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# Blowing the Whistle on Unethical Information Technology Practices: The Role of Machiavellianism, Gender and Computer Literacy

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## ABSTRACT

Although organizations can derive competitive advantages from developing and implementing information systems, they are confronted with a rising number of unethical information practices. Because end-users and computer experts are the conduit of an ethical organizational environment, their intention to report unethical IT-related practices plays a critical role in protecting intellectual property and privacy rights. Using the survey methodology, this paper investigates the relationship between willingness to report intellectual property and privacy violations and Machiavellianism, gender and computer literacy in the form of programming experience. We found that gender and computer literacy interact with Machiavellianism to influence individuals' intention of reporting unethical IT practices. This study helps to improve our understanding of the emergent ethical issues existing in the IT-enabled decision environment.

## Keywords

Ethics, Whistle-blowing, Intellectual Property, Privacy, Computers, Information Technology, Machiavellianism, Computer Literacy

## INTRODUCTION

Although organizations can derive competitive advantages from developing and implementing information systems, they are also confronted with a rising number of unethical information practices (Mason, 1986; Oz, 1994). Businesses in the U.S. have suffered billions of dollars per year of financial losses from computer misuse (Banerjee Cronan and Jones, 1998). With advances in IT and its proliferation in the workplace, information collection, storage, transmission and access have become much easier, making the protection of intellectual property rights and privacy an imperative in the information age (Calkins, 2002; Gladney, 2000; Mason, 1986; Shaw, 2003).

Two categories of ethical dilemmas faced by organizations have been particularly affected by IT advances in data handling. With the advent of the World Wide Web and other electronic mass communication methods, it is easier to copy and distribute information, including copyrighted material and other forms of what is called intellectual property (widely accepted to include any original intangible work created by the mind such as books, music, or an invention). Similarly, unethical employees could use their companies' IT to track, profile, or expose private customer and employee data. Private information, when misused or inadequately protected, can result in identity theft, financial fraud, and other threats to people, businesses, and governments. These are all considered violations of privacy, which has been variously defined as the right to control information about oneself, to be left alone, and to keep others from collecting data about oneself (Mason, 1986; Shaw, 2003).

Industries, organizations, and professional associations have devoted considerable effort to developing and constantly revising preventive and deterrent measures (e.g., enhanced active security countermeasures, codes of conduct for information systems professionals) to control unethical IT-related behaviors such as intellectual property (IP) and privacy rights violations (Banerjee et al., 1998). However, those measures tend to lag behind the development of technologies, so organizations and individuals are often faced with ethical dilemmas that cannot be solved by enforcing existing rules. To develop more effective methods of controlling unethical IT practices, research in this field has increasingly looked toward studies of the individual characteristics of the employees who are responsible for ethical/unethical IT use (Banerjee et al., 1998; Winter Stylianou and Giacalone, 2004).

As information usage in organizations broadens, the growing number of employees who have direct access to equipment and information are now on the frontline of maintaining an ethical working environment and enforcing rules and norms regarding unethical IT-related behaviors. Because end-users and computer experts are the conduit of an ethical organizational environment, their intention to report unethical IT-related actions plays a critical role in protecting intellectual property and privacy rights. Employees who report illegal, unethical, or illegitimate activities to people or entities that have the power and willingness to take corrective action are generally referred to as whistle-blowers (Sims and Keenan, 1998). Previous research in the ethics literature has shown that whistle-blowing is an effective weapon fighting against unethical practices in the traditional ethical quadrants such as employee theft and fraud (Trevino and Victor, 1992). In the information age, however, whether the predictors and effects of whistle-blowing apply to the context of unethical IT-related practices remains an unanswered question.

Winter et al. (2004) found that two dispositional tendencies (Machiavellianism and ethical ideology) and an indicator of group norms in the programmer community (computer literacy) predict employees' acceptance of unethical IT practices. But whether those individual characteristics will have a similar impact on individuals' intention to report unethical IT usages is not yet clear. Therefore, this study intends to bridge the gap between the whistle-blowing literature and the literature on IT-related ethics by examining the relationship between individual characteristics and willingness to report unethical IT-related behaviors. We will focus on the relationship between willingness to report intellectual property and privacy violations and Machiavellianism, gender and computer literacy in the form of programming experience.

The paper contributes to the ethics literature in the following ways. First it goes beyond predicting individuals' attitudes toward unethical IT behaviors and focuses on predicting employees' intentions to *report* misconduct. Second, by focusing on the impact of individual characteristics on reporting against unethical IT uses, the research will help managers gain insights into the human component of ethical IT practices and therefore aid in developing effective countermeasures to help control unethical behaviors. Third, it expands the whistle-blowing literature by incorporating the emergent IT-related ethical behaviors into existing research findings.

The paper is organized as follows. The next section reviews the extant literature on whistle-blowing and IT ethics and develops research hypotheses of the relationships between individual characteristics and willingness to report unethical IT practices. A study was conducted to test the proposed relationships. The research methods of the study are described in section three and section four presents the results. Section five discusses the implications of the findings and our conclusions are put forward in the last section.

## LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

### Whistle-blowing

Whistle-blowing is defined by Near and Miceli (1985) as "organization members' disclosure of illegal, immoral, or illegitimate practices under the control of their employers, to parties who may be able to effect action". It is conceptualized by researchers as one type of prosocial behavior (Dozier and Miceli, 1985). Prosocial behavior is positive social behavior that may be driven by selfish or unselfish motives on the part of actors who have an intention to benefit others or gain reward for themselves (Dozier and Miceli, 1985). Previous research have suggested that personality characters of individuals and their perceptions of the organizational climate play a significant role in predicting whistle-blowing behaviors (Dozier and Meceli, 1985; Miceli and Near, 1988). Whistle-blowing intentions are not only the reflections of individual characteristics but also group norms (Greenberger Miceli and Cohen, 1987). In IT, where ethical issues are poorly defined, both will likely be influential (Winter et al., 2004). Studying these factors and how they interact can help us better understand how people make IT-related ethical decisions.

### **IT-related Unethical Behavior, Machiavellianism and Whistle-blowing**

Machiavellianism is a person's dispositional tendency to deceive and manipulate others for personal gain. It was named after Renaissance diplomat and writer Niccolo Machiavelli, who wrote "The Prince" (Machiavelli, 1965a). Machiavellianism is an amoral approach that employs devious, manipulative tactics and ignores the needs and rights of others for personal gain (Calhoun, 1969; Christie and Geis, 1970; Robinson and Shaver, 1973). Machiavellians see nothing wrong with stealing (Harrell and Hartnagel, 1976), cheating (Flynn Reichard and Slane, 1987), or lying (Fletcher, 1990) in their own self-interest (Mudrack, 1993). Based on Machiavelli's work (Machiavelli, 1965a; Machiavelli, 1965b) Christie and Geis (1970) developed a test of Machiavellianism.

Winter et al. (2004) found that higher Machiavellian individuals considered intellectual property infractions and privacy breaches more acceptable. Based on the prosocial view of whistle-blowing, an individual will not report an unethical behavior if he or she considers the wrongdoing not worth reporting. Because Machiavellians perceive IT-related infractions as more acceptable, they will be less likely to blow the whistle on such violations. In addition, Machiavellians are generally less ethical (Hegarty and Sims Jr., 1978; Hegarty and Sims Jr., 1979) and do not feel morally compelled to take action when confronting wrongdoings, especially those that can lead to self gains. Finally, Machiavellians' personal ideal values are in stark contrast to the personal values that drive whistle-blowers: Machiavellians seek personal gain regardless of the interests of others while whistle-blowers intend to benefit others. As a result, we propose that Machiavellianism will negatively affect the willingness to report unethical IT-related behaviors.

**Hypothesis1a:** Higher Machiavellian individuals will be less likely to report IT-related intellectual property infractions.

**Hypothesis1b:** Higher Machiavellian individuals will be less likely to report IT-related privacy infractions.

### **IT-related unethical behavior, Gender and Whistle-blowing**

Gender is an important individual characteristic included in a growing body of research in business ethics (Burton and Hegarty, 1999; Loch and Conger, 1996). In their survey of empirical articles studying business ethics, Ford and Richardson (1994) reported that 7 out of 14 studies on gender differences found females were more likely to act ethically than males in at least some situations. Ruegger and King (1992) found that gender was a significant factor in the determination of ethical conduct and that females were more ethical than males in their perception of business ethical situations. Research on IT-related ethical issues has shown that females tend to better recognize unethical actions described in IS scenarios (Khazanchi, 1995) and they behave more ethically when faced with IT-related wrongdoings, such as privacy intrusions and intellectual property violations (Cronan Lenard and Kreie, 2005).

Gender differences have also been studied in the areas of whistle-blowing. Miceli and Near (1988) suggested that whistle-blowing was more likely when observers were male. Sims and Keenan (1998) found that males were more likely to have intentions of external whistle-blowing than female. More recent studies, however, report that females are more likely to actually conduct whistle-blowing actions than males (Mesmer-Magnus and Viswesvaran 2005). As ethical crisis in big US corporations was brought under light, anecdotal evidence revealed that the main "whistle blowers" such as Sherron Watkins at Enron and Cynthia Cooper at WorldCom, were women. Consequently, because females are more likely to discern unethical behaviors and also willing to report what they believe to be unethical, we propose that:

**Hypothesis2a:** Females are more likely to report IT-related intellectual property infractions than males.

**Hypothesis2b:** Females are more likely to report IT-related privacy infractions than males.

### **IT-related Unethical Behavior, Computer Literacy and Whistle-blowing**

As the use of IT becomes pervasive in the workplace, computer literacy is an important individual characteristic that indicates an individual's knowledge about computers. Employees with programming experience tend to be more computer literate (Gutek Winter and Eriksson, 2000). Employees with higher levels of computer literacy are more knowledgeable in IT-related topics and more skillful at wielding IT tools. On one hand, employees with higher levels of computer literacy are able to use computing tools more effectively and efficiently, and therefore, have higher productivity. But on the other hand, better knowledge in IT also provides those employees with greater potential to use IT for unethical purposes. Although IT ethics researchers have identified that computer literacy has an impact on IT-related ethical decision making (Loch and Conger; 1996; Winter et al., 2004), little research has been done to study how employees' computer-related knowledge will affect their whistle-blowing intentions. This study will extrapolate the ethical impacts of computer literacy on whistle-blowing.

Winter et al. (2004) found that programmers with more computer literacy consider intellectual property infractions more acceptable. This finding can be attributed to the culture and norms regarding intellectual property in the community of

programmers. There has been a history of knowledge sharing and collaborative development of products such as operating systems (e.g., Linux), networking protocols (e.g., TCP/IP), markup languages (e.g., HTML), and other Open Source Systems. IT professionals such as programmers tend to value access to knowledge and believe that knowledge should be distributed for free (Winter et al., 2004). Therefore, we believe that their attitudes toward intellectual property will reduce the likelihood of reporting intellectual property infractions. Therefore, we hypothesize:

**Hypothesis3a:** Individuals with higher levels of computer literacy as measured by programming experience will be less likely to report IT-related intellectual property infractions.

In contrast to the clear norm in favor of disseminating knowledge without regard for intellectual property rights, the programmer culture appears to be unusually respectful of people's privacy (Oz, 1991; Winter et al., 2004). Overall, IT professionals are more interested in providing good information systems and tools than in considering the privacy ramifications of their use (Wilder and Soat, 2001). Consistent with the evidence provided in the literature, Winter et al. (2004) showed that individuals with higher levels of computer literacy were not associated with higher level of propensity to accept privacy infractions although they are more likely to accept intellectual property infractions. Consequently, we posit that the higher levels of computer literacy will not be associated with a lessened likelihood of reporting privacy breaches. Therefore, we have the following hypothesis:

**Hypothesis3b:** Individuals with higher levels of computer literacy as measured by programming experience will *not* be less likely to report IT-related privacy infractions.

#### Joint Effects of Machiavellianism and Gender

Machiavellians view and manipulate others for their own purpose (Christie and Geis 1970). The relationship between gender and Machiavellianism has been studied by researchers in psychology (Brown and Guy, 1983; Christie and Geis, 1970). They found that males consistently scored higher than females on Machiavellian traits. Rosenthal (1978) suggested that female Machiavellians did not exhibit the same traits as male Machiavellians. Brown and Guy (1983) argued that Machiavellianism involved qualitatively different behaviors in males and females. Based on the literature we reported earlier, males do not judge unethical behaviors as harshly as females and males are less likely to engage in actual whistle-blowing actions. Consequently, we expect that being a male enhances the effect of Machiavellianism on both intellectual property and privacy beliefs.

**Hypothesis4a:** Gender will moderate the relationship between Machiavellianism and reporting IT-related intellectual property infractions. The relationship will be stronger for males.

**Hypothesis4b:** Gender will moderate the relationship between Machiavellianism and reporting IT-related privacy infractions. The relationship will be stronger for males.

#### Joint effects of Machiavellianism and Computer Literacy

Christie and Geis (1970) theorized an interaction between Machiavellians and the situations they are in. A Machiavellian's main interest is personal gain, but the attitudes and behaviors that will lead to the gain vary by context. When Machiavellians belong to groups whose norms are to accept particular kinds of ethical violations, their inherent tendency to perceive fewer ethical problems will be enhanced because they encounter few negative consequences for doing so (Winter et al., 2004).

Programmers have a lower tendency to report unethical behaviors related to intellectual property violations, so higher levels of computer literacy will enhance the effect of Machiavellianism on intellectual property beliefs.

**Hypothesis5a:** Computer literacy as measured by programming experience will moderate the relationship between Machiavellianism and reporting IT-related intellectual property infractions. The relationship will be stronger for those with more programming experience.

Programmers consider privacy breaches unethical and have the tendency to report the wrongdoings as likely as the others, so computer literacy will not enhance the effect of Machiavellianism on privacy beliefs.

**Hypothesis5b:** Computer literacy as measured by programming experience will *not* moderate the relationship between Machiavellianism and reporting IT-related privacy infractions. The relationship will *not* be stronger for those with more experience.

Figure 1 shows the proposed relationships.

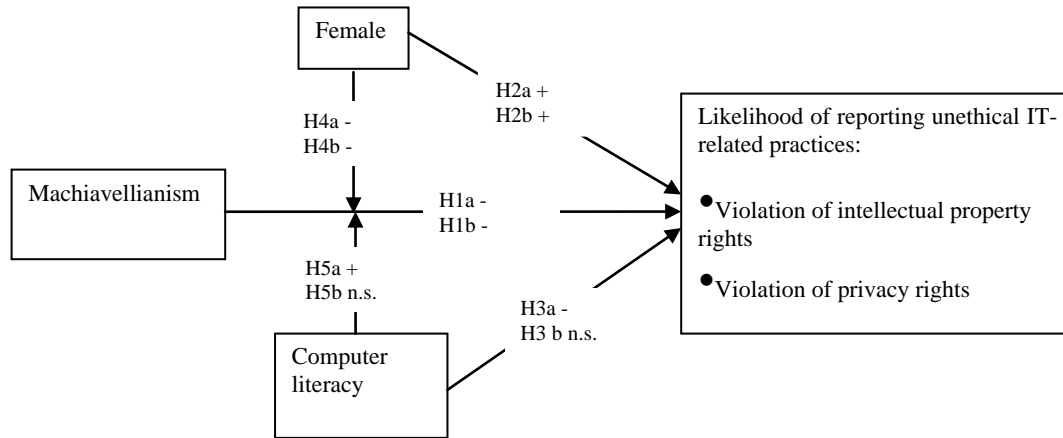


Figure 1. Summary of Hypothesized Relationships

RESEARCH METHODOLOGY

Participants

People who have used email and the Web and have work experience are more likely to have formed opinions about what constitute ethical and unethical IT activities. Consequently, the sampling frame consisted of adults 18 years of age or older, working full-time, with e-mail addresses, who had access to the Web. To maximize diversity, students enrolled in an upper level undergraduate business information systems class identified working adults who were not students and fit the criteria listed above and supplied their basic contact information.

Our respondent profile was quite similar to that found by other researchers who have randomly selected consumers based on e-mail addresses (Sheehan, and Hoy, 1999). Females constituted more than half of our sample (59.7%). Most of the respondents fall into the age group of 21-49 (84.7%), have more than a high school education (81.9%) and six or more years of work experience (78%). The largest industry group represented was banking (23.6%). About forty percent of the respondents worked in non-management jobs and a quarter of the respondents were managers (25%). Most of the respondents have more than 10 years of experience with computers (62.5%), used computers for less than 40 hours per week (51.4%), and worked in for-profit organizations (77.8%).

Procedures

Seventy-seven individuals received e-mail messages containing a description of the study, assurances of confidentiality, instructions for participation, and a link to a web-based survey. If the recipient had not completed the survey within a week, a reminder e-mail was sent out. Four of our e-mail messages were received by the individuals living in foreign countries. Evidence from the literature suggested that people from different countries may differ on their ethical decision making with regard to whistle-blowing (Tavakoli Keenan and Cranjak-Karanovic 2003; Chiu, 2003). Thus, we decided to exclude the four cases from the sample. Among the 73 individuals in the U.S. who received the message, all but one responded, constituting a 99% response rate. Therefore, our sample size was 72.

Measures

Machiavellianism was measured with the Mach IV Likert-based scale taken from Christie and Geis (1970). Computer literacy was measured with a single question asking respondents about their experience in writing computer programs (Gutek et al., 2000). Sixty four percent of respondents had no experience, 22.2% had experience with one language and 19.4% had experience with more than one language.

Measures of intent to report violations of intellectual property and privacy rights were adapted from those previously developed and validated by Winter et al. (2004) to measure acceptability. For each item, participants were asked “To what extent that you would report the person carrying out each of the following activities in an organization?” There were five specific response options providing equal appearing intervals: 1 = Never Report (0% of the time), 2 = Seldom Report (25%

of the time), 3 = Report About Half of the Time (50% of the time), 4 = Frequently Report (75% of the time), and 5 = Always Report (100% of the time).

**RESULTS**

Table 1 shows the means, standard deviations, reliability and correlations for the independent and dependent variables. Machiavellianism and computer literacy were related to intentions to report intellectual property violations, but not intentions to report privacy violations. The relationship between gender and the outcomes of interests were strong and in the predicted direction. The outcome measures were also related to each other. Because bivariate correlations do not control for confounding variables, such as demographics and other situational factors, a hierarchical regression analysis was performed.

Measures	# of items	$\alpha$	Mean	SD	IP Reporting	Privacy Reporting	Female	Computer Literacy
IP Reporting	5	0.94	3.16	1.45	-			
Privacy Reporting	23	0.98	3.56	1.28	0.72**	-		
Female	1	-	1.60	0.49	0.28*	0.28**	-	
Computer Literacy	1	-	1.56	0.8	-0.20*	-0.06	-0.25*	-
Machiavellianism	20	0.63	3.28	0.62	-0.20*	-0.05	-0.02	0.09

\* p <.05; \*\* p < .01

**Table 1. Means, Standard Deviations, Reliabilities and Intercorrelations among Intentions of Reporting Intellectual Property and Privacy Related Unethical Behavior and Hypothesized Predictors**

**Intellectual Property**

Table 2 shows the regression results for the tests of Hypotheses 1a, 2a, 3a, 4a, and 5a, predicting individuals’ tendency to report IT-related unethical behaviors involving intellectual property infractions. Step 1 controls for demographic factors (age, education, work experience, working in not-for-profit organizations, years of computer use, and hours per week of computer use). To test the main effects (H1a, 2a and 3a), Machiavellianism, computer literacy and gender were entered in step 2. The main effects, taken together, were statistically significant and accounted for about 12% of the variance. Gender was positively related to whistle-blowing intentions, over and above all of the other predictors in the regression, providing support for H2a. Machiavellianism and computer literacy were negatively related to the likelihood of whistle-blowing on intellectual property rights violations, but the relationships were not statistically significant. Therefore, H1a and H3a are not supported.

	Model 1		Model 2		Model 3	
Predictors	$\beta$	t(1,65)	$\beta$	t (1,62)	$\beta$	t (1, 60)
Demographics						
Age	0.30	1.53	0.28	1.50	0.59	1.58
Education	0.06	0.47	0.14	1.07	0.11	0.88
Work Experience	-0.07	-0.38	-0.04	-0.22	-0.08	-0.46
Not For Profit	-0.12	-0.86	-0.17	-1.30	0.15	-1.19
Yrs. of Computer Use	-0.09	-0.65	-0.12	-0.90	-0.07	-0.56
Hrs/Wk of Computer Use	-0.08	-0.60	0.00	-0.03	-0.03	-0.25
Main Effects						
Gender			0.31	2.51*	0.24	1.98^
Computer Literacy			-0.09	-0.66	-0.12	-0.92
Machiavellianism			-0.11	-0.86	-0.09	-0.73

Interactions						
Mach * Comp. Literacy					-0.25	-2.13*
Mach * Gender					-0.26	-2.20*
R <sup>2</sup>		0.08		0.19		0.28
F		0.88 <sup>a</sup>		1.65 <sup>b</sup>		2.13 <sup>c*</sup>
R <sup>2</sup> Change				0.12		0.09
F for R <sup>2</sup> Change				3.01 <sup>d*</sup>		3.69 <sup>e*</sup>
* p<.05, ^ p = .052						
a. df = 6, 65; b. df = 9, 62; d. df = 3, 62; c. df = 11, 60; e. df = 2, 60						

**Table 2. Results of Hierarchical Regression Analysis Predicting Individual Tendency to Report IT-related Intellectual Property Issues (n = 72)**

The last step of the regression tested the two-way interactions by adding two interaction terms: 1) the cross-product of Machiavellianism and computer literacy and 2) the cross-product of Machiavellianism and gender. Table 2 shows that the interaction effects were significant and accounted for 9% of the variance. Individually, each interaction effect had a statistically significant effect on the dependent variable. Figure 2 shows the interaction effect between Machiavellianism and gender. Gender moderated the relationship between Machiavellianism and the likelihood to report intellectual property infractions. However, instead of strengthening the relationship between Machiavellianism and likelihood to report, being males changed the direction of the relationship. Specifically, the result showed that only among those who are low in Machiavellianism, males were less likely to report intellectual property violations. When Machiavellianism was high, females and males were equally likely to report. We also run a test on the simple effect of Machiavellianism for the two groups. Our result shows that the slope of the line for the male group was not significant ( $b = .12, t = .67, p > .05$ ), while the slope of the line for the women group was statistically different from zero ( $b = -.33, t = -2.09, p < .05$ ). The simple effect test results show that the male individuals were not so different in their intentions to report intellectual property violations even with their different Machiavellianism beliefs. However, female individuals were likely to be influenced by Machiavellianism. Therefore, H2a is only partially supported.

As predicted by H3a, computer literacy moderated the relationship between Machiavellianism and reporting intellectual property infractions, and the relationship was stronger for those with high levels of computer literacy. Therefore, H3a was supported. A check on the simple effect of Machiavellianism showed that the slope of high computer literacy ( $b = -.33, t = -1.78, p > .05$ ) and the slope of low computer literacy ( $b = .055, t = 1.36, p > .08$ ) were not significantly from zero. This result of the simple effect further shows that individuals within the same computer literacy group has similar whistle-blowing tendencies regardless of their Machiavellianism levels, while individuals with different computer literacy levels behave differently holding Machiavellianism constant. Figure 3 shows the significant interaction effect between Machiavellianism and computer literacy.



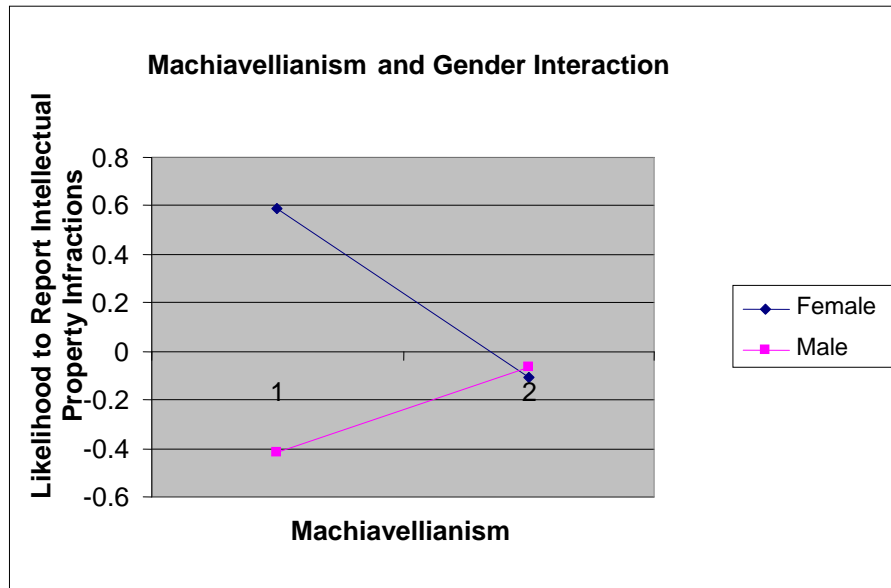


Figure 2. Interaction of Machiavellianism and Gender for Likelihood of Reporting Intellectual Property Infractions

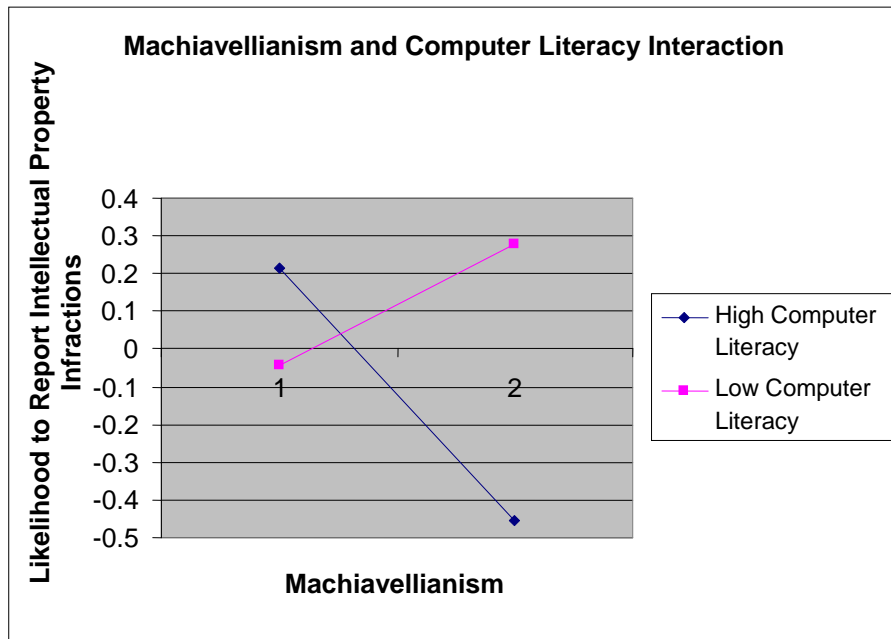


Figure 3. Interaction of Machiavellianism and Computer literacy for Likelihood of Reporting Intellectual Property Infractions

**Privacy**

Table 3 presents the regression results for the tests of H1b, 2b, 3b, 4b, and 5b, predicting the likelihood of an individual to report IT-related privacy breaches. Step 1 controls for demographic factors. To test the main effect (H1b, 2b, and 3b), Machiavellianism, computer literacy and gender were entered in step 2. Taken together, the main effects accounted for 10% of the variance. Individually, two of the hypotheses were supported. As predicted in H2b, females are more likely to report IT-related privacy breaches. H3b hypothesized that individuals with higher levels of computer literacy are *not* less likely to

report privacy infractions. The results showed that there was a positive but non-significant relationship between computer literacy and individuals' tendency to report privacy-violated misbehavior. Therefore, H3b was supported. H1b hypothesized that high Mach will be less likely to report any privacy breaches. Although the results showed a negative association between Mach and the tendency to report, the magnitude of the relationship was not statistically significant. Therefore, H1b was not supported.

	Model 1		Model 2		Model 3	
Predictors	$\beta$	t (1, 65)	$\beta$	t (1, 62)	$\beta$	t (1, 60)
Demographics						
Age	-0.11	-0.08	0.01	0.07	0.05	0.24
Education	-0.06	-0.42	0.03	0.22	0.03	0.17
Work Experience	0.18	1.00	0.22	1.23	0.17	0.97
Not For Profit	-0.10	-0.76	-0.16	-1.19	-0.17	-1.20
Yrs. of Computer Use	-0.02	-0.13	-0.07	-0.49	-0.04	-0.27
Hrs/Wk of Computer Use	-0.00	-0.02	0.04	0.27	0.04	0.27
Main Effects						
Gender			0.34	2.60*	0.32	2.40*
Computer Literacy			0.04	0.29	0.01	0.09
Machiavellianism			-0.02	-0.16	0.00	0.02
Interactions						
Mach * Comp. Lit					0.01	0.09
Mach * Gender					-0.16	-1.24
R <sup>2</sup>						
		0.04		0.14		0.16
F						
		0.49 <sup>a</sup>		1.12 <sup>b</sup>		1.07 <sup>c</sup>
R <sup>2</sup> Change						
				0.10		0.02
F for R <sup>2</sup> Change						
				2.33 <sup>d</sup>		0.87 <sup>e</sup>
* p<.05						
a. df = 6, 65; b. df = 9, 62; c. df = 11, 60; d. df = 3, 62; e. df = 2, 60						

**Table 3. Results of Hierarchical Regression Analysis Predicting Individual Tendency to Report IT-related Privacy Infractions (n = 72)**

The last step of the regression tested the hypothesized two-way interactions by adding two interaction terms: 1) the cross-product of Machiavellianism and computer literacy and 2) the cross-product of Machiavellianism and gender. The results indicate that, after controlling for the main effects of gender, computer literacy and Machiavellianism the overall interaction effects accounted for 2.4% of the variance. However, the overall variance accounted for is not statistically significant. The interaction between Machiavellianism and computer literacy was not significant, providing support for H5b. Contrary to H4b, the interaction between Machiavellianism and gender was not statistically significant.

Table 4 shows a summary of the results.

Hypothesis	Relationship Tested	Hypothesis Supported?
H1a	Machiavellianism->Reporting IP Infractions	Not Supported
H1b	Machiavellianism->Reporting Privacy Infractions	Not Supported
H2a	Gender->Reporting IP Infractions	Supported
H2b	Gender->Reporting Privacy Infractions	Supported
H3a	Computer Literacy->Reporting IP Infractions	Not Supported
H3b	Computer Literacy->Reporting Privacy Infractions	Supported
H4a	Gender*Mach->Reporting IP Infractions	Partially Supported
H4b	Gender*Mach->Reporting Privacy Infractions	Not Supported
H5a	Computer Literacy*Mach->Reporting IP Infractions	Supported
H5b	Computer Literacy*Mach->Reporting Privacy Infractions	Supported

**Table 4. Summary of Testing Results**

## DISCUSSION

The relationships between individual characteristics and their willingness to report IT-related unethical behavior was not simple and consistent. Although the literature has shown that Machiavellians tend to ignore intellectual properties and privacy rights of others, we did not find evidence that they are simply less likely to report breaches of those IT-related rights under all circumstances. There is a complex interaction between dispositional tendencies and demographics including gender and computer literacy.

Consistent with known programmer norms and the dispositional tendencies of Machiavellians, people who were highly computer literate and Machiavellian were much less likely to report violations of intellectual property rights. However, those who were not very computer literate, but were Machiavellian were much more likely to report intellectual property infractions. Further research is needed to understand why Machiavellianism does not predict ethical decision making among low computer literacy individuals. The insignificant simple effect of Machiavellianism on reporting intellectual property violations indicate that employees with similar computing experiences exhibit similar whistle-blowing intentions related to intellectual property violations, regardless of their Machiavellianism beliefs. This finding suggests that with the presence of group norms in the computing communities, individuals' dispositional tendency such as Machiavellianism may not play a significant role in influencing employees' whistle-blowing intentions. Hence, to encourage whistle-blowing against unethical IT practices, managers should especially understand and pay attention to the group norms that may facilitate or inhibit individuals' likelihood of engaging in reporting.

There is an interaction between Machiavellianism and gender. Women and men who were Machiavellian were equally likely to report violations of intellectual property rights, but women who were low in Machiavellianism were much more likely to report such violations. Our result shows that when holding Machiavellianism constant, females are more likely to report intellectual property violations. This result echoes our propositions of the gender effect on ethical decision making. As the females become Machiavellians, their tendency to report intellectual property violations decreases. This trend among females can be explained by the role of Machiavellianism on ethical judgments. Therefore, it shows that Machiavellianism can be used as a stable predictor for ethical decision outcomes among females. Males, on the other hand, show an unexpected upward trend for their intentions to report unethical IT use when they become Machiavellians. One possible explanation for the result could be that male Machiavellians consider reporting of intellectual property violations as a strategy for manipulation. In order to achieve personal gains, such as advancement in the organization, male Machiavellians reporting intellectual property violations as an opportunity to gain recognition and reputation. Future research is warranted to explore the reasons why Machiavellianism may not have the same predicting power for males and females. Especially, research can be conducted to understand the factors that may contribute to the weakened effect of Machiavellianism on male decision making.

The main effect of Machiavellianism on individuals' intentions to report unethical IT use is not significant. It is possible that we would have found significant main effects of Machiavellianism if we had included additional control variables related to the organizational environment. One of the salient characteristics of high Machiavellians is that they are more concerned

with maximizing personal gains in social interactions (Ghirstie and Geis, 1970). When a Machiavellian makes the decision whether or not to report wrongdoing he or she weighs the likelihood that doing so will result in personal rewards such as getting a raise, a promotion or recognition by the organization. An organization's culture and policies determine to a large extent how people perceive whether their whistle-blowing behavior will get rewarded. One limitation of the study is that it did not control for the organizational environment with respect to whistle-blowing, so it may not have been able to tease out the direct relationship between Machiavellianism and reporting intentions. Future research should control for the extent of personal gains when investigating the effect of Machiavellianism on the likelihood to reporting unethical behaviors.

Gender was established as a significant factor to predict whistle-blowing intentions toward IT-related wrongdoings. The results of this study indicated that females are more likely to report intellectual property and privacy rights infractions than males. This finding corroborates the role of gender on ethical decision making in the literature.

Computer programmers respect others' privacy rights more than intellectual property rights. Partially consistent with the norms of the IT development community, we have shown that programmers will not be less likely to report violations to privacy rights. However, we failed to show the difference between programmers and other groups in terms of the likelihood to report violations of intellectual property rights as a main effect. Previous research has shown a positive relationship between computer literacy and individual acceptability of intellectual property violations (Winter et al, 2004). When it comes to reporting, however, the factor of computer literacy seems to bear no effect. We found that employees with high computing knowledge are as likely to report intellectual property violations as the employees who have less computing knowledge. Future research is needed in examining what make computer programmers have the same intentions to disclose a violation to intellectual property while they have a high acceptance to such unethical behaviors. Case studies may be an appropriate research method for this topic.

## CONCLUSION

Our research has shown that Machiavellianism, gender, computer literacy and the intent to report violations of intellectual property and privacy infractions interact in complex ways. As information systems expand their reach in modern organizations and become simpler to use, more employees have access to sensitive information that can be easily transmitted. Although organizations can derive competitive advantages from developing and implementing information systems, they are facing a number of unethical information practices. Rapid advances in IT capabilities are lagged by legal, policy, and technical controls on unethical uses of information systems, rendering organizations reliant upon employees to create and maintain an ethical work environment. This research represents the first step in improving the understanding of practitioners as well as researchers on the issue of whistle-blowing in the context of unethical IT uses in organizations. We examine the problem from an individual's perspective. Based on the findings of the research, managers who want to promote an ethical working environment in the information age should adopt a multidimensional approach, which focus on employees' dispositional tendency as well as its interaction with other factors such as demographics and group norms, in understanding employees' whistle-blowing tendencies against unethical IT use.

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