The Antecedents of Plagiarism in Higher Education: Support Tools for Teaching Staff

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The Antecedents of Plagiarism in Higher Education: Support Tools for Teaching Staff

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Abstract

Numerous studies have described the causes of plagiarism within higher education, either by focusing on contextual factors or on individual reasons. Few of these, however, help teaching staff when seeking to reduce or control this plagiarism. This paper analyses a series of factors of voluntary and involuntary plagiarism that may be taken into account in teaching strategies. Furthermore, it provides empirical evidence using data from anti-plagiarism software and from a survey involving 92 university students. The study's main conclusions are that the more straightforward a task is and the less information students have available to them, the less the likelihood of deliberate plagiarism. By contrast, it is shown that the greater students' instruction regarding the citation system, the lower their propensity to involuntary plagiarism.

Keywords: Voluntary plagiarism; Involuntary plagiarism; Anti-plagiarism software; Teaching strategy

Introduction

The dishonest behaviour of university students is, unfortunately, a common phenomenon. Withley conducted a meta-analysis of 107 papers on the subject, published between 1970 and 1996, concluding that 70% of students had in one way or another acted dishonestly in their academic studies. One such instance of dishonest behaviour is plagiarism, understood to be the wrongful appropriation of another author's intellectual content, passing it off as one's own, and it is one of the most widespread [1]. The design of a teaching strategy is altered by the phenomenon of plagiarism, as it undermines the validity of a student's assessment process and provides distorted feedback, not to mention the serious ethical issues it poses.

Scholars have frequently sought to delve into the reasons behind plagiarism, but few studies provide teaching staff with valid tools for reducing and controlling it. Plagiarism was already a serious problem for the higher education community before the internet appeared [2,3]. Today, the increased use of technology in society, with higher education obviously being no exception, has exponentially increased the information available to teaching staff and students alike. This circumstance, which may indeed be positive as teaching staff can improve the quality of their work [4], has meant that plagiarism is now a viable option for any university student [5].

Those studies that seek to identify the reasons for plagiarism among students have distinguished between the study of contextual and individual determinants. Regarding contextual determinants, scholars have focused on the adaptation of the institutional environment, the application of codes of conduct at centres of higher education, social learning, the branch of learning or the sanctions imposed [6-10]. As for individual determinants, particular attention has been paid to gender, age, academic backgrounds, work ethics, self-esteem, profession, sports habits, laziness, character failings or the lack of personal integrity [1,7,11,12].

In spite of the extensive literature on the subject, there are very few studies that offer teaching staff any pointers for controlling and reducing the phenomenon of plagiarism before it occurs. This research work aims to raise our understanding of the factors informing plagiarism over which teaching staff do have some control, so as to provide a platform for generating sound alternatives to be used by university staff in the design of their teaching strategy, thereby ensuring academic integrity within the sphere of their work.

Based on the classification made by Braumoeller & Gaines [13], this research differentiates between involuntary plagiarism and voluntary plagiarism. The former is driven by students' inability to prove they have no intention of committing plagiarism, either because they do not know how to cite properly or because they do not know how to properly handle the actual anti-plagiarism software. Both these aspects will be reviewed here. On the other hand, an analysis will be made of certain antecedents of voluntary plagiarism, which is when students commit it deliberately. Specifically, the analysis will address the complexity of students' study tasks, the time in which these are to be undertaken and the information available on the relevant subject matter.

The evidence found through the data provided by anti-plagiarism software and a survey involving undergraduates studying for a Degree in Business Administration at Salamanca University single out those factors that are more closely related to plagiarism. According to our study, the likelihood of plagiarism increases in step with the lower the understanding students have of citation systems, the more complex the tasks they are required to undertake and the more information available to them. All this may help teaching staff in higher education to propose teaching strategies that either prevent plagiarism or, otherwise, stress the need to exert greater control over certain types of tasks the students have been set.

The paper is arranged as follows: the next section reviews the theory and formulates our hypotheses. The third section provides a description of the methods, data and variables used in the empirical study. The fourth section comments on the results forthcoming and

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initiates a discussion on the implications our findings have for prior literature. The final section presents the paper's main conclusions.

Theory and Hypotheses

State-of-the-art

Numerous studies have addressed the subject of plagiarism in higher education. Although most of them deal with plagiarism among students, increasingly more attention is being paid to the dishonest behaviour of academics [14-16] due to the incentive systems implemented by universities, based largely on the impact of their research [17].

Although there is a great deal of literature on student plagiarism, the empirical evidence is not so conclusive, with a large number of the studies being theoretical, qualitative, exploratory or merely descriptive. We may distinguish between those studies that have sought to explore the influence of contextual factors and those that have addressed individual factors.

Scholars have highlighted the importance of the environment surrounding students; firstly, basing themselves on the theory of social learning, focusing on whether there is a perception that it is acceptable to plagiarise (e.g., because others have done so successfully). Secondly, scholars have studied the codes of honour in students' behaviour [7,11] have reported that these contextual factors have a greater impact on students' behaviour than individual factors.

The significant individual factors behind plagiarism in previous studies have involved demographic factors such as age, gender [12], country and life-style [18], or even partnership status. Barnett provides evidence of the relationship between academic factors such as the marks obtained over the degree course or in the year the students are studying.

Love and Simmons [19] and McCabe et al. [8] study other student personality traits that may have a bearing on plagiarism, such as the desire to excel, the degree of influence of external pressures (parental or competitive), self-esteem, responsibility, lack of personal integrity or laziness.

A further factor of relevance is the punishment students will receive if their illicit behaviour is discovered. Through the application of the theory of dissuasion, the more severe the punishment (or its perception) by students, the less incentive they will have to plagiarise [19]. Other aspects of a moral nature have also been studied, such as students' immaturity [20], their capacity for neutralisation [21], or their antecedents of illicit behaviour [22].

All these studies make a significant value contribution to academic policies and the sociological profile of a student who cheats. They are, however, of little use to teaching staff having to tackle plagiarism. Our aim here has been to widen the debate by proposing new factors that allow predicting plagiarism. We have distinguished between the factors that lead to involuntary plagiarism and those behind voluntary plagiarism [12]. We have done so in all cases from the perspective of teaching staff; in other words, we have considered those factors that to a greater or lesser extent may be addressed in teaching strategies.

Involuntary plagiarism: developing capabilities

As one of the sundry types of dishonest behaviour, plagiarism is often associated with the fact students are unaware they are doing anything wrong [23]. Students are simply repeating the same learning approach they have used since they were children: read something, learn it by heart and then regurgitate it. The need to mention the source of the information used might constitute a novelty for students, who need to be instructed and taught to do so. Whereas deceit implies wilful intent, it may be the case in plagiarism that such seemingly dishonest behaviour is a result of ignorance. Perrin (2009), for example, identifies the different degrees of plagiarism as "whole-paper plagiarism, copy-and-paste plagiarism, and careless plagiarism". The last one of these, "careless" plagiarism, also referred to as involuntary plagiarism, should be the focus of specific attention, for although it does not compromise a student's honesty, it might create a moral hazard problem.

An understanding of the nature of plagiarism, the identification of sources of information and their proper use in academic texts all help to reduce this type of plagiarism caused by unawareness. Students should have access to programs for checking plagiarism (e.g., Turnitin) during the review process, and the software's technological capacity will also have an influence, as will the way in which it is used [24] for detecting plagiarism in their work. In other words, there can be two types of involuntary plagiarism: either through a lack of knowledge on how to cite properly, or due to unfamiliarity with the actual tool that decides what is and what not plagiarism is? Other authors have posited different classifications regarding the degree of intent in plagiarism by using, for example, the inclusion or omission of citations or literature references [25], textual or prototypical plagiarism [26], or depending on the text's level of review [27].

Nevertheless, the lack of intent may be due to unawareness of how to cite or of the system itself for detecting plagiarism. We therefore predict that the more capabilities students have for making proper use of sources of information and the way of citing them, as well as the greater skills they have for handling content authentication programs, the less likely they will be to plagiarise in their work.

H1: The less instruction students receive regarding the citation system, the more likely they are to plagiarise.

H2: The less instruction students receive regarding plagiarism checker software, the more likely they are to plagiarise.

Voluntary plagiarism: characteristics of the assessment task

In line with the principle informing this research, namely, a practical approach by teaching staff to the phenomenon of plagiarism, one of the aspects that staff can have a more direct influence on by modulating their teaching strategy involves the actual work a student has to undertake as an assessment task. Several studies have stressed that the type of work students are exposed to conditions the pressure perceived when undertaking the task, and this has a direct bearing on the level of plagiarism [28,29].

Complexity of the assessment task: One of the factors that may generate such pressure is the complexity of the task, which may be linked to the amount of effort and care the work requires of students. This matter gives rise to clear differences between scholars. While the majority find a direct relationship between a task's complexity and the degree of plagiarism [30], others report an inverse relationship. From our perspective, the main problem to be found in the few studies conducted to date on this phenomenon is the actual definition of complexity, as in her research Garnica [31] argues in favour of a direct relationship between cognitive load and the level of plagiarism detected. Thus, for example, a task may be very complex, but there may be a great deal of information available on the subject, the students may have developed sufficient skills to resolve it, etc. Yet what determines its complexity is the effort and care required. Accordingly, the impact

a task's complexity has might be expected to fulfil the following hypothesis:

H3: The more complex a task is, the more likely students are to resort to plagiarism.

Time available: A further aspect of the task upon which teaching staff may act to reduce plagiarism involves the time allotted to its undertaking. The time available for the task brings pressure to bear on students' work that, apart from the familiar issues related to the phenomenon of procrastination, may lead to malpractice in terms of plagiarism [12]. Several scholars contend accordingly that the pressure of a task's deadline forces students to plagiarise [12,28]; nevertheless, a comparison between this finding and the quantitative measurement of plagiarism has received much less attention. We therefore expect the following hypothesis to be fulfilled:

H4: The less time available to students for undertaking a task, the more likely they are to plagiarise.

Information available: There is no doubt that the internet is the main factor that has raised global concern about the phenomenon of plagiarism [32]. If the availability of abundant information for the tasks undertaken at university is an initial concern of sufficient import regarding plagiarism, even more so is the ever increasing connectivity and use of social networks, which have increased exponentially in recent years. Paradoxically, a university environment favours such connectivity by providing means of communication between students through the use of e-learning systems.

The context within which this research has been conducted, that is, the courses attended by the students who have provided the data analysed here, constitutes an academic environment in which the internet is a common tool. This setting may therefore be described as an internet-based learning environment (virtual support classroom and online activities). Saito & Miwa [33] report that students within an online learning environment improve their ability to search for information on the web, as they perceive its use to be more important, and they tend to activate the search cycle through the net more often. This means the internet not only provides more sources of information, as its frequent use impacts upon browsing skills.

While a web environment improves browsing skills, it also provides students with the ability to use the internet in a dishonest way. Szabo & Underwood [12] report that students using the web in a more active way record a greater tendency toward plagiarism than those who make less use of it. It should be taken into account, furthermore, that the existence of information on the topic students are studying is a necessary, albeit insufficient, condition for them to plagiarise. This means the impact of the information available for undertaking the task is expected to confirm the following hypothesis:

H5: The more information available to students for undertaking a task, the more likely they are to plagiarise.

Methodology

Data

With a view to verifying our hypotheses, we have used data from two different sources: firstly, from the Turnitin anti-plagiarism program and, secondly, from an individual survey involving students. The data gathered through the Turnitin software correspond to a plagiarism analysis of two tasks presented by each student. The tasks were compulsory for completing the subject Production and information management in the third year of the degree in Business Administration and Management at the Faculty of Economics and Business at Salamanca University (Spain). For its part, the survey was conducted by electronic means in the computer room, being a compulsory task as part of the continuous assessment arranged in that facility in March 2012. The survey was completed by 112 students, with 98 being finally used in this research, as they contained all the information for both the surveys and the tasks. The survey's questions are available in Table 1. The sample is divided into 34 males and 64 females. There are 92 ordinary students and 6 on international exchange programmes. The average age of these students is just under 22.

Variables

Dependent variable

Plagiarism: This is a dichotomous variable that indicates whether a student has committed plagiarism in either one of the two tasks. It takes the value 1 if the student has cheated and 0 otherwise.

Independent variables

***Citation ability (citation)*:** This measure a student's ability to properly cite the sources used in their tasks. A low value indicates the student is scarcely able to cite correctly and a high value indicates a student is able to cite those sources correctly.

***Use of the software program (program)*:** This measures a student's ability to handle the Turnitin software. A low value indicates the student is scarcely able to handle the software correctly and a high value indicates a student is able to handle the program correctly.

***Task complexity (Complexity)*:** This measures how complex or straightforward the student's tasks are. A high level indicates the tasks are complex and a low level means they are straightforward.

***Time available (time)*:** This measures the time available to the students for undertaking the tasks set by the lecturer. A high level indicates little time is available, while a low level indicates plenty of time for undertaking the tasks.

***Information available (information)*:** This measures the amount of information available from other students on the tasks set by the lecturer. A high level corresponds to a great deal of information available, while a low level implies there is little information available.

Variable	Rate your level of agreement with the following statements
Citation ability	I know how to properly cite sources in my tasks.
Use of the software program	I know how to use Turnitin according to the lecturer's instructions.
Task complexity	The tasks in this subject are very straightforward (INVERSE).
Time available	I do not have enough time for the tasks.
Information available	There is information available from other students on the tasks set by the lecturer.
Antecedents of plagiarism	I have cheated before in other subjects.

Note: Scale = 1- Totally disagree; 2 - Partially disagree; 3 - Neither agree nor disagree; 4 - Partially agree; 5 - Totally agree

Table 1: Questions included in the survey.

Control variables

Gender: Basing ourselves on prior literature, our aim is to control for the fact that males are more likely to plagiarise than females [12]. We have constructed a dichotomous variable that distinguishes between males and females. The value 1 corresponds to a male and 0 to a female.

***Age*:** Other previous studies have detected that plagiarism is more likely among younger students as they are immature and have yet to fully develop their moral values. The Age variable is the log-transformation of the students' age. This transformation has been carried out in order to normalise the variable.

***Type of student (student)*:** There are prior studies in which a distinction is made between international and domestic students when checking the authenticity of their work [1]. We have measured the Type of student using a dichotomous variable to differentiate between those students with an ordinary enrolment (value 1) and those students on international exchange programmes (value 0).

***Degree mark (degreemark)*:** An academic record may also have an influence on plagiarism [11], with students with poorer marks being more prone to dishonest behaviour. In order to obtain the variable for the degree mark, students were asked to provide their average mark so far in the degree.

***Task marks (taskmark)*:** Likewise, the mark obtained in the task may also be significant, as students producing poorer work have less to lose and may be more tempted to plagiarise. This variable reflects the average mark scored in the students' two set tasks.

***Antecedents of plagiarism (antecedents)*:** A lack of integrity is a factor that has already been used in the literature to determine plagiarism [7]. This variable measures a student's past record regarding plagiarism. Students are asked in the survey whether they have cheated in the past in other subjects. A low value indicates they have not cheated before and a high value indicates they have. The correlations between the variables used in the study are listed in Table 2.

Methods

In order to verify the hypotheses formulated here, we have used binary logistic regression in four different models, using Plagiarism as the independent variable. This enables us to see which variables have a greater probability of affecting a student's behaviour in terms of plagiarism. It does not, therefore, involve predicting what induces students to plagiarise more, but rather what induces them to plagiarise even to a minor extent (e.g., through incorrectly citing a source).

Model 1 includes solely the control variables. Model 2 also includes the independent variables corresponding to involuntary plagiarism (Citation and Program). Model 3 includes the control variables and the explanatory variables for voluntary plagiarism (Complexity, Time and Information). Finally, Model 4 contains all the variables. We may therefore refer to Model 4 as a full model.

Results and Discussion

The results of the analyses involving our four models are shown in Table 3. We have included three different adjustment measures for the models: - 2 Log Likelihood, the Cox & Snell R^2, and the Nagelkerke R^2. Including the explanatory variables in the model increases its predictive powers, with the full model being the one with the best fit. It can also be seen that Model 3 has a better fit than Model 2; in other words, the variables of voluntary plagiarism have more explanatory power than the variables of involuntary plagiarism.

The control variables provide some interesting information. The Gender variable is significant in all the models. As reported in the prior literature, males are more prone to cheating due to their decision-making based on risk and impulse [34].

The full model reveals that the Degree mark variable is significant and negative, thereby showing that students with lower marks over their degree course have a greater tendency to cheat. [35] distinguish between self-esteem (general mental wellbeing) and academic self-esteem (of a cognitive nature and associated with an individual's behaviour within an academic setting). A student with high academic self-esteem, measured in terms of general academic performance, will seek to achieve a high academic performance. To be caught plagiarising would have a devastating impact upon their academic self-esteem if it were to be made public, as they would be shown up in front of all the other students.

Nevertheless, none of the models reveals any significant relationship between plagiarism and age. There are other prior studies with the same results [36]. There is no evidence either in any of the models to show

	1	2	3	4	5	6	7	8	9	10	11	12
Plagiarism	1											
Citation	-0.233**	1										
Program	-0.058	0.494***	1									
Complexity	0.191*	-0.132	0.066	1								
Time	0.055	0.001	-0.092	-0.118	1							
Information	0.174*	-0.004	-0.046	0.179*	0.17	1						
Gender	0.214**	-0.222**	0.016	-0.109	-0.08	0.085	1					
Age	0.029	0.125	-0.046	-0.067	0.091	0.011	0.119	1				
Student	-0.109	-0.044	0.028	-0.182*	-0.096	-0.106	0.159	0.161	1			
Degree mark	-0.058	0.039	-0.061	-0.179*	0.004	0.044	-0.016	-0.079	-0.240**	1		
Task mark	-0.08	0.036	0.059	0.032	0.01	-0.135	-0.149	-0.009	0.081	0.035	1	
Antecedents	-0.024	-0.128	0.139	0.134	-0.023	-0.025	0.108	0.072	-0.036	-0.119	0.131	1

Note: Pearson's bilateral correlation coefficient. N = 92. Sig * p < 0.10; ** p < 0.05; *** p < 0.01

Table 2: Correlations between study variables.

Dependent variable: Plagiarism				
	Model 1	Model 2	Model 3	Model 4
	ß	ß	ß	ß
Citation		**-0.925***		**-0.872***
Program		0.264		0.224
Complexity			**0.862****	**0.804****
Time			-0.052	0.017
Information			**0.495***	**0.505***
Gender	**1.455****	**1.332***	**1.346***	**1.289***
Age	0.373	1.452	-0.398	1.065
Student	-20.692	-20.879	-21.429	-21.534
Degreemark	-0.255	-0.324	-0.513	**-0.556***
Taskmark	-0.004	-0.001	0.006	0.008
Antecedents	-0.183	-0.23	-0.082	-0.103
Constant	21.027	20.198	24.157	21.69
- 2 Log L.	85.114	80.103	77.191	73.260
Cox & Snell R^2	0.089	0.138	0.164	0.199
Nagelkerke R^2	0.14	0.215	0.257	0.312

Note: Binary logistic regression. Sig. * p < 0.10; ** p < 0.05

Table 3: Antecedents of plagiarism: results of the estimations.

that the type of student, the task mark or antecedents of plagiarism are related to the probability of plagiarism. This would suggest that an academic record reveals more information than the result of this specific task or the fact they may have plagiarised in the past. The reason for this may be that the final mark has not taken into account minor instances of plagiarism detected by Turnitin (considered to be unintentional plagiarism). This also reinforces our supposition that the characteristics of each task are determining factors of plagiarism; in this case, more decisive than having plagiarised in the past.

Our hypotheses first posited that unintentional plagiarism was due to a lack of mastery of the program that checked a task's authenticity (H1 and H2). In both Models 2 and 4, the coefficient of the variable Citation is negative and significant, which indicates that the greater the knowledge on how to cite, the less a student plagiarises. This confirms Hypothesis 1. However, the coefficient of the Program variable is not significant, so Hypothesis 2 cannot be confirmed. Table 2 shows that the variables Citation and Program have a high correlation (0.494***), but when we conducted a further analysis in which the variables were introduced separately, it was found that the coefficient of the Program variable is still not significant. This suggests that both variables belong to the same dimension (which we have labelled as involuntary plagiarism), but only the ability to cite properly has an impact on the probability of plagiarism.

Concerning voluntary plagiarism, we formulated three hypotheses including the antecedents of task complexity (H3), the lack of time for its undertaking (H4) and the amount of information available on it (H5). In Models 3 and 4, the coefficients of the variables Complexity and Information are positive and significant, thereby confirming Hypotheses 3 and 5. The more complex a task is and the more information on that task available to a student, the greater the probability of plagiarism. Nevertheless, no evidence has been found to confirm Hypothesis 4 on the relationship between the time a student has to complete the task and the probability of plagiarism. This may be due to a combination of two different effects. On the one hand, if the time is very short, students may feel pressured [6,7] and this may incite them to plagiarise; but, on the other hand, if the time allocation is too generous, students may have access to more information they can plagiarise. It would be interesting in the future to test other non-linear relationships between the time available for completing a task and the possibility of plagiarism.

Conclusion

This research has focused on singling out and comparing the main individual antecedents of plagiarism. Although several studies have stressed the importance of plagiarism's institutional or contextual antecedents [10] or a plagiariser's profile [12], they provide teaching staff with little or no guidance on what can be done to reduce or at least discourage plagiarism among their students. Nevertheless, this paper's conclusions may be of considerable use for teaching staff.

Like other studies, we have differentiated between the antecedents of voluntary and involuntary plagiarism [13]. This paper has provided evidence to show that both one set and the other are related to the probability of a student plagiarising. Our evidence is based on a study in which we have related the plagiarism in two tasks analysed with Turnitin software and a survey held among 92 students who had undertaken the tasks and were studying the third year of the Degree in Business Administration and Management at Salamanca University.

Specifically, the evidence reveals that a lack of knowledge of the citation system, the complexity of the tasks and the existence of information on the task topic are associated with a greater probability of plagiarism. This enables academics to better plan our teaching strategy, bearing in mind these limitations in the design of assessment tasks. Firstly, because teaching the meaning of plagiarism and how sources of information should be used properly reduces the probability of involuntary plagiarism. Secondly, because the complexity of the task and the information students might have on the topic are factors that increase the likelihood of plagiarism. This does not mean that tasks of this nature should be avoided, but rather it permits pre-empting possible instances of plagiarism when teaching staff manage to clearly convey these notions to their students.

These aspects help to reinforce students' perception of authority and fair play, as well as strengthen the role of teaching staff and modulate the value the University gives to students [37], impacting upon their self-esteem, and especially their academic self-esteem.

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