






Academic Plagiarism among Secondary and High School Students: Differences in Gender and Procrastination

Plagio académico entre alumnado de secundaria y bachillerato: Diferencias en cuanto al género y la procrastinación

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ABSTRACT

This paper analyses the phenomenon of academic plagiarism among students enrolled in Secondary Education and High School. It is a subject poorly studied at pre-university level and very scantily discussed in the Spanish-speaking context. It investigates the frequency of committing plagiarism and the relationship between gender and procrastination and such practices. A questionnaire was administered to a representative sample ($n=2,794$). The results show that plagiarism is certainly present and widespread in the secondary classrooms. Furthermore, it shows that men have significantly higher levels of perpetration than women and than students who tend to leave the tasks until the last moment are more likely to plagiarize. The fruits of this research suggest the need to take into serious consideration the magnitude and severity of the problem identified; secondary schools should urgently plan and undertake measures in order to reduce and prevent the commission of this type of academic fraud. Secondly, results are useful to give clear guidance to teachers about the need for them to follow up and apply an effective control of the writing process of academic essays and tasks by students. Improving IT and library competences of the students has been identified as one of the main strategies needed to effectively address the problem.

RESUMEN

En este trabajo se analiza el fenómeno del plagio académico entre el alumnado de Educación Secundaria Obligatoria y Bachillerato. Se trata de un tema poco estudiado en los niveles preuniversitarios y muy escasamente tratado en el contexto hispanohablante. Se investiga la prevalencia de este fenómeno así como su relación con el género y la procrastinación. Los datos fueron obtenidos mediante la administración de un cuestionario a una muestra representativa ($n=2.794$). Los resultados del estudio muestran que las prácticas constitutivas de plagio están ampliamente extendidas en las aulas de los ciclos educativos medios. Además, se demuestra que los varones presentan niveles de perpetración significativamente superiores a los de las mujeres y que el alumnado que tiende a dejar los trabajos hasta el último momento tiene mayor propensión a cometer plagio. Los frutos de esta investigación sugieren la necesidad de tomar en seria consideración la magnitud y severidad del problema detectado. Los centros de educación secundaria deben proyectar y acometer de manera perentoria medidas en aras de reducir y prevenir la comisión de este tipo de fraudes académicos. Los resultados también hacen recomendable que los docentes hagan un seguimiento y un control efectivo del proceso de elaboración de los trabajos académicos. La mejora de las competencias informacionales del alumnado es señalada como una de las estrategias necesarias para encarar eficazmente el problema.

KEYWORDS | PALABRAS CLAVE

Ethics, secondary education, high school, academic integrity, academic plagiarism, information skills, assessment, school culture. Ética, educación secundaria, bachillerato, integridad académica, plagio académico, competencias informacionales, evaluación, cultura escolar.

1. Introduction

This study addresses the phenomenon of academic plagiarism among students in compulsory secondary education (CSE) and high school. Academic integrity –a value that is undermined by such activities as cheating in exams and plagiarising– is of paramount importance for any education system aiming to educate upright, honest people. The value of integrity is unlikely to be incorporated into the students' axiological scale if school practices suffer from discord between what is preached –we will not find any education institution that defends corruption and deceit in its discourse– and what is done. We will find, as Morey, Comas, Sureda, Samioti and Amengual (2012) suggest, few schools in our country with a clear policy of containment and disapproval of dishonest practices. Incidentally, these practices are not limited to merely copying and plagiarising. In this regard, it is worth recalling the great influence exerted by the hidden curriculum in school practice and the need for coherence between what is proposed and what is practised. The need for the creation of a «culture of honesty and integrity» (Lathrop & Foss, 2005) in schools seems ever more pressing.

Plagiarising, copying, deceiving and cheating in exams are practices that have always been present in the classroom. However, it is in the last few years, due in part to the development and expansion of the Internet, that the phenomenon has taken on a new, greater, more worrying dimension (Comas & Sureda, 2010). Some bibliometric indicators clearly show that interest in the issue has grown considerably in recent years. If we restrict ourselves to the articles indexed in the SCOPUS database, we find that 38 academic articles were published in the period 1999-2003 (7.6 articles per year), 171 in 2004-2008 (34.2 articles per year) and 308 in 2009-2013 (61.6 articles per year). Considering the studies indexed in the academic search engine Google Scholar, we find 68 resources in 1999-2003 (13.6 articles per year), 232 in 2004-2008 (46.4 articles per year) and 525 in 2009-2013 (105 articles per year)¹.

Despite the number of studies carried out, there is no shortage of research gaps. In this regard, the low interest aroused by this issue in secondary education is striking: the vast majority of studies conducted on plagiarism have focused on university settings, as if lower education levels were immune to this phenomenon (Comas, 2009). However, aside from the paucity of studies conducted, there are solid arguments to justify the need to set our sights on this level of education. The fact is that, as Comas (2009) demonstrated by

analysing plagiarism among university students, the roots of this phenomenon stretch down to lower levels of the education system: students do not spontaneously begin to develop plagiarising practices when they reach university. Furthermore, the convenience of researching what happens in secondary and high school in relation to academic plagiarism has been implicitly noted by all of those who advocate that information literacy should form part of the core of school curricula (Julien & Barker, 2009; Williamson & McGregor, 2011). The fact is that plagiarising practices, in addition to undermining academic integrity, reveal a lack of information skills by students as far as the use and ethical and legal communication of information is concerned (Morey, 2011).

Having shown not only the pertinence but also the convenience of studying the issue of plagiarism at pre-university levels, we now describe, albeit briefly, some of the main contributions of the few studies existing on the matter.

Research on academic plagiarism among secondary school students –as in the case of that on plagiarism among university students– has focused on the analysis of the prevalence and extent of the phenomenon and on identifying the explanatory factors for this fraudulent practice (Comas, Sureda, Angulo & Mut, 2011). In 1986, before the use of the Internet became widespread, Dant (1986) showed that up to 50.7% of secondary school students surveyed (albeit in a very small sample of only 309 students from one school) claimed to have copied from encyclopaedias when completing academic assignments. Years later, when the Internet was beginning to receive widespread use, McCabe (2005, cited in Sisti, 2007), with data from more than 18,000 students from 61 US schools, noted that up to 60% of students admitted carrying out some form of plagiarism when drafting and presenting academic assignments. McCabe observed that secondary schools 'are facing a significant problem'. Subsequent studies (Sisti, 2007; Sureda, Comas, Morey, Mut & Gili, 2010; Bacha, Bahous & Nabhani, 2012; Morey, Sureda, Oliver & Comas, 2013) have gauged the magnitude of the problem by showing that, in fact, plagiarism in pre-university education is by no means a trivial issue.

Regarding the causes or factors involved in academic plagiarism, attention has focused on different aspects (Comas & Sureda, 2010): students' personal factors (academic performance, procrastination, gender, motivation, etc.), institutional factors (the existence of academic regulations that address the issue of plagiarism, the ethical culture of the education centre,

the existence and use of detection programmes, etc.), factors linked to teaching (types of assignments that are given, number of assignments given, follow-up on assignments by the teacher, etc.) and factors outside education practice (levels of political corruption, crisis in the system of values, etc.).

In addition to describing and quantifying the practices of plagiarism committed by students in secondary and high school, the present proposal addresses the relationship between these practices and various personal characteristics (gender and procrastination). With respect to the relationship between gender and academic plagiarism, there is a high level of unanimity in the doctrinal corpus regarding the greater prevalence in committing plagiarism among male university students (Athanasou & Olasehinde, 2002; Straw, 2002; Lin & Wen, 2007; Comas, 2009; Brunell, Staats, Barden & Hub, 2011). If we focus on secondary students, this relationship has been very little studied, and the few existing studies suggest the same trend, that is, a higher frequency in the commission of academic plagiarism among men than among women (Schab, 1969; Cizek, 1999). Concerning the academic procrastination factor, understood as the act, voluntary or involuntary, of putting off and delaying certain programmed actions (Klassen & Rajani, 2008), Roig and DeTomasso (1995) reported significant relationships among the following factors for university students: the higher the level of postponement in assignments, the higher the likelihood of perpetration of academic plagiarism. Similar results were obtained by Daly and Horgan (2007) in a study on the profile of university students with the greatest propensity to commit academic plagiarism. Finally, in our country, the contribution of Clariana, Gotzens, Badia and Cladellas (2012) is notable. Using a small sample, they analysed the relationship between plagiarism and procrastination among pre-university students, concluding that there is a moderate, positive correlation between both variables.

The research questions (CI) we aim to answer with this proposal are

- CI1: What is the prevalence of academic plagia-

rism and cyberplagiarism among students in secondary and high school?

- CI1.1: Are there significant differences regarding the frequency of academic plagiarism and cyberplagiarism among these students?
- C.1.2: Are there significant differences in terms of the frequency of academic plagiarism among these students according to gender?
- CI2: Are academic plagiarism and cyberplagiarism related to procrastination?
- CI2.1: Are there significant differences in the

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relationship between procrastination and academic plagiarism and cyberplagiarism among these students?

2. Material and methods

2.1. Population and sample

In total, 1,503 students in second-, third- and fourth-year CSE² participated in this study (compulsory education in Spain, with a student mean age of between 13 and 16 years), as did 1,291 first- and second-year high school (baccalaureate) students (post-compulsory education in Spain, with mean ages from 16 to 18 years) in the Balearic Islands. The representativeness of this sample is within a margin of error, calculated for the geographical area of this community, of $\pm 1.7\%$ ³ for an estimated confidence interval of 95% under the most unfavourable condition of $p=q=0.50$. The stratified random sampling was used, considering: a) the three years of CSE and the two years of high school, b) the island of residence (Mallorca, Menorca and Ibiza-Formentera) and c) the ownership of the schools (public and private/government-sponsored).

The fieldwork was conducted by three interviewers previously instructed on how to administer the instrument to participating students in an individual and anonymous way in classroom situations in the presence of a teacher employed by the school.

Data collection was carried out between February and April 2010 for the high school sample and February and April 2011 for the CSE sample. No student refused to participate in the study. However, although 1,302 and 1,515 student surveys were obtained

from the high school (baccalaureate) students» (for the high school sample), which were expressly designed and based on: a) an analysis of the existing literature on the matter and b) the adaptation of various items in the questionnaires of DeLambert, Ellen and Taylor (2003); Finn and Frone (2004); and Comas (2009). The two questionnaires had 10 questions in common, with the CSE questionnaire being longer (it had three more questions) and derived from the high school (baccalaureate) questionnaire. Once the initial questionnaire had been designed,

a validation phase was initiated through, first, the opinion and contributions of eight external experts (three secondary/high school teachers and five university lecturers and national and international researchers, experts in the issue of academic plagiarism), who commented on its viability as well as possible amendments of items to best reflect the aims and dimensions of the study. Second, this questionnaire was administered to two pilot groups of secondary and high school students (46 subjects from the second and fourth years of CSE and the first year

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of baccalaureate) to verify that the students understood the items. Plagiarism incidents that occurred in the classroom during the completion of the pilot survey were recorded. This validation phase resulted in the rephrasing of some of the initially proposed items and the precision of the variables to be analysed. Once the final version had been drawn up, the questionnaire was administered to a second pre-test sample of 59 second-, third- and fourth-year CSE students. The internal consistency of the questionnaire was calculated using Cronbach's Alpha, which ranged between 0.73 and 0.84 for the questions comprising the final version of the instrument and the sample as a whole.

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The results that are set forth in the present article focus on the analysis of four of the variables addressed in the questionnaire and the ulterior association between these variables (V1 with V2 and V3):

- V1: Self-reported frequency in the commission of different practices that constitute academic plagiarism and cyberplagiarism.
- V2: Gender.
- V3: Index of procrastination.

V1 is based on the answers given by participants in

ned from the high school and CSE students, respectively, the sample was smaller because 23 questionnaires were invalidated due to one of the following three reasons: multiplicity of answers in single-answer questions, less than 50% of items answered and the unintelligibility of the answers given by respondents.

2.2. Source of data and variables

Concerning the characteristics of the subjects in the sample, 54.9% were female and 45.1% male. Student age varied between 12 and 23 years, with a mean age of 15.6 years (a standard deviation of 2.6) and 15-year-old subjects being the most numerous.

This study was designed on the basis of a self-reporting questionnaire administered to the participants. This type of questionnaire is the most common among studies on academic integrity and has been shown to offer sufficiently accurate estimates (Cizek, 1999; Comas, 2009; Mut, 2012). For data collection, the following instruments were used: the «Questionnaire on academic plagiarism among CSE students» (for the CSE sample) and the «Questionnaire on academic plagiarism among high school (baccalau-

the study regarding the perpetration of six actions constituting plagiarism (set out independently) in the academic year prior to the time of administration of the questionnaire, that is, actions that took place during 2008-2009 for high school students and 2009-2010 for CSE students. These practices are:

- Action 1: Submitting an assignment written by another student that had already been submitted in previous years (for the same class or a different class).
- Action 2: Copying fragments of texts from websites and -without citing- pasting them directly in a document -in which part of the text was written by the student- and submitting it as a class assignment.
- Action 3: Downloading an entire assignment from the Internet and submitting it, without modification, as student's own work for a class.
- Action 4: Copying fragments from written sources (books, encyclopaedias, newspapers, journal articles, etc.) and adding them -without citing- as parts of the student's own work for a class.
- Action 5: Drafting an assignment wholly from fragments copied literally from websites (with no part of the assignment having actually been written by the student).
- Action 6: Copying parts of assignments submitted in previous years and using them as sections in a new assignment.

For each action, participating students indicated the frequency at which they had performed this practice from the following five options: «Never», «Between one and two times», «Between three and five times», «Between six and 10 times» or «More than 10 times».

As a gauge of V3, which concerns procrastination, we analysed the data regarding two items related to two subjective-scale questions: participants had to rate their degree of agreement with the following statements (between 1 and 10, where 1 represents «Totally disagree» and 10 «Totally agree»): «When I have to do an assignment, I always leave it until the last day» and «When I have to do an assignment, I get to it right away».

2.3. Data processing

The frequency variable for commission of plagiarism (based on the response of participants to six actions constituting plagiarism) was recoded in another variable (index of committing academic plagiarism) by summing up the answers for each student.

Next, for each of the category variables analysed, the frequency and

percentage was calculated. For the scale variables (index of procrastination), the items were recoded, and an index of procrastination derived from this operation was established by summing the two items used in operationalizing procrastination. Next, to establish potential associations between the index of committing academic plagiarism and the characteristics of students or independent variables (gender and procrastination index), a statistical analysis was conducted using comparison of means obtained through the application of a t-test for independent samples (for the association between the frequency of committing plagiarism and the gender variable) and analysis of variance (ANOVA) (for the association between the frequency of commission of plagiarism and the procrastination index).

All of the analyses were conducted using the statistical package SPSS (version 19.0). The data matrix can be found at <http://dx.doi.org/10.6084/m9.figshare.1066207>.

3. Results

3.1 Self-reported frequency of the commission of different types of academic plagiarism

The most common practices (table 1) are so-called «collage plagiarism» (Comas, 2009), that is, drafting an assignment by copying scattered fragments of text, whether from digital sources or written sources, and including them in an academic assignment without citing their origin. Amongst the least recurrent actions, the most outstanding are downloading a whole assignment from the Internet and submitting it as one's own and presenting an assignment written and already submitted by another student in previous years.

If we analyse the data from the measurements (taking into consideration the values 1 to 5 that correspond to the five possible answers), we are able to establish a ranking in which the actions studied are ordered from most to least frequent (table 2).

Going a little further into the exploitation of the

Table 1. Response frequencies for each of the six actions related to academic plagiarism

Action	Never	Between 1 and 2 times	Between 3 and 5 times	Between 6 and 10 times	More than 10 times
Action 1	77.5%	17.6%	3.1%	1%	0.8%
Action 2	18.7%	36.8%	22.8%	10.1%	11.7%
Action 3	82.8%	12.2%	3.1%	1.1%	0.9%
Action 4	27.5%	39.7%	19.2%	6.9%	6.7%
Action 5	56.4%	26.3%	10.9%	4.9%	4.5%
Action 6	62.7%	26%	7.7%	2.1%	1.5%

Table 2. Mean and standard deviation of the responses for each of the six actions related to academic plagiarism

Ranking	Action	Mean	Standard deviation
1 st	Action 2	2.59	1.23
2 nd	Action 4	2.26	1.13
3 rd	Action 5	1.81	1.10
4 th	Action 6	1.54	0.84
5 th	Action 1	1.30	0.65
6 th	Action 3	1.25	0.64

results, we totalled the answers for the three practices considered to be academic cyberplagiarism (actions 2, 3 and 5) as well as the answers for the three plagiarism practices from written sources (actions 1, 4 and 6). Based on this calculation, we estimated and compared the means of each grouping. The academic cyberplagiarism grouping has a mean response of 5.64 with a standard deviation of 2.25, whereas the set of actions corresponding to the plagiarism of written sources has a mean response of 5.08, lower than that of the first group, with a standard deviation of 1.83.

3.2. Association between the level of academic plagiarism and gender

For each action except number 4 (table 3), men have higher mean perpetration rates than women, with an appreciable significant relationship between the commission of plagiarism and gender in four of the six actions analysed.

The same relationship is found if the analysis is established from the association between gender and the sum of the answers given for the various plagiarism actions studied. Thus, from the t-test for independent samples, we also obtain results that indicate that men engage in academic plagiarism practices significantly more often than women do (\bar{x} Women: 10.39; \bar{x} Men 11.33; $t=-6,040$; $gf=2544$; Bilateral Sig. = <0,000).

3.3. Association between the level of academic plagiarism and level of procrastination

From the data resulting from the association between the students' procrastination index and the sum of the six forms of plagiarism analysed in the present study as well as the individual sums of the practices constituting plagiarism of written sources and typical of cyberplagiarism, a significant direct relationship between both groups of variables can be appreciated: the greater

the tendency to procrastination, the greater the tendency to engage in plagiarism (tables 4 and 5).

Individuals who report greater postponement tendencies have higher mean sums of the six actions analysed in the present study if compared with students who have a lower tendency to leave assignments until the last minute.

4. Discussion and conclusions

The results of the present study show that academic plagiarism is widespread among secondary and high school students, with levels practically identical to those for university education. However, the most recurrent practices for secondary and high school students are those that can be considered the least serious. Indeed, although measuring the severity of misconduct is not at all straightforward, it seems sensible to maintain that the seriousness of drafting an assignment from extracts copied without citing, regardless of the source, combined with parts written by the pupils themselves is less serious than submitting completely plagiarised assignments. These results referring to the prevalence of 'low-intensity' dishonest behaviours are along the same lines as those obtained in other studies in higher education settings. For instance, Comas (2009) reached very similar conclusions in his doctoral dissertation studying Spanish university students. Ferguson (2013) analysed the frequency of commission of 20 different practices undermining academic integrity amongst students from four US university campuses and found that the most widespread practices were those considered less intentional by the participants in the study. Similar conclusions were reported in the doctoral thesis of Tabor (2013), who conducted a qualitative study on US university students. Specifica-

Table 3. Values obtained through a t-test for independent samples for the analysis of relationships between the commission of actions typical of academic plagiarism and gender

Action	Gender	N	\bar{x}	t	gf	Sig. (bilateral)
Action 1	Female	1420	1.26	-4.289	2587	<0.000**
	Male	1169	1.37			
Action 2	Female	1420	2.50	-4.821	2587	<0.000**
	Male	1169	2.74			
Action 3	Female	1420	1.16	-7.040	2587	<0.000**
	Male	1169	1.34			
Action 4	Female	1419	2.30	0.780	2582	0.436
	Male	1165	2.26			
Action 5	Female	1414	1.66	-7.177	2573	<0.000**
	Male	1161	1.97			
Action 6	Female	1417	1.51	-1.785	2581	0.074
	Male	1166	1.57			

N = Number of students in the sample; \bar{x} = mean; t = value obtained for each group; gf = degrees of freedom; Sig. (bilateral) = * Significant at 0.05 (bilateral); ** Significant at 0.01 (bilateral).

Table 4. Means of the sum of rates of plagiarism

Sum of plagiarism			Sum of plagiarism of written sources			Sum of cyberplagiarism		
IP ¹	N	Mean	IP	N	Mean	IP	N	Mean
2	91	9.54	2	92	4.80	2	94	4.74
3	113	9.96	3	113	4.83	3	114	5.11
4	220	9.44	4	224	4.50	4	221	4.92
5	321	9.98	5	327	4.87	5	322	5.12
6	466	10.56	6	470	5.01	6	471	5.56
7	449	10.48	7	450	4.97	7	453	5.51
8	392	11.09	8	397	5.29	8	396	5.80
9	273	11.47	9	273	5.25	9	276	6.25
10	406	12.15	10	408	5.62	10	406	6.52

lly, in Tabor's study, students felt that there are different levels of seriousness in plagiarising practices and that the least serious levels are the most recurrent.

As far as the gender variable is concerned, the results obtained suggest a marked prominence of males over females in regard to committing acts constituting academic plagiarism.

It is worth noting that the data obtained in this study reveal a marked relationship between committing plagiarism and procrastinating or postponement behaviours. This close relationship may have a very simple explanation: students who have a greater tendency to leave tasks to the last minute do not have the time to complete the activity required by the teacher on their own; in this case, drafting the assignment using plagiarism practices is their only option. This fact has clear implications concerning: a) students, as it hints at the need to educate students in better management of time and resources, and b) teachers, as it suggests the need for teachers to conduct an efficient follow up on the assigned tasks. The model of the teacher who sets an assignment and does not follow-up on the task in progress, merely waiting for the submission deadline to correct and grade the assignment, increases the likelihood of students leaving the task until the last minute and thereby engaging in the less-than-honourable act of copying (Comas, 2009). It is therefore advisable that teachers plan and carry out regular check-ups on the tasks to follow up on students' progress rather than simply waiting for the result. The reality of plagiarism in secondary education raises the need to adopt preventative measures and to introduce values of academic integrity and honesty into schools.

Fraud in education, as Moreno (1998) so rightly, in our opinion, argues, is the main non-violent or «white collar» antisocial behaviour at school, and school is the «first field for practices of

fraud and corruption».

Dishonest behaviours are learnt and develop in certain settings and contexts, just like any other manifestation of human behaviour. In this regard, if we ask the question of whether schools encourage and promote the developments of academically honest and ethically relevant behaviours, the answer would not reflect well on schools, above all due to the contradiction between

explicit and implicit discourse, between the formal and hidden curriculum.

There are three fronts on which schools ought to act to address academic dishonesty: regulations (all secondary schools should incorporate the issue of fraud in their regulations), the adoption of teaching methodologies adapted to the new requirements stemming from the mass use of ICTs in teaching-learning processes and, finally, a strong boost of students' combined digital and information literacy (So & Lee, 2014), stressing the ability to «use information efficiently and ethically» (Alexandria Declaration, 2005, cited in Wilson, Grizzle, Tuazon, Akyempong & Cheung, 2011).

Notes

¹ Data obtained from SCOPUS and Google Scholar for a search for the term «academic plagiarism».

² Because the data gathered refer to the behaviours carried out in the academic year prior to the administration of the questionnaire, the collection data corresponding to students in the first year were considered irrelevant, as this would have included information regarding the last year of primary schooling.

³ Based on statistical data for academic year 2011-12 from the Ministry of Education, Culture and Sport (2012), which puts the number of students enrolled in the Balearic Islands in the second, third and fourth years of CSE and the first and second years of baccalaureate at 41,236.

⁴ Index of procrastination.

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Table 5. Means of the sums of commission of plagiarism associated with the procrastination index

Summations	gf	F	Sig.
Plagiarism	8	19.27	<0.000**
Plagiarism of written sources	8	9.63	<0.000**
Cyberplagiarism	8	19.25	<0.000**

gf = degrees of freedom; F = Fischer's distribution; Sig. = *Significant at 0.05; **Significant at 0.01

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