to organize and schedule assignments and encourage communication with the students. As such, it is not unusual for professors to use BB to apply assignments, quizzes, and even exams. In addition, this university instilled an honor code in 1993. According to the code, cheating practices are evaluated by a professor with evidence to suggest academic dishonesty has taken place. A student is warned when he/she receives his/her first academic dishonesty infraction, which is registered in the student's file; the student also fails the course. When a second incident of academic dishonesty in noted in a student's file, he/she is expelled from the institution. When designing the study, it is important to consider these features.

The study consisted of two phases developed during the fall 2007 semester. In the first phase, four professors and six undergraduate students answered in-depth interviews to explore in an open format their viewpoints, experiences and perceptions about academic dishonesty in order to design a useful questionnaire for the survey study. In a second phase, the questionnaire was designed, and a pilot study was applied with 30 students to validate the correct interpretation of the instructions and application of the scales. The sensitivity of the research topic demands a clear and understandable instrument to apply in a self-administered format, reducing bias in responses and avoiding students' rejection to participate stemming from the presence of the interviewer.

Participants

At the university at which the study was conducted, approximately 40% of the students come from other states of the country, 50% are local residents of the state, and 10% come from other countries. The population under research was defined considering all the students enrolled in campus during the fall 2007 semester. The total number of undergraduate students was 17,144 students, including all majors offered. This number

was narrowed down to 15,957 students by excluding international students. The final size of the sample was 200 participants from all areas of undergraduate study. The data collection process included a combination of convenience and quota sampling methods. The quotas were designed based on the actual distribution of majors at the university to ensure a similar representation of this characteristic according to the population. This information is presented in Table 1.

Table 1.
Demographic characteristics of the sample

(N=200)

	Numer*	Percentage*
Gender		
Male	99	49.5
Female	99	49.5
No answer	2	1.0
Major		
Administration and Finance	68	34.0
Media and Information Technologies	22	11.0
Human and Social Science	15	7.5
Health Science	15	7.5
International Business	12	6.0
Engineering and Architecture	65	32.5
No answer	3	1.5
Grade Level		
1st to 4th semester	92	46.0
5th to 9th semester	99	49.5
No answer	9	4.5
Religion		
Catholic	164	82.0
Protestant	8	4.0
Other	21	10.5
No answer	7.0	3.5
Financial support		
Parents	130.0	66.0
Scholarship	57.0	29.3
No answer	13.0	4.7

**Number and percentages based on cases with valid responses*

Source: Author's own elaboration

Additional characteristics summarized in Table 1 include the fact that gender was equally distributed, with 49,5% of both females and males. In addition, 46% of the participants were in their first four semesters while 49,5% were in their fifth through ninth semesters. As expected in a country like Mexico, a majority (82%) of the participants practice Catholicism as their religion, while 4% were identified as Protestant and 10,5% mentioned another religion. In addition, 66% of the participants said their parents were financing their studies, while 29,3% declared they have some type of scholarship; these figures are close to the actual scholarship rate in this university.

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The questionnaire included four main sections: introduction, general use of technology, attitudes and behavior toward cheating, and demographics. The introduction section provided a clear discussion of the research objectives in order to assure the students that all data would be handled in a completely anonymous and confidential manner. The technology section identified the different technologies, applications, and devices students use in an academic context and for how long. The attitudes and behavior section referred to participants' level of agreement with 15 statements related to academic dishonesty as well as the technology connected with such behavior. Responses to these questions were collected using a five-point Likert scale. Most of these questions were based on previous research, such as Carpenter et al. (2006) and Klein et al. (2007). The final section of demographic variables included age, gender, major, and grade level as well as questions referring to the participants' religion and their financial form for paying for college to determine whether such factors could impact cheating behavior. The self-administered questionnaire was distributed throughout the campus, with participants' major being a control variable used to achieve the quota sampling.

Data Analysis

Attitudes toward Cheating

In order to measure students' perceptions and attitudes toward different forms of cheating, 15 items were included in the survey (Table 2). The level of agreement with the items describing frequent cheating habits was measured using a five-point Likert scale, where 1 equates to strongly agree and 5 equates to strongly disagree.

Table 2.
Students attitudes toward cheating: Descriptives

	Strongly Agree/Agree*	Mean**	St. Deviation
Indicate yor level of agreement whit the followiong:			
Copying during an exam	10.0	4.1	1.1
Copying a whole homework from previous semesters	18.1	3.7	1.3
Copying parts of homeworks from previous semesters	26.0	3.3	1.3
Copying without mentioning the source	13.6	3.9	1.2
Taking unallowed notes to the exam	7.5	4.2	1.1
Talking wiht a classmate during an exam	14.1	3.7	1.2
Taking a quiz in BB with the help of other students	60.6	2.2	1.3
Taking a quiz in BB using the book or notes	71.9	1.9	1.2
Using the cell phone in an exam	8.1	4.2	1.1
Other related statements:			
New technologies facilitate cheating	63.6	2.2	1.2
It is ok to dopy form internet without mentioning the source	11.6	4.1	1.2
It is ok to help other students during exams	27.5	3.4	1.3
It is ok to copy from others students during exams	11.6	4.1	1.1
Dishonest behavior increases within higher semesters	16.9	3.8	1.3
Cheating behavior will continue in professional life	31.4	3.3	1.4

**Cumulative Percent*
***Five-point Likert scale, 1 = strongly agree and 5 = strongly disagree*

Source: Author's own elaboration

In response to the question "how much do you agree with copying during an exam" as well as other cheating-related items, most participants indicated some extent of disagreement; the average scale indexes centered around 4. Table 2 indicates that students did not believe that they are cheating when using other students' support, books, or class notes during quizzes in the BB platform. 26% of the students indicated that they are more comfortable with the idea of copying parts of others' homework. In this respect, a pattern emerged in participants' attitudes toward cheating: In practices further from the instructor's presence (e. g., copying homework, having illegal help in online assignments), students were more agreeable with the idea they are not cheating. This is an important finding given the intensive use of online platforms in this university.

Two patterns of association emerged among all the items describing the level of agreement with alternative forms of cheating. To confirm these patterns of multivariate association and obtain weights to aggregate and form overall cheating indicators, a factor analysis was conducted on the data, using the principal axis factoring method and a varimax rotation. Two factors explained 63% of the total variation in the data and had Eigen values larger than one. The loadings of these factors are displayed in Table 3.

Table 3.
Factor loadings of perception of the agreement with cheating practices

	Factor 1	Factor 2
Copying during an exam	0.778	0.197
Copying a whole homework from previous semesters	0.702	0.374
Copying parts of homeworks from previous semesters	0.572	0.412
Copying without mentioning the source	0.516	0.116
Taking unallowed notes to the exam	0.766	0.133
Talking with a classmate during an exam	0.545	0.248
Taking a quiz in BB with the helo of other students	0.211	0.917
Taking a quiz in BB using the book or notes	0.185	0.742
Using the cel phone in an exam	0.56	0.104

Source: Author's own elaboration

The loadings clearly reveal that the first factor loads more in the traditional ways of cheating, and the second one in those associated with the use of the BB platform. Consequently, these factors are distinguished as traditional cheating and cheating in BB, respectively. These two factors are used as the aggregation indexes of the students' cheating attitudes throughout the rest of the study.

Other interesting attitudes prevalent among these students included that 28% openly considered helping other students during exams to be acceptable, further indicating that —in the Mexican context— the collectivistic culture makes individuals prone to cheating if the motivation is to help others. Almost 64% considered technology to facilitate cheating and 33% indicated that such cheating will continue in their professional careers.

Determinants of Cheating

Measuring cheating is in itself problematic. Most studies using students' self-reported cheating frequency, such as this study, simply ask a yes or no question about whether student have cheated in any form. Other studies define proportions of cheating by type of misconduct. Both methods have inherent problems. First, the temporal distance is very ambiguous

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when a specific period of time is not indicated, as is the case in most empirical studies on cheating. Second, the kind of cheating is not specified, thereby suggesting that all types of cheating —from copying during exams to copying just one solution of a problem on a single homework task— have the same weight.

The current study aimed to be more specific, asking "how many times you have copied during an exam during the last five exams you have taken?" Using this metric controls for the temporality (i. e., during the last five exams) and the type of cheating (i. e., copying during an exam). The timing of the "last five exams" seems to be an accurate metric and refers to the recent past (i. e., last mid-term exam period), thereby making it more likely for students to clearly remember their conduct. The conduct "copying on an exam," rather than others, was used as copying during exams is clearly understood to be cheating for students and professors and because it is perhaps the most serious form of cheating. Thus, this study deals with serious cheating. According to this item, 61.8% of participants reported no cheating activity on their last five exams, 27,1% cheated on one exam, 3,5% on two exams, 2,0% on three exams, 2,5% on four exams, and 3,0% on all of them. In order to build a model to test different determinants of the likelihood of becoming a cheater, a cheating dummy variable was coded as 1 if the participant reported cheating on at least one exam and 0 otherwise.

Four types of independent variables were tested in the theoretical framework. One group consisted of individual variables such as major, age, gender, religiosity (i. e., religion, if the student considered him-/herself to be a religious person or if he/she studied in a religious high school), and whether the student received some kind of scholarship. The second group consisted of context variables regarding the students' perception about enforcement of the honor code and the severity of the sanctions in the case of being caught. The third group related to the context variable of what proportion of participants' friends regularly cheats. The fourth group consisted of students' attitudes toward cheating, summarized in the factor scores of the traditional and BB cheating attitudes described in the previous section.

A probit model was estimated for the likelihood of being a cheater; the estimated coefficients are presented in Table 4. Almost all variables have the expected signs, but only three are significant at less than 10%: the proportion of close friends who regularly cheat and the two score indexes that indicate students' attitudes toward cheating. As the signs of these coefficients indicate, the evidence is consistent with the conclusion that the higher the proportion of close friends who cheats, the higher the likelihood of being a cheater and, the higher the score of the attitudes' indexes (showing less agreement with cheating), the lower the likelihood of being a cheater.

Table 4.
Probability of being a cheater: Probit results

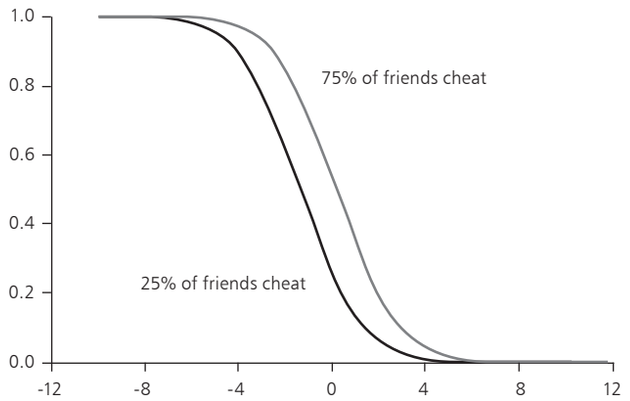
Variable	Coefficient	Std. Error	z-Statistic	Prob.
Constant	-2,754	1,487	-1,852	0,064
Professors enforce cheating legislation	0,344	0,264	1,303	0,193
If caught, the punishment is severe	-0,045	0,295	-0,152	0,879
Proportion of close friends that cheat	0,015	0,005	2,982	0,003
Factor 1: Traditional cheating	-0,472	0,139	-3,395	0,001
Factor 2: Cheating in Blackboard	-0,295	0,153	-1,922	0,055
Business student	-0,535	0,335	-1,597	0,110
Male	0,483	0,328	1,475	0,140
Age	-0,410	0,278	-1,477	0,140
I consider myself a religious guy	0,094	0,070	1,335	0,182
Procedent from a catholic high school	0,016	0,275	0,057	0,955
Scholarship	-0,074	0,260	-0,108	0,914
	0,391	0,272	-0,273	0,785
Mean dependent var	0,391	S.D. dependent var		0,490
S.E. of regression	0,448	Akaike info criterion		1,265
Sum squared resid	24,114	Schwarz criterion		1,548
Log likelihood	-71,128	Hannan-Quinnn criter.		1,380
Restr. log likelihood	-89,001	Avg. log likelihood		-0,535
LR statistic (13 df)	35,746	McFadden R-squared		0,201
Probability (LR stat)	0,000			
Obs with Dep=0	81	Total obs		133
Obs with dep=1	52			

Source: Author's own elaboration

The goodness of the fit of this estimation is, in gross terms, acceptable. Using a binomial random rule to discriminate a probability of being a cheater of 0,4 correctly discriminated 60% of the cases; using the probit estimation model correctly discriminates 73% of the cases. Thus, important marginal improvement occurs. In addition, the model helps explain 20% of the variability of the data.

One useful way of summarizing the main results of the estimated model is to graph the probability of being a cheater on the attitude index for two levels of the proportion of cheaters' close friends (i. e., 75% for the high level and 25% for the low level), as in Figure 1. The remaining independent variables are fixed at their mean values.

Figure 1.
Probability of being a cheater: Attitudes and network effects



Source: Author's own elaboration

The relationship between the attitude index —attitudes toward both traditional and BB cheating— and the probability of being a cheater is negative as the lower the index, the more favorable the attitude is toward cheating. The shift in the graph is more salient when the proportion of friends who are regular cheaters increases. For example, using the mean value of the attitude, increasing the ratio of cheating friends from 25% to 75% almost doubles the probability of becoming a cheater, clearly suggesting that this is an important driver of dishonesty in the sample. Indeed, the beta coefficient of this context variable is 0,3, meaning that the probability of being a cheater increases by roughly 0,3 deviations when the proportion of friends who cheat increases by one deviation. The beta coefficients for the traditional cheating attitude and the BB attitude are 0,3 and 0,2, respectively.

Discussion and Final Conclusions

The statistical exercise outlined herein undoubtedly leads to new insights about academic dishonesty in Mexico. Indeed, evidence supports the hypotheses that the rate of cheating in Mexico is high —higher than the estimated rate in the United States. The comparison cannot be done directly because the metrics are different, but some stylized comparisons can be made with previous works using a binomial distribution to model cheating rates and assuming a few parameters. Whitley's (1998) excellent

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survey of 107 research papers on cheating serves as the benchmark in the discussion. Whitley reported rates of cheating on exams ranging from 4% to 82% with a sample mean of 43.1%. He further noted the average tends to increase; as such, in the final studies examined, the mean was almost 47%. To compare with the metric in the current study, it is assumed that the average student in Whitley's sample has completed 2 years of college, meaning this student might have taken some 40 exams during these 2 years (2 per course, 5 courses per semester). In addition, assuming that 20% of the students never cheat and the remaining 80% cheat with a constant and independent probability (*p*), the probability that a student cheats on any exam in the Whitley sample of 107 students is of 2,2%; in addition, the probability that a student cheats on at least one of the most recent five exams is 8,4%. If the current cheating rate were not 47%, but 70%, then even in that extreme case the probability of cheating at least once in five exams is 18,3%. Given that the rate of cheating in the current study is 40% on the last five exams, the cheating rate in the sample is 2 to 4 times higher the mean cheating rate on exams as reported in existing literature.

Regarding the determinants of cheating behavior, is the story also different? The estimations in the current study indicate that the behavior of close friends is a major determinant of cheating; in the academic dishonesty literature, it is also commonplace that the coefficient of variables such as "have you seen anyone copying" or other variants of the context dishonesty are significant at high rates. Indeed, the marginal response of cheating to this variable is of the same magnitude —namely, a beta coefficient of 0,3— as has been documented in several other studies, such as the seminal paper of McCabe and Treviño (1993), which reported a beta coefficient for this variable of 0,47; McCabe et al. (2008) for the United States and Lebanon, whose estimated beta coefficient for this context variable of 0,3; and the mean beta coefficient in the Whitley (1998) survey, which was also 0,295.

Comparing the current results with two studies that used probit models, the perception that the marginal response effects are not different is evident. For example, the probability of becoming a cheater increases 0,14 for every 10% increase in the number of friends who are regular cheaters in our study, while that probability increases 0,1 for a similar situation in Bunn et al.'s (1992) study. In addition, the elasticity of the probability of becoming a cheater regarding this context variable in the current study (0,58) is not very different from those implied in the studies of Bunn et al. (1992) —0,66— and Burrus et al. (2007) —0,635.

Consequently, it can be concluded that the marginal increase in the cheating rate when the context dishonesty increases seems to be equal in the current sample as in the majority of the literature. Nevertheless, as the mean proportion of friends who cheat in the close friend circle in this sample is high (41%), even though the marginal responses are almost the same, the total effect of this variable is more important in the Mexican setting studied. In this case, the network effect appears statistically evident to suggest that students are currently "locked-in" in vicious circles, which partially explains the high cheating rate prevalent in this study. As Carrel et al. (2005) demonstrated network effects in cheating are indeed strong; when one individual joins a dishonest network, he or she might become a cheater, making the group even more dishonest, which might affect other students, thereby reinforcing the loop. At the end of the day, one cheater might affect two or three more; as a result, a large proportion remains trapped in a dishonest environment.

The third major finding of this research is that neither any background variables (i. e., major, gender, scholarship status, and others) nor the students' perception about the enforcement and severity of the sanctions established in the dishonesty academic legislation proved to be significant in explaining cheating behavior. This result is also consistent with long-imprinted frames in Mexico, where the rule of law is weak and impunity is high, leading students not to take legislation or the consequences of breaking the law seriously.

Limitations

The current study also has some important limitations. First, it is a single-campus study that makes it difficult to test contextual variables regarding students' perception of academic dishonesty policies. A multi-campus, multi-country study is suggested in order to bring more variety of institutional policies, honor-codes, students' backgrounds, and countries' particularities (i. e. collectivistic vs. individualistic cultures) or fixed effects. Cultural differences that might generate cheating as a motivation for helping others can also be tested. In addition, it is recommended that different metrics be used in order to assess the validity of the high cheating rate found in this study. One alternative would be to use a randomized response technique, perhaps a modified Grijalva, Nowell & Kerkvliet (2006) metric.

The current study provides interesting implications for academic authorities. As attitudes toward cheating are more relaxed and the proportion of friends who regularly cheat is higher, cheating becomes more widespread; hence, this environment locks students into high academic dishonesty-level equilibrium. A

useful way of approaching this problem would be to determine how to move away from this undesired equilibrium to cleaner, steady state equilibriums.

How to move away from this trap? Any proposal must involve a mix of some actions. The situation deserves public recognition of the seriousness of the problem. Academic leaders should prioritize how to address this problem and seek a consensus with the main actors, including parents, students, and professors. Once consensus is achieved, one important step is to design a simple, credible and easy-to-enforce honor code. It is also imperative to define precisely what is cheating for the institution, mostly in the activities related with online assignments. Changing students' framing about how acceptable cheating is can be done by designing permanent communication campaigns about the negative consequences of cheating —namely, the consequences if caught and/or the cognitive dissonance in the chance of not being caught. Breaking the vicious cheating cycle is not easy, but the hope is that —once broken— the network effect can function in reverse; thus, as the environment cleanses itself of cheating, the likelihood of anyone else being affected drops rapidly.

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