

Analyzing and reducing plagiarism at university

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Plagiarism is one of the less desirable practises in the academic context. This paper presents an experience of massive plagiarism detection at university and the steps taken to prevent its subsequent occurrence. Plagiarism was detected in the first assessment phase of a research project practise. As a result, students were required to arrange ethical group discussions with the professor to prevent plagiarism in the future. A substantial reduction in the rate of plagiarism was observed from the first practical assessment to the second one, $t_{(16)}=2.5$, $p=.02$, $d=0.83$, $1-\beta=.63$, unilateral contrast. Additionally, a survey was developed to analyse students' opinions and attitudes about plagiarism. A sample of 64 students (15 boys and 49 girls) with an average age of 22.69 ($SD=2.8$) filled in an electronic questionnaire. More than a half of the sample (56.92%) admitted that they had plagiarised before but most of the students (83.08%) agreed they would not like someone else plagiarising their reports. A preliminary short scale to measure attitude towards plagiarism in undergraduate students at university is provided. Finally, a set of recommendations are given based on this experience to prevent and to reduce the level of plagiarism in the university context.

Keywords: Plagiarism, university, ethical commitment, scale, measurement.

Análisis y reducción del plagio en la universidad. El plagio es una de las prácticas menos deseables en el contexto académico. Este artículo presenta una experiencia de detección masiva de plagio en la universidad y los pasos llevados a cabo para prevenir la posterior ocurrencia del mismo. El plagio fue detectado en la primera fase de evaluación de un proyecto de investigación práctico. Seguidamente, los estudiantes fueron organizados en grupos de discusión éticos para prevenir el plagio en el futuro. Se observó una reducción substancial en la tasa de plagio desde la primera evaluación parcial de la asignatura a la segunda, $t_{(16)}=2.5$, $p=0.02$, $d=0.83$, $1-\beta=.63$, contraste unilateral. Adicionalmente, se desarrolló una encuesta para analizar las opiniones de los estudiantes sobre el plagio. Una muestra de 64 estudiantes (15 hombres y 49 mujeres) con una edad media de 22.69 años de edad ($DT=2.8$) cumplieron un cuestionario electrónico. Más de la mitad de los estudiantes (56.92%) admitieron haber plagiado previamente y la mayoría indicaron que no les gustaría que plagiasen sus trabajos (83.08%). Una versión preliminar de una corta escala para evaluar actitudes hacia el plagio en estudiantes universitarios es facilitada. Finalmente, un conjunto de recomendaciones son proporcionadas basadas en esta experiencia para prevenir y reducir el nivel de plagio en el contexto universitario.

Palabras clave: Plagio, universidad, compromiso ético, escala, medida.

Plagiarism is probably one of the worst examples of misconduct in scientific research. Errami & Garner (2008) consider that plagiarism, together with duplication and co-submission, is one of the three major sins in contemporaneous scientific publishing. Psychology has recently attracted the attention of the scientific community because of the Stapel's Case. Diederik Stapel was a Professor of Social Psychology at the Tilburg University in the Netherlands and he abruptly appeared in the communication media accused of serious misconduct practises (Callaway, 2011). As he later confessed, Stapel was accused of having manipulated and fabricated his results in at least 30 high impact publications during 20 years (Fanelli, 2013; Yong, 2012). Although some voices were heard warning that it is (under certain conditions) relatively easy to succumb to unethical practises (Crocker, 2011), the issue still continues generating discussion and reactions (e.g., Fanelli, 2013).

The American Psychological Association (2001) considered plagiarism the same way it was defined by the American Psychological Association Ethics Committee (1992) almost a decade before. Thus, in point 6.22 of the Publication Manual of the American Psychological Association (2001) plagiarism is referred as the presentation of "substantial portions or elements of another's work or data as their own, even if the other work or data source is cited occasionally" (p. 395). Later on, the American Psychological Association (2003/2010) re-wrote it with almost the same words in a succinct reference to plagiarism in point 8.11 of the Ethical Principles of Psychologist and Code of Conduct. In general terms, plagiarism is referred to the presentation of someone else work as oneself creation.

There is at least another form in which plagiarism might be present in scientific literature. The term self-plagiarism has been introduced to describe the act of presenting or copying previous work as a new contribution to scientific knowledge. For example, the American Psychological Association (2010) assumed that self-plagiarism has occurred when researchers "present their own previously published work as new scholarship" (p. 16). Is self-plagiarism (or duplication) as severe as plagiarism? David (2008) says that banning self-plagiarism, in certain cases, is an error. As he points out, self-plagiarism is not considered a legal issue by the US Public Health service although he also stresses that it might cause problems in meta-analytic studies and waste valuable publication space. In fact, David (2008) considers that restructuring previous published work could help to disseminate or transfer scientific knowledge. Brennan (2008) agrees with him approving the re-publication of documents in different languages when it contains information to promote good medicine practices, for example. The American Psychological Association (2010) considers that some degree of duplication could be justified when describing specific experimental procedures, instruments or analytic techniques. It is also noted that excessive or undesirable self-referencing should be avoided (American Psychological Association, 2010). In any case, the issue of

self-plagiarism is not closed and regulations and standards have been claimed from different scientific knowledge areas (e.g., Reich, 2010).

As stated by Errami & Garner (2008), plagiarism is a global phenomenon. It is not only present in the scientific field but it has also taken visibility in the politics context (Abbott, 2012). From Errami & Garner's (2008) point of view, there are three reasons to explain why plagiarism has increased during the last decade. First, the number of online publications has increased dramatically which make it easier to copy-and-paste information into a new document. Secondly, the exponential rise of scientific literature might give the impression that the odds of being detected are relatively low. Finally, it seems that there is a belief in the scientific community considering that you can get away with it. Just to figure out how serious is plagiarism in scientific research take the data published in May 2012 indicating that 9.8% (out of 2,047) of the retractions in high impact journals were due to plagiarism (Corbyn, 2012).

Undergraduate students are surrounded by this situation. They probably perceive that politicians copy their works, that scientist or their professors try to deceive the scientific community by copying or fabricating research documents and, most importantly, that nothing happens. As pointed out by López (2012), even cracking software, music or films is seen as a positive and meritorious activity. As a result, it is not difficult to imagine that students will consider plagiarism as a way to save time and effort protected by the fact that they are modelling what their models (scientists, professors and politicians) are doing. Derby (2008) proposed that one of the reasons why students copy is because they have access to electronic copies of articles and because they are not scared by anti-plagiarism software.

The main objective of this article is to present an experience of massive plagiarism detection and to inform about the actions taken to try to reduce it. The aim of the present study is not to study unconscious plagiarism (Perfect & Stark, 2012) but the conscious one, that is to say, the deliberate copy of written material and its presentation as a genuine work by university undergraduates. Plagiarism was detected in the first assessment phase of a research project task. The actions taken were oriented to make students aware of ethical principles against plagiarism. We hypothesise a significant reduction in plagiarism in the second assessment phase of the research project after discussing ethical issues with students. Additionally, a short scale is tested and provided to help to measure the attitude of undergraduates towards academic plagiarism.

METHOD

Participants

A sample of 65 undergraduate students (15 male, 23.08%, and 49 female, 75.38%) accidentally sampled and enrolled in the subject psychometrics, Degree in

Psychology, at a Spanish university took part in this study. Their ages ranged between 20 and 37 years old ($M=22.69$, $SD=2.82$).

Materials

A WebCT course (*Blackboard Inc.*) was set up to manage the development of the subject. The *Tasks* tool was activated in order to allow students to send their reports using the virtual learning platform. Two tasks were created each of them to collect and evaluate the technical reports generated for each of the assessments phases in which the task was divided. The tasks were associated to the SafeAssign software (*Blackboard Inc.*) to check for plagiarism.

Additionally, an electronic questionnaire was created to measure the students' opinion about plagiarism using the software LimeSurvey (*Fa. Carsten Schmitz*). The questionnaire had four sections. After a short presentation indicating the objective of the study, appeared the first section in which students had to indicate their ages and sex. In the following section an experimental scale to measure Attitude towards Academic Plagiarism was presented (AHPA – from the Spanish expression *Actitud Hacia el Plagio Académico*). The original scale contained ten items to compute the score of positive attitude towards academic plagiarism. Students had to show their agreement with the statements using a Likert-type scale with five options (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). The scale had two filler items and three of the items were inverse statements. The score is interpreted in the direction of pro-plagiarism, that is to say, the higher the score the more positive attitude towards plagiarism (Table 1). However, items 5, 9 and 10 were excluded from the computation of the total score given that showed a non optimal functioning in the preliminary quantitative analysis. As a result, the AHPA score ranged from 5 to 25 indicating 5 the lowest preference or the lowest positive attitude to plagiarism and 25 the highest preference or positive attitude towards plagiarism.

Table 1. Preliminary items in the AHPA scale

Items	α	$Z\alpha$	r_{IT}
1. Plagiarism is a dishonest practise*	.55	.58	.58
2. Everybody plagiarise, it is not a serious fault	.60	.65	.41
3. I usually crack computer software – F	-	-	-
4. It is not desirable to present someone else ideas as your own*	.62	.66	.36
5. The work is simplified if you copy someone else material	-	-	-
6. Professors plagiarise so it is justified activity	.56	.61	.52
7. Cheating in exams is not bad – F	-	-	-
8. I do not like the idea of copying information without referencing*	.58	.62	.48
9. The issue with plagiarism is you could be caught	-	-	-
10. I admire Plagiarists	-	-	-

Note: The * symbol indicates that it is an inverse item; the - F indicates it is a filler item; α refers to the Cronbach's reliability coefficient if the item is deleted; $Z\alpha$ is the standardized reliability coefficient and r_{IT} is the item-total correlation coefficient.

In the third section students were asked if they had plagiarised before, the percentage of plagiarism in their prior works and their estimation of plagiarism between students. They also were asked to say if they would like to be copied and which are the reasons motivating plagiarism between students.

In the final section students were asked to give their identification user code in the WebCT platform to reward their participation in the study with a 0.25 credit token to sum up to their final marks. That information was not used for any other purposes.

Procedure

The psychometrics subject was structured into two parts: theory and practise. Fifty percent of the final grade was derived from the theory exams (a final exam and a midterm exam) whereas the remaining 50% grade was derived from the practical part of the subject.

The practical dimension of the subject consisted in developing a team research project. Students had to organise themselves into teams containing between three and five members. Students had to decide a topic to research and apply the contents of the subject. The research project was formally assessed two times through the course, in the midpoint and when the project was completed. Students had to design and plan the research in the first phase and had to write a short report indicating who they will accomplish the project. In the second assessment point students had to present the final research project report. Plagiarism was detected in the first practical assessment phase. Only six out of 32 teams (18.75%) showed a rate of overlap equal or lower than 5%. The rest of the reports showed more than 11% of overlap with the contents explored by SafeAssign.

Once that massive plagiarism was detected teams were cited in the professor office to discuss the content of their reports. Students were asked to say why they copied. Much of the discussion session was focused towards metaphors or imagined scenarios in which serious cases of misconduct were present. For example, students were invited to imagine they sold a house which was not their property and got away with it. The metaphor of the not-owned-house was presented to try to show that plagiarism is not a legal behaviour in a similar fashion. Students were asked to reflect on their behaviour and to behave differently next time. No punishment was applied to the students but they were said they had to act according to the ethical rules of their future profession.

After finishing the whole course students were asked to complete the online survey to know their opinion about plagiarism and were given the possibility to get an extra 0.25 point for participating in the study.

RESULTS

A substantial reduction in the rate of plagiarism was observed from the first practical assessment ($M=25.4$, $SD=27.1$) to the second one ($M=8.33$, $SD=9.41$), $t_{(16)}=2.5$, $p=.02$, $d=0.83$, $1-\beta=.63$, unilateral contrast. The survey showed that most of the students (37, 61.67%) admitted to have plagiarised previously. More than a half of the sample (56.92%) admitted that they had plagiarised before but most of the students (83.08%) agreed they would not like someone else plagiarising their reports.

When asked about the percentage of students they think use plagiarism when developing their reports most of the students (30, 50.85%) said that more than 50% of the students use that strategy and zero students indicated that “nobody plagiarise”. Only three students (5.08%) said that “everybody plagiarise”. Most of the students also report that they usually plagiarise about 10% (14 students, 37.84%) or 20% (11 students, 29.73%) of the contents of their works. An equal percentage of students (10.81%) say they plagiarise between 30% and 40% of the content of the reports whereas four students (10.81%) reckon that they plagiarise 50% or more of the content of their manuscripts.

Students were also asked to indicate which are the reasons explaining plagiarism amongst students. Most of the students point out that the reason why students plagiarise is because it saves time (42, 79.25%). Another important reason identified by students as a motivating factor contributing to plagiarism is the fact that students are not interested in the information they are plagiarising (9, 16.98%).

The AHPA scale scores range from 5 to 19 ($M=9$, $SD=3.33$) and provides a .74 coefficient of internal consistency (see table 2 for further details). Men show a lower attitude towards plagiarism ($M=7.86$, $DT=3.21$) as compared with women ($M=9.4$, $DT=3.32$) although this difference is not statistically significant, $t_{(59)}=-1.54$, $p=.13$, $d=0.47$, bilateral contrast. There is evidence supporting the differential validity of the scale scores because people who admit to have plagiarised before obtain a higher score in the scale ($M=9.76$, $DT=3.48$) as compared with those who reckon not having plagiarised before, ($M=7.96$, $DT=2.88$) and this difference is statistically significant, $t_{(58)}=2.07$, $p<.05$, $d=0.56$, bilateral contrast.

Table 2. Items in the final version of the AHPA scale

Items	α	Z_α	r_{IT}
1. Plagiarism is a dishonest practise*	.6131	.6176	.7098
2. Everybody plagiarise, it is not a serious fault	.7420	.7451	.3776
3. It is not desirable to present someone else ideas as your own*	.7249	.7264	.4225
4. Professors plagiarise so it is justified activity	.6983	.7053	.4906
5. I do not like the idea of copying information without referencing*	.6813	.6847	.5403

Note: The * symbol indicates that it is an inverse item; α refers to the Cronbach's reliability coefficient if the item is deleted; Z_α is the standardized reliability coefficient and r_{IT} is the item-total correlation coefficient.

DISCUSSION

Our results indicate that discussing ethical principles related to plagiarism with our students might favour a reduction of this type of academic misconduct. More specifically, we suggest that using metaphors might help students to understand how pernicious plagiarism is for academic and scientific knowledge. The results also show that the main reason students use to explain plagiarism is time saving. It seems that, as stated by Derby (2008) and Errami & Garner (2008), the access to electronic media invites students to copy-and-paste from the internet when creating their academic reports. As a result, students prefer copying-and-pasting information from the Internet because this method produces good and fast academic results. As a result, if we want control or reduce plagiarism in that sense we should warn and inform students we will use automated plagiarism detectors and that we will punish seriously plagiarism detection. Additionally, students reported that people plagiarise because they are not interested in the contents they copy. In that case we could try to reduce plagiarism by making students more interested and motivated for the contents they are learning about. In Bruner (2012) words, we should make students aware of the learning process in which they are involved in order to help them to feel they are key actors or actresses of their own learning. For example, López (2011) presented an experience in which undergraduate students succeed in managing an unstructured and relatively difficult academic task. The author explained students' behaviour paying attention on variables such as motivation and illusion. Thus, López (2011) considered that the students' success was conditioned by the sensation of self-creativity they experimented and the active role they taken on their own learning. In that sense, we agree with Sanz de Acedo & Sanz de Acedo (2013) stressing that the higher education system should promote creative and metacognitive skills in order to stimulate creative potential and, as a consequence, reduce the temptation to plagiarise among undergraduate students.

Our results show that plagiarism might be a serious problem in a near future. As Derby (2008) warned, we should manage carefully the issue of plagiarism among undergraduate students at university because it seems it is going to increase as more and more electronic information is available from the Internet. Taking proposals made to reduce plagiarism in the general scientific publishing we could identify some points applicable to the educational context. For example, Errami & Garner (2008) proposed the development of ethical standards specifying what is and is not admissible when creating scientific manuscripts. In the case of psychology the American Psychological Association (2010) has provided a normative context to help to discern which is admissible and is not. It would be interesting if we tried to familiarise our students with it. Errami & Garner (2008) also note that stressing legal aspects of plagiarism (like aggressive enforcements of copyrights) or exposing publicly the cases of misconduct (in

order to “scare” students of being embarrassed) might serve as a warning to students to avoid plagiarising. Fanelli (2013) also considered improvements in the mentorship process to reduce cases of misconduct among students. Finally, Fenner (2008) proposes to deny grants and jobs to applicants or candidates accused of plagiarism. However, it should require the creation of specific databases containing that information and it would suppose hallmarking students with a label difficult to erase.

In addition to intervening directly on students, we think we should try to articulate mechanisms to reduce plagiarism in the scientific research field. From an institutional point of view, for example, universities should encourage programmes oriented towards free plagiarism post-graduate degrees because it would increase the quality standards of these educational plans (see Ariza, Quevedo-Blasco, Bermúdez & Buela-Casal, 2012 for a recent detailed analysis of PhD. quality in the Spanish higher educational system). There are many possibilities to reduce plagiarism and fabrication in scientific publishing. Following Yong (2012) and remembering the essence of the scientific method, we should encourage researchers to provide tracks enabling studies replication; it presumably would make the communication process clearer and fairer. It is also needed to reduce the pressure to publish amongst researchers, to review ethics standards and that journals evaluated the possibility of accepting negative results (Fanelli, 2013). Other proposals indicate that it should be useful to share data between different research groups in order to check if data analysis, for example, were conducted properly (Wicherts, 2011). Finally, as suggested by Derby (2008), journals had to reject or retract articles in which plagiarism was detected.

The scale provided in this article showed acceptable levels of internal consistency and differential functioning when measuring positive attitude towards plagiarism. However, more research is needed to get a stable version of the test. For example, different samples from different cultures and areas of knowledge might be useful to test how the scale works to measure attitude to plagiarism. In any case, the experimental prototype presented in this paper might be used as a brief screening test to scan attitude towards academic copy-and-paste misconduct.

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