

# **A PILOT STUDY OF FACTORS THAT INFLUENCE UNDERGRADUATE STUDENTS' OPINIONS OF IT ETHICS**

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## **ABSTRACT**

Research on ethics in business today is being shaped by the explosive development of information technology (IT) and the growth of the Internet. We look at some of the factors that influence undergraduate student's opinions of cheating. Based on questionnaires administered to undergraduate students it appears that students exposed to some ethical issues in a class find cheating less acceptable than students who have not had any ethics content in a course. However, students who spend ten or more hours per week on the Internet find cheating more acceptable than do those students who spend fewer than ten hours per week.

## **INTRODUCTION**

The availability of information technology (IT) and the growth of the Internet have made information more readily available to the general public, but it has also given control of thousands of megabytes of sensitive, valuable information to business organizations who are able to manage the generation and maintenance of such information. This increased control of information by business organizations has led to a great temptation for unethical decision-making. As a result, business decision-making ethics has become an issue in today's news, and there has been an associated increase in research aimed at bringing about better ethical behaviors of employees in business organizations. Additionally, is there a relationship between cheating in today's undergraduate classrooms and the business ethics of tomorrow's new hires? And if this is so, how do we reduce cheating and improve the student ethical behaviors while they are still undergraduates? If some studies are to be believed, educating undergraduates to have better ethics regarding cheating will impact their ethics at graduation; and these improved ethical standards will then result in better business ethics and better IT-related ethics when these undergraduates become new hires in business organizations. So there is a call for the introduction of ethical education into undergraduate curricula, and it has become an issue that is in the early stages in the literature.

This study reports on an empirical study of undergraduate students to see what factors might influence their opinions of the acceptability of cheating. The study specifically asks, does the coverage of ethical concepts in one or more classes impact opinions on cheating? And secondly, does the degree of Internet use influence these opinions? We wanted to look at whether taking an ethics course and/or discussing ethical issues in a course affected the student's opinion of cheating. Furthermore, in this information age, we wanted to see if how long a student has used the Internet or how many hours they spend on the Internet has any effect on the students' perceptions of cheating. In order to evaluate our students' perceptions of cheating, we first discuss previous research regarding ethics and IT and outline the purpose of our study. Next we outline our hypotheses and methodology. Finally we present the results of our study and its implications.

## **BACKGROUND AND LITERATURE REVIEW**

### **Ethics and IT**

With the increase in corporate control of information and the accompanying rash of unethical business practices in large organizations making headlines (WorldCom, Tyco, and Enron, for example), there has been an increased interest in the need for reputable business ethics and IT ethics in the workplace. In the early stages of growth of the Internet, Udas, et. al [24], make the point that IT professionals are integrally related to the development and deployment of IT-related solutions in business organizations. As such, they have a tremendous impact on both the business organization and on its clients. The decisions they make with regard to IT-related issues are based on their professional ethics. Udas, et. al [24] suggest that professional organizations and their codes of ethics do not impact the ethical attitudes of IT professionals. Oz [20] found that IT professionals were more likely to commit software piracy or hack into networks than the other professionals in the working population; but they were no less ethical than the other professionals in the working population towards protecting people's private data. Cronan [6] approaches the issue by studying how ethical beliefs influence the propensity to download digital media files (movies and music, for example) illegally from the Internet. The fact that past piracy behavior had the greatest influence on intention to pirate suggests that in order to reduce the incidence of digital piracy in business organizations, it would be good to prevent it from happening the first time.

Winter, et. al. [26] found that personality, computer literacy, and social norms affect attitudes toward IT-related unethical practices. They call for further research on IT-related ethical issues and the personal, situational and organizational factors that influence them. Molnar, Kletke and Chongwatpol [19] found that undergraduates in general find cheating with the use of IT more acceptable than cheating in the old-fashioned way, without IT. Thus, with today's students, and tomorrow's new hires, IT ethics permit behaviors that would not occur in non-IT enhanced ethical situations. Additionally, Cronan [6] discusses the physical means that are being considered to fight the digital piracy (software protection, hardware mechanisms to prevent piracy, passing laws to require physical mechanisms, increase the cost of resources required to pirate digital media, legal litigation of network providers, high-end firewalls that can be implemented by internet service providers).

### **Cheating and Ethics Education**

There is another approach to reduce piracy that is not physical. That method is to work to educate people about how harmful piracy actually is. This can be done through advertising and public service announcements, or through formal education. Universities can take the leading role in formally educating students about these things, and in instilling acceptable ethics into students through ethics classes and ethical components in classes. Because of this responsibility, cheating in undergraduate programs and its potential relationships with ethics, as well as the relationship between cheating of students and their ethics when they enter the workforce, are of great interest. Many studies over the years have addressed the issue of cheating at the undergraduate level in colleges and universities. A key question is this: is an undergraduate student's cheating isolated collegiate behavior, or is it associated with a student's later decision to engage in unethical workplace activities? Beck and Ajzen [3], for example, found that collegiate cheating, lying, and shoplifting are significantly related; Sims [22] found a correlation between cheating by college students and unethical behaviors later in the workplace. Crown and Spiller [7], in a 25-year period meta-analysis of studies of collegiate cheating, state that cheating by students and their ethical beliefs

are strongly linked, and they underscore the need for research that examines relationships between cheating in college and subsequent unethical workplace behaviors. Lawson [15] found that there is a strong correlation between when students cheat in college they are more likely to support or engage in unethical behaviors in business settings. Students need to be educated so that they will have the ethical skills and the business knowledge that they need to engage in ethical behaviors when they are employed in the real world.

### **Building Better Individual Ethical Standards**

It has been suggested that ethics training incorporated into the curricula of colleges and universities may lead to better ethical standards among graduates, thereby improving the business ethics of new hires in today's business organizations. Some research has shown that business students have less acceptable ethical beliefs than do students with other majors ([12], [17], [7]). As a result, colleges of business are looking for effective ways of building solid ethical beliefs and attitudes in their students to prepare them to be ethical professionals when they enter the work force. Pressure to do this is coming from a variety of sources. The Association to Advance Collegiate Schools of Business (AACSB) Eligibility Procedures and Accreditation Standards for Business Accreditation [1] overall objective is to reduce the level of unethical behaviors and encourage tomorrow's new hires to have higher standards of ethical conduct. However, the AACSB does not indicate specifically how this is to be done. The Overview Report of Computing Curricula 2005 (the Joint Task Force for Computing Curricula 2005) also calls for business ethics to be included throughout the curriculum, although, again, it is not specific as to what the content should be. The Joint Task Force for Computing Curricula 2005, as another example, is a joint effort by the ACM, AIS, and IEEE-CS to establish content for undergraduate degree programs in computer-related degrees, also suggest that computing disciplines help computing professionals make ethically informed decisions. Again, however, ways and means of implementing this are not specified.

A variety of approaches have been tried in business curricula for fulfilling these ethics requirements and engendering appropriate business ethics in university students. Some universities have added a single ethics course into their curriculum; others have inserted varied ethics-related content into a few classes across the curriculum; some have adopted a combination of these two approaches. Few, if any, have successfully integrated ethics concepts throughout the curriculum. Some researchers have suggested these and other ways of achieving effective ethics education. Greening, et al [10] favor integrating ethics coverage throughout the curriculum. Marchant [16] calls for a special ethics course in undergraduate curricula that combines ethics, IT, and societal considerations and will build in the students a desirable ethic that they can extend to the situations that arise as IT becomes more integrated with today's global business. Jones [14] points out that the introduction of computers into the workplace has brought with it a set of ethical questions and dilemmas that we have yet to answer satisfactorily. There have been mixed results studying the impact of current ethics instruction on business students. Bodkin, et al [4], for example, find that reinforcement of marketing ethical concepts through discussion in multiple places in the curriculum is more effective than having one ethics class. At any rate, it is becoming apparent that ethical issues need to be formally and successfully addressed in the undergraduate curriculum.

## **METHODOLOGY**

We wanted see whether taking an ethics course and/or discussing ethical issues in a course impacted students' opinions on cheating, with the idea that incorporating ethics into university curricula should have a desirable impact if we are going to the effort of incorporating classes into the curricula.

Furthermore, in this information age, we wanted to see if the length of time that a student has used the Internet or how many hours they spend on the Internet has any effect on the student's perceptions of cheating. We are interested in exploring the potential relationship between students' basic ethical positions and their opinions on cheating in college.

First we define "cheating" as a violation of intellectual property. Intellectual property is generically defined by Webster's dictionary as "property derived from the work of an individual's mind or intellect." Therefore, we defined cheating as any violation of that definition. This includes plagiarism of any kind, including incorporation of any part of uncited text in a paper; buying a paper and using it; copying part of or complete homework assignments; or illegally obtaining test answers. It also includes illegally obtaining digital music or software.

In order to assess whether or not "expert" use of the Internet had any effect on student opinions of cheating, we needed to define what "expert" meant in terms of the Internet. Research is divided on how to determine an individual's Internet expertise. Dumas and Redish [8] suggested defining experts based upon the frequency of use or the amount of time spent in using an application. However, Scerbo [21] recommended categorizing participants according to their individual computer literacy; and Vu, et. al. [25] found that individual's ratings of their own overall knowledge were better predictors than were estimations of frequency of use. Aula and Nordhausen [2] provide a helpful discussion on the definitions of "novices" and "experts" in carrying out search tasks on the Internet. They indicate that Internet experts have been defined in various ways. For example, one study defined experts as those who have more than 5 years of computer use, more than 4.5 years of Internet use, and some use of search engines. Another study defined experts as those who browse the internet for more than 5 hours per week. Yet another study defines an expert as someone who has more than 50 hours (cumulative) of www experience. Based on these definitions, we decided to assess expertise based on how many years the student has been using the Internet in conjunction with how many hours per week they spend on the Internet. Since the average undergraduate age is approximately 20 years, we used more than 10 years on the Internet as a cutoff point since this would be more than half their lifetime. For the cutoff point for the number of hours spent using the Internet, we used a 2001 (Futurist) [9] and a 2002 (Internet Retailer) [13] reports that suggest that the average amount of time spent online by users is approximately 10 hours per week. Our definition of expert, then, is more restrictive than many of the studies reported in the literature.

Although there is widespread overall agreement on ethical issues, there may be ambiguity when it comes to their applications. For example, most students would agree that it is wrong to shoplift; however, many disagree about whether or not it is okay to download music from the Internet. In addition, student conceptions of 'fair use' may lead them to view information in cyberspace as public knowledge. Molnar, Kletke and Rampal [18] found that students' perceptions of cheating differed between cheating with the use of IT and cheating without the use of IT. In general, students found it more acceptable for them to cheat using IT than when not using IT. Therefore, we used an equal combination of IT and non-IT ethical questions on the survey and we also only looked at responses to questions directly related to the student.

## **Hypotheses**

When we created our questionnaire we created separate questions regarding cheating into technology versus non-technology intellectual property violations. For example, the survey asked how the students felt about cheating using technology (e.g. It is okay for me to download or copy music/software/computer games without complying with the licensing agreement) versus not using

technology (e.g. It is okay for me to shoplift a CD or computer disk). Then we asked questions about whether or not they have ever taken an ethics course, whether or not they have ever discussed ethical issues in a course, how long they had been using the Internet (in years) and how many hours per week they spend on the Internet. From this conceptual outline we proposed the following hypotheses:

- 1) H1: In general, students will find it less acceptable to cheat if they have ever taken an ethics course.
- 2) H2: In general, students will find it less acceptable to cheat if they have ever discussed ethical issues in a course.
- 3) H3: In general, students will find it less acceptable to cheat if they have been using the Internet for less than 10 years.
- 4) H4: In general, students will find it less acceptable to cheat if they spend less than 10 hours per week on the Internet.

## **Experiment**

Surveys were administered to undergraduate students at five different geographical academic locations in the fall and spring semester, 2006-2007. All subjects volunteered to take the survey and no extra credit was provided. All subjects were guaranteed complete anonymity; no personal identifying data of any sort was collected. The subjects were reminded to read the questions closely (due to the reversal of the way some questions were asked) and were given adequate time to complete the surveys. Data were coded on an interval assumed Likert-scale of 1 to 5, with 1 representing 'strongly disagree' with the acceptance of cheating and 5 indicating 'strongly agree' with the acceptance of cheating, as perceived by the subject. Appropriate reversals of negative question responses were made. This survey was derived from a previous pilot study [18]. The survey asked how the students felt about cheating using technology (e.g. It is okay for me to download or copy music/software/computer games without complying with the licensing agreement) versus not using technology (e.g. It is okay for me to photocopy a book/article without complying with the copyright) for themselves and for others (e.g. It is okay for others to ...). The questions were divided into various categories of intellectual property violations which included, copying of music/software/computer games, copying electronically or non-electronically completely or any part of a homework assignment, copying electronically or non-electronically completely or any part of a paper, buying or borrowing a paper, and illegally getting test answers electronically or non-electronically. Each of the categories was represented by five questions.

## **RESULTS**

A total of 708 usable questionnaires were returned: 104 questionnaires from a small, private liberal arts college in the north mid-west, 412 questionnaires from a large, public south mid-western university, 95 questionnaires from a large, public north-western university, 43 questionnaires from a small, private catholic north eastern college and 54 questionnaires from a small, private north eastern college. An independent samples t-test analysis was then performed on the responses to the questionnaire using SPSS for each of the hypotheses using the dependent variables of user attitudes. The mean value of the students' responses was calculated. The larger the mean value of the response represent the more strongly the student agrees that it is okay to cheat. The results support hypothesis 2 and 4, but does not support hypothesis 1 and 3.

**The first hypothesis H1:** Students will find it less acceptable to cheat if they have ever taken an ethics course. The mean values for those students who said they have taken an ethics course were compared to the mean values of those students who said they had not taken an ethics course. The mean

average response for cheating if they had taken an ethics course was 1.95 with a standard deviation of .59. The mean average response for cheating if they had not taken an ethics course was 2.02 with a standard deviation of .59. The t-test for equality of means resulted in a p-value of .102. This does not support the hypothesis that students find it less acceptable to cheat if they have taken an ethics course.

**The second hypothesis H2:** Students will find it less acceptable to cheat if they have discussed ethical issues in a course. The mean values for those students who said they had discussed ethical issues in a course were compared to the mean values of those students who said they had not discussed ethical issues in a course. The mean average response for cheating if they had discussed ethical issues in a course was 1.97 with a standard deviation of .58. The mean average response for cheating if they had not taken an ethics course was 2.20 with a standard deviation of .63. The t-test for equality of means resulted in a p-value of .001. This does support the hypothesis that students find it less acceptable to cheat if they have discussed ethical issues in a course.

**The third hypothesis H3:** Students will find it less acceptable to cheat if they have been using the Internet for less than 10 years. The mean values for those students who said they have been using the Internet for less than 10 years were compared to the mean values of those students who said they had been using the Internet for 10 years or more. The mean average response for cheating if they had used the Internet for less than 10 years was 2.03 with a standard deviation of .56. The mean average response for cheating if they had been using the Internet for 10 years or more was 1.97 with a standard deviation of .61. The t-test for equality of means resulted in a p-value of .179. This does not support the hypothesis that students find it less acceptable to cheat if they have been using the Internet for less than 10 years.

**The fourth hypothesis H4:** Students will find it less acceptable to cheat if they spend less than 10 hours per week on the Internet. The mean values for those students who said they spend less than 10 hours per week on the Internet were compared to the mean values of those students who said they spend 10 hours or more per week on the Internet. The mean average response for cheating if they spend less than 10 hours per week on the Internet was 1.96 with a standard deviation of .55. The mean average response for cheating if they spend 10 hours or more in the Internet was 2.05 with a standard deviation of .63. The t-test for equality of means resulted in a p-value of .028. This does support the hypothesis that students find it less acceptable to cheat if they spend less than 10 hours per week on the Internet.

## CONCLUSIONS

It appears from this analysis that students find cheating less acceptable if they have ever discussed ethical issues in a course. They also find cheating less acceptable if they spend less than 10 hours per week on the Internet. However, there is no significant difference in student perceptions of cheating if they have taken an ethics course or the number of years they have been using the Internet. This suggests that simply taking a course in ethics does not affect student opinions of cheating. However, discussing ethics in a course may have an effect. In addition, the number of years they have used the Internet has no affect. However, if students use the Internet more than 10 hours per week they find cheating more acceptable. It should also be noted that the highest average response mean of 2.20 is still within the 'disagree' to 'no opinion' category range.

## REFERENCES

Available upon request from authors