Unethical Behavior in Information Systems: The Gender Factor

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ABSTRACT. This article reports the findings of a survey examining whether gender differences influence the degree to which individuals recognize unethical conduct in the use and development of information technology. The results show that, on the average, there is a significant gender gap in the recognition of unethical behavior in information systems. Although, women are better able to recognize unethical actions described in information systems scenarios than men, the existence of statistically significant differences varies depending upon the nature of the ethical dilemma. The findings of this study provide both managers and researchers valuable understanding regarding the differences (and similarities) in the reactions of individuals of both genders to unethical situations in information systems.

Introduction

The ability of managers to recognize (and ultimately resist) unethical conduct has been associated with factors relating to the environment (e.g., employing organization, cultural, situational etc.) and others having to do with the individual themselves (e.g., family influences, religious values, personal experiences, demographic characteristics). There is little doubt that individual attributes relate to moral reasoning and ethical conduct; but it can be argued that individual factors could be the most powerful determinants of personal ethical standards (and consequently conduct) (Bommer *et al.*, 1987; Trevino, 1986). Dejoie *et al.* (1991) urge that information systems (IS) related studies on ethical decision making need to examine the disparity between genders, among other social aspects.

Although there have been numerous studies on sex differences and moral development,[1] the IS discipline has not seen many studies regarding the role of gender and other demographic variables in recognizing unethical conduct. Thus, the goal of this study is to examine one individual demographic attribute, gender, and study its impact on the ability of prospective decision makers to identify (and hopefully refrain from) unethical behavior in information systems design, development, implementation and use.

Research rationale and questions

The belief that gender differences might exist in moral conduct can be traced to Freud who believed in the notion of "a stronger male conscience". However, there is no systematic empirical evidence that supports this view. In fact, some researchers have suggested that there are no overall consistent sex differences in moral conduct (e.g., Burton and Casey, 1980). Extrapolating this argument to unethical behavior in information systems, it could be argued that gender may not be of any importance.

In contrast to the above, there is some evidence to indicate that a majority of computer criminals tend to be young, bright, and primarily male (Wolk and Luddy, 1986). Although, Bickel *et al.* (1991) assert that this may not be totally accurate today, in that ". . . computer criminals

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who are older and/or female now exist (Alexander, 1991)". Furthermore, some researchers have found large gaps between the attitudes of male/female respondents toward unethical business practices. Poorsoltan *et al.* (1991) found that female and married subjects consistently proved to be more conservative than their respective counterparts. Their female and married respondents (subjects were upper-division and graduate business students) expressed a more ethical view regarding issues such as 'financial and non-financial contributions to achieve business goals in foreign markets', 'accepting gifts from clients', and 'pressuring others for information'. In another study of the effect of demographic factors on attitudes towards software piracy, Solomon and O'Brien (1990) reported finding gender differences for two issues: "making illegal copies", and "letting others copy".[2]

Research questions

The previous discussion provides the impetus for this research study. The major research question is: Are there overall gender differences in the identification of unethical behavior in ethical dilemmas relating to the information systems field? The secondary question is: Do the gender differences persist when specific types of ethical problems (dilemmas) are considered?

Method

Subjects and setting

The subjects for this study were 134 undergraduate and graduate business students (65 women and 69 men) enrolled in different introductory and higher-level information systems (IFS) courses at a medium size mid-western university in the United States. A large number (55%) of study subjects were upper-division undergraduate students (junior/senior), and the rest (45%) were split between either lower-division (freshman, sophomore and unknown) or graduate students (pre-MBA, MBA, post-baccalaureate and other). Student grade point averages varied between 2.00 to 4.00, with a mean of 3.18 and a mode of 3.00. A majority of the students (60%) had completed one to two courses relating to computer technology and/or information systems, with 14% having completed at least one class. The remaining students (40%) were distributed between those who had completed three to four courses (26%) and those who had taken five or more IFS classes (14%). In terms of years of full-time experience, subjects reported a range between 3 months to 348 months (μ = 89.6), with only 12% reporting less than a year's work experience. In addition, subjects ranged between 1 month to 132 months of part-time work experience (μ = 52.3), with a majority (92%) reporting one year or more experience.

Procedure

Subjects were presented with a survey containing seven scenarios describing various types of unethical conduct in information systems. They were asked to assess the "degree of unethicalness" of specific actions described in the scenarios. The scenarios describing cases involving unethical actions in the information systems and/or computer science context are all adapted from Parker (1980). Each scenario is a representative example of the seven types of ethical situations categorized by Parker: ". . . the classification looks at ethical norms from an individual's point of view". These categories are comprised of the ethical responsibilities of IS professionals regarding *disclosure, social responsibility, integrity, conflict of interest, accountability, protection of privacy* and *personal conduct.* A detailed definition for each of these categories of ethical dilemmas is provided in Appendix A. Parker used expert judges from various disciplines (technologist, manager, ethical philosopher, academic, lawyer etc.) to evaluate thirty-two ethical dilemmas. Seven of these scenarios and a "degree of unethicalness" rating scale was used for the present study and is provided in Appendix B. The behavior of the actors in each of these scenarios was considered to be absolutely unethical by an overwhelming majority of Parker's expert judges. The resulting scores of the expert judges along

with Parker's classification of each scenario is also provided in Appendix B.

The unethical acts described in each scenario were rated by the subjects on a 7-point Likert-type interval scale ranging from "absolutely not unethical" = 1 to "absolutely unethical" = 7, with no verbal labels for intermediate scale points (i.e., 2 through 6). Thus, based on their response to the seven scenarios, a respondent could receive an aggregate "degree of unethicalness" (UNETH) score ranging from a maximum of 49 (7*7) to 7 (7*1). Since, a majority of Parker's experts rated the action described in each scenario to be 'absolutely unethical', respondents' scores ranging between 28 (mid-scale value) and 49 are indicative of the fact that their ethical judgment is closer to the expert judges.[3]

Results and discussion

A pearson-correlation analysis of UNETH with demographic variables such as students' status (senior, junior, graduate, etc.), part-time work experience, full-time work experience, academic ability (measured by GPA), and number of information systems related courses completed, produced no significant associations at the 0.05 level. This result is important in that it adds value to the decision regarding the issue of gender differences in recognizing unethical behavior.

In order to examine the overall relationship of GENDER and the dependent variable, aggregate degree of unethicalness (UNETH), a one-way analysis of variance using the GLM procedure in SAS was performed. The results indicate that GENDER has a strong (at the 0.05 significance level) association with respondents' aggregate ability to recognize unethical acts.[4] Furthermore, gender differences persisted when the model was modified to covary demographic variables, namely, part-time work experience, full-time work experience, status, and 'IFS course work completed', along with the main effect variable (GENDER).[5]

A Student-Newman-Keuls (SNK) test for differences in means showed that the women performed significantly differently than men at the 0.05 level of significance.[6] Although, both men and women had high mean scores for UNETH, significantly exceeding the middle scale value of 28, the results indicate that female respondents were closer to the expert judges in terms of recognizing the unethical acts described in the scenarios (refer Table I). Thus, the mean UNETH scores for women significantly exceeded the mean score of 34.04 obtained for all respondents and that achieved by male subjects (32.16).

TABLE I
Aggregate "Degree of Unethicalness" (UNETH) and GENDER

GENDER	N	Mean UNETH Score	Standard Deviation
Female	65	36.03	5.60
Male	69	32.16	6.05

A detailed analysis of the disaggregated scores for the ratings on each of the ethics scenarios (refer Appendix B) produced some mixed, but interesting results. At the outset, it is worth noting that all of the "degree of unethicalness" mean scores, for both men and women, are relatively high and range between 3.5 and 6.3. In fact, a majority (5 out of 7) fall above the mid-scale value of 4.00. But, evidently, women and men differed in their responses to unethical actions in certain types of ethical dilemmas. Table II furnishes these results in detail. Women performed differently (at the 0.05 level of significance) than men in ethical dilemmas pertaining to *disclosure*, *integrity* and *conflict of interest*. In all of these instances, women were consistently better able to recognize unethical acts than men – notwithstanding the covariance that could be ascribed to the other demographic variables described earlier. In the remaining ethical dilemmas relating to social responsibility, accountability, protection of privacy and personal conduct, there were no significant gender differences at the 0.05 level. Even though the disagreggated mean 'degree of unethicalness' scores for women are significantly better than men only in three of seven categories of ethical

TABLE II
Disaggregated 'degree of unethicalness' scores and GENDER

Category (or type) of ethical dilemma	*p*-value for main effect: GENDER (df = 132)	Mean 'degree of unethicalness' score		SNK test for differences in means (α = 0.05)
		Men (n = 69)	Women (n = 65)	
S1: Disclosure	0.007*	4.768	5.631	Groups differ
S2: Social responsibility	0.111	5.116	5.523	–
S3: Integrity	0.022*	5.797	6.293	Groups differ
S4: Conflict of interest	0.001*	3.609	4.739	Groups differ
S5: Accountability	0.683	4.884	5.000	–
S6: Protection of privacy	0.181	4.490	4.862	–
S7: Personal conduct	0.177	3.536	3.985	–

* Significant at α = 0.05.

dilemmas, on the average, women clearly outperformed men in identifying unethical actions in all seven situations. Table II provides testimony for this fact by displaying the average degree of unethicalness (UNETH) scores for each ethical dilemma categorized by gender.

Limitations

The use of undergraduate and graduate business students in a class setting, especially with a survey research design, raises some questions of external validity. However, a peculiarity of the subjects in this study is that most of them attend school part-time. Thus, study subjects had extensive full-time and part-time work experience and had completed a relatively large number of information systems and/or computer science related course work. Another potential limitation could be the *a priori* assumption that age differences in moral conduct do not exist (see e.g., Burton and Casey, 1980), and consequently could not diminish (through covariation) the significance of the impact of gender on ethical behavior. Poorsoltan *et al.* (1991) also found no evidence to indicate that age had any significant relationship with the expression of an ethical attitude.

Implications for research and practice

The present study shows that the ability to recognize (and ultimately resist) unethical actions involving IS dilemmas rests in part on the nature of the ethical dilemma and differences in gender of the adjudicator. The findings provide an insight into gender differences in the ethical judgment of future leaders and managers in the management information systems discipline.[7] Managers and researchers need to realize that these differences exist and that the ethical judgments of women differs from men, especially with regards to certain types of ethical dilemmas. These differences might influence the way corporate ethics policies, professional codes of conduct, and rewards/punishment systems for unethical conduct are ultimately implemented. Further research needs to be done in regard to all of these aspects. The findings of this study can also serve as a basis for estimated size effects relevant to studies about different types of information systems related ethical dilemmas and the role of gender and other social aspects that influence ethical decision making and/or ethical behavior. Another possible avenue for future research includes studying the influence of geographical and/or cultural differences on the ability to recognize and resist unethical conduct using the approach followed in the present study.

Finally, more research needs to be done in

discovering reasons/explanations for the gender differences found in this study. Are the differences caused by the type of ethical dilemma or is it due to the differences in the way women and men grow up in our society? There is little doubt that social norms and legal rights are still evolving in the field of information systems use and development. Another possible explanation lies in the notion that ethical judgment is not acquired but innate. Alternatively, it can be argued that individuals do not exist in a vacuum and do not enter an unethical situation *tabula rasa*. Decisions involving ethical dilemmas are personal acts, and the ability to recognize "right" from "wrong" or "good" from "bad" may be more a matter of habituation than environmental. Ultimately, ethical behavior in the context of information technology may largely depend upon whether individuals' are rewarded or punished for their immoral conduct or unethical actions throughout their development process, beginning with childhood.

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Appendix A: Categories of ethical dilemmas in IS[8]

Disclosure
Obligation not to divulge confidential or private corporate knowledge or information to competitors or individuals; Not use the resources of employer(s) for personal gain or for any purpose without explicit approval.

Social responsibility
Obligation to be socially responsible in the use and dissemination of information; Not withhold or misrepresent information that is germane to a problem or situation of public concern; To the best of my ability, insure that the products of my work are used in a socially responsible way.

Integrity
Obligation to act with integrity or honesty at all times; Not use or take credit for the work of others without specific acknowledgment and authorization.

Conflict of interest
Obligation to avoid conflict of interest and insure that employers or clients are aware of any potential conflicts; At all times act faithfully in behalf of employers or clients.

Accountability
Obligation to take appropriate action in regard to any illegal or unethical practices that come to my attention; Accept full responsibility for work that I perform; Not misuse authority entrusted to me.

Protection of privacy
Obligation to protect the privacy and confidentiality of all information entrusted to me; Not use knowledge of a confidential or proprietary nature in any unauthorized manner or to achieve personal satisfaction or personal gain.

Personal conduct
Not exploit the weakness of a computer system for personal gain or personal satisfaction; Be honest in all professional interactions; Not take advantage of the lack of knowledge or inexperience on the part of others; Endeavor to share my special knowledge; Not misrepresent or withhold information concerning the capabilities of equipments, software or systems.

Appendix B: Unethical behavior instrument[9]

Scenario 1:
A computer programmer was seeking new employment, unknown to her current employer. At times when she was unobserved, she made copies of the listings and documentation of programs she had written for her employer, and she used these examples of her work.

In one case, where she knew there would be

no direct harm done, she gave the examples as part of her resume to a prospective employer. However, she also showed them to another prospective employer, who gained from them significant knowledge, which gave him a competitive advantage over the programmer's employer.

Degree to which you believe that the programmer's act of taking a copy of her programming work and showing them to prospective employers is unethical

Absolutely not unethical 1 2 3 4 5 6 7 *Absolutely unethical*

[*S1:* Classification = DISCLOSURE; 26 out of 26 judges found the programmer's action to be unethical].

Scenario 2:

At a time when experts where beginning to question the merits of current agricultural practices, a researcher used computer-modeling techniques to predict that a global agricultural disaster would occur in fifty years. To stimulate public concern and debate about agricultural practices, he published his prediction in a low-priced, mass-market paperback. The book emphasized the role of the computer in making this prediction, for example, by including computer-generated graphs and illustrations. But the book did not discuss the fact that the prediction depended on debatable assumptions and selection of data, and could be radically different, with a slight change of assumptions. Being unaware of these facts, the general public accepted the dramatic predictions as indisputable and objective, in significant part because it came from a computer, and the public became deeply concerned with agricultural practices.

Degree to which the researcher's act of misrepresenting the facts is unethical

Absolutely not unethical 1 2 3 4 5 6 7 *Absolutely unethical*

[*S2:* Classification = SOCIAL RESPONSIBILITY; 26 out of 26 experts found the researcher's action to be unethical].

Scenario 3:

A professor of compute science at a university developed a new computer programming language for a range of computer applications. Two of his graduate students tested the language for consistency and completeness. They discovered and corrected several significant shortcomings and added several new features. A programmer on the staff of the university's computer center programmed the compiler for the language. He discovered flaws in the syntax and corrected them, with the permission of the professor. He also found ways to change the language that improved the performance. The graduate students and professor documented the language, and they wrote a user's manual.

The professor compiled the writings into a scientific paper and published it under his own name alone, with no acknowledgment of the contributions of the graduate students or the programmer.

Degree to which the professor's act of producing a paper without acknowledgements is unethical

Absolutely not unethical 1 2 3 4 5 6 7 *Absolutely unethical*

[*S3:* Classification = INTEGRITY; 28 out of 30 judges found the professor's action to be unethical].

Scenario 4:

Company A invited a consultant to submit a proposal to develop a computer program based on explicit program specifications. The consultant is currently programming the same application for Company B, based on far superior specifications that will give it a significant competitive advantage over Company A. The consultant submits a proposal to Company A without mentioning that the specifications are already inferior to the competing product.

Degree to which the consultant's act of bidding on an inferior program while furnishing another client a superior program is unethical

Absolutely not unethical 1 2 3 4 5 6 7 *Absolutely unethical*

[*S4:* Classification = CONFLICT OF INTEREST; 20 out of 26 experts found the action to be unethical].

Scenario 5:
A computer operations manager has responsibilities that include data preparation and entry, computer operation, computer security, report generation and distribution. The top executive officers of the company are engaged in a massive fraud against the stockholders and other investors by inflating company assets. Significant evidence of the fraud is contained in the data files stored and processed by the computer, and computer programs have been developed to assist in the perpetration of the fraud.

The computer operations manager becomes aware of the company's problems and unorthodox methods being used to solve them. He avoids being confronted with information or activities that might make him aware of possible wrongdoing.

The fraud is ultimately discovered and the perpetrators prosecuted. The prosecutor requires the operations manager to make a deposition. He states that he was ordered to perform unorthodox and unexplained acts, such as leaving large numbers of product shipment addresses blank, or making them all the same in the data entry function. He claims he was not, nor would be expected to be, aware of the purposes of the acts. He stated that his was a neutral service function, not requiring any knowledge of the company's business. He was not prosecuted.

Degree to which the operations manager's failure to act on indications of company fraud is unethical

Absolutely not unethical 1 2 3 4 5 6 7 *Absolutely unethical*

[*S5:* Classification = ACCOUNTABILITY; 29 out of 30 experts found the operation manager's action to be unethical].

Scenario 6:
A commercial time-sharing service offered use of a program at a premium charge, the program to be used only in the service company's computer. A user obtained a copy of the program accidently, when the service company inadvertently revealed it to him in discussions through the system (terminal to terminal) concerning a possible program bug. All copies of the program outside of the computer system were marked as trade secret, proprietary to the service, but the copy the customer obtained from the computer was not. He used the copy of the program after he obtained it, without paying the usage fee to the service.

Degree to which the user's act of exploiting accidental access to a proprietary program is unethical

Absolutely not unethical 1 2 3 4 5 6 7 *Absolutely unethical*

[*S6:* Classification = PROTECTION OF PRIVACY; 24 out of 26 experts found the user's action to be unethical].

Scenario 7:
A university student used the campus computer time-sharing service as an authorized user. The service director announced that students would receive public recognition if they successfully compromised the computer system from their terminals. Students were urged to report the weaknesses they found. This created an atmosphere of casual game playing and one-upmanship in attacking the system.

The student found a means of compromising the system and reported it to the director. However, nothing was done to correct the vulnerability, and the student continued to use his advantage to obtain more computer time than he was otherwise allowed. He used the time to play games and continue his attacks to find more vulnerabilities.

Degree to which the student's act of using idle computer time is unethical

Absolutely not unethical 1 2 3 4 5 6 7 *Absolutely unethical*

[*S7:* Classification = PERSONAL CONDUCT; 20 out of 26 experts found the student's action to be unethical].

Notes

[1] The reader is referred to Bommer *et al.* (1987), and Trevino and Youngblood (1990) for a good review of the general business ethics literature. Dejoie, Fowler and Paradice (1991) provide an extensive synthesis of the prevailing notions on the relationship between ethics and information systems (IS).

[2] The direction of these gender differences was not reported.

[3] It is important to note that each of Parker's expert judges were asked to respond whether the action(s) described in a particular scenario was either 'absolutely unethical', 'absolutely not unethical' or 'not an ethics issue'. In five of the seven scenarios adapted for the present study, the expert verdicts regarding the unethicalness of the specific action was nearly unanimous (greater than 90% agreeing). The remaining two cases were voted as 'absolutely unethical' by a majority (greater than 80% agreeing) of the expert judges. The actual vote regarding the unethicalness of each action described in the scenarios used for this study is furnished along with the 'degree of unethicalness' instrument in Appendix B.

[4] Type III Sum of Squares = 501.63; F = 14.73 and *p*-value = 0.0002.

[5] Inclusion of additional demographic variables as covariates in the model reduced the type III sum of squares to 429.06, with a F-statistic of 12.26 and *p*-value of 0.0006.

[6] Using Cohen's (1969; p. 25–38) tables for *post-hoc* power calculations, the *power (1-β)* of this test is approximately *94%*, with an effect size (ES) of *0.65* (medium size effect). Thus implying that there is only a very small chance, approximately *1 in 20*, of making a Type II error – i.e., incorrectly finding the reported gender differences while detecting medium size effects.

[7] Business majors are considered a good proxy of "real" entry-level managers (Paradice, 1990).

[8] The seven categories of unethical behavior in Information Systems (IS) elaborated here have been adapted from Parker (1980). The definitions of each type of ethical dilemma incorporate a majority of the codes of ethics, cannons and/or code of professional conduct established by the DPMA (Data Processing Management Association) and ACM (Association of Computing Machinery).

[9] Each scenario is rated by respondents on a Likert-type interval scale, ranging from a 1 to 7. Respondents are instructed to evaluate the action described in the scenarios in terms of the degree of "unethicalness" involved. Thus, circling **1** implied that the action described in the scenario was *clearly not unethical*; and selecting the **7** meant that the act was judged to be *completely unethical*. Respondents are advised to us the in-between numbers (2–6) for in-between degrees of unethicalness – the higher the number the more unethical the action becomes.

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