Morality and Computers: Attitudes and Differences in Moral Judgments

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Business ethics is an emerging area of research in many subfields of management, including information systems (IS). Empirical IS research has studied differences in users' attitudes and in moral judgments regarding ethical computer-related behavior. This study applied the "domains of morality" approach to determine how users felt about certain computer-related behaviors. Vignettes describing ethical dilemmas involving computer technology (e.g., uploading a computer virus on an electronic network/bulletin board system) were presented to a sample of Internet users. The research findings offered several interesting and, in some cases, unexpected results. The empirical results indicated that older computer users have a less permissive sense of what is right and wrong for an illegal game. When computers were used to test a banned game, men and women differed in their assessment of its appropriateness. A surprising finding was that participants were not likely to endorse civil liberties, and were more concerned about the harm to, and violations of, social norms when the scenario described a situation involving a computer virus. How users perceive, prejudge, and discriminate computer ethics and abusive computer actions raises numerous questions and implications for IS researchers, IS practitioners, and policy makers. The results of this study foster a better understanding of Internet users' moral categorization of specific computer behaviors and, hopefully, help to further reduce risks and vulnerabilities of systems by identifying computer actions deemed ethically acceptable by users. Opportunities for IS researchers to further explore this timely issue are also discussed.

(Computer Security; Domain Theory of Moral Development; Data Encryption; Computer Viruses; Gender; Ethics; Socioeconomic Status; Age)

Introduction

During the past two decades, society has witnessed a rapid evolution in and adoption of computer technologies and the Internet. Because of the proliferation of computer technology and the introduction of new technology, many individuals who use their computers on a daily basis at home or work (e.g., Dürrenberger et al., 1995) are encountering ethical situations (Conger et al., 1995, Johnson and Mulvey 1995) at increasing rates. In addition, the number of social transgressions to organizations—both internal and external—by computer users is increasing (Conger and Loch 1995).

To date, empirical research on computer ethics and moral issues associated with computer technology has received minimal attention by the IS community (Conger et al. 1995). Johnson (1989) emphasized that computers create an entirely "new species of ethical

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issues" (p. 37); new technologies create unforeseen possibilities for events and for controversial actions by individuals. Consequently, for IS researchers, IS practitioners, and managers, several important questions are paramount: How are the moral judgments of users affected when computer technologies are involved? What moral issues are involved in the ethical decision-making process? What types of controversial computer actions do users perceive as ethical and unethical? Moreover, how should organizations address the unethical computer behavior of their employees (e.g., Nicholson 1994)?

In addition, Conger and Loch (1995) stressed that the lack of a social ethic in organizations regarding appropriate computer use is a serious shortcoming of the IS profession. Indeed, many situations regarding computer ethics are not well understood (Conger and Loch 1995). Before the IS community can work to identify issues and propose solutions regarding ethical issues in computing, we need to develop a better understanding of the moral judgment process where computers are involved and of users' ethical assessment of controversial computer behavior. This information would help the IS community better manage the internal and external threats and vulnerabilities of computer systems by identifying situations where policies and regulations would be accepted and adhered to by the majority of users.

This paper tries to advance our knowledge of Internet users' moral judgment of situations involving computers. This is accomplished by the application of the domain theory of moral development, a widely accepted and empirically validated model from moral psychology. The objectives of this study are (1) to determine whether users' assessment of the domains of morality (i.e., personal domain, conventional knowledge domain, and moral domain) differ when they are presented with various ethical dilemmas that involve computer technology (see Appendix 1), and (2) to assess whether individual differences (i.e., age, gender, computer experience, and socio-economic status) influence users' moral judgments of what constitutes ethical/unethical computer behavior.

Three vignettes were used, within the framework of the domain theory of moral development, to determine attitudes of respondents regarding the moral categorizations of computer-related issues (see Appendix 2). This study contributes to the current discussion about the regulation of telecommunications and the Internet by comparing attitudes toward computer and Internet technology use held by end users. The investigation of users' judgments regarding ethics and moral issues associated with computer technology is important because of our limited understanding of this significant topic (Johnson 1989).

The article is organized as follows. First, the theoretical background is discussed, and the hypotheses to be tested are presented. Next, the development of the research instrument and data collection activities are outlined and then analyzed. Finally, we summarize key findings and contributions, suggest future research directions, highlight management implications, and describe research limitations.

Theoretical Background and Hypotheses

The popular press reports an increase in the abuse of computer systems. The incidence of computer-related crime, ranging from pirating software to infecting computer systems with harmful and nonharmful viruses and hoaxes, is on the increase. For instance, 1997 data indicate that, in most countries, at least a third of all software is pirated (No author, 1997). Some computer users often tolerate offenses by ignoring pirating incidents, actively pirating software, or using pirated software. A decade ago, viruses and malicious codes may have been a nuisance; today, they represent security problems for organizations and their IS (Solomon 1996). Clear-cut moral issues have become more difficult to define in a society in which technological change occurs at an increasing pace, and where national boundaries are becoming more obscure (Gattiker 2000). Consequently, a better understanding of users' attitudes toward computer-mediated behavior is required in order to make the Internet a safer place, and to minimize the internal and external threats to organizations' information technology and systems.

Domain Theory of Moral Development

Personal decisions involving social issues are grounded in moral frameworks (Miller et al. 1990). *Morality* is concerned with the behavior of individuals

who choose, implement, and bear the consequences of their actions. Morality is traditionally understood to exert an impartial constraint on the pursuit of individual interests in the face of societal objectives. Haidt et al. (1993) define moral issues as "intrinsically interpersonal issues" (p. 614) that "involve questions of harm, rights or justice" (p. 613). Morals provide the individual with the necessary constraints to function in a society (Gauthier 1986). The *domain of morality* is defined as "prescriptive judgments of justice, rights and welfare pertaining to how people relate to each other" (Turiel 1983, p. 3). The domain theory of moral development postulates that the interpersonal consequences of events are placed into three domains: personal, moral, and conventional knowledge (Haidt et al. 1993, Schweder et al. 1987). These three domains are discussed below, and a social and interactional approach to the domain theory of moral development is outlined in Appendix 1.

Personal Domain of Morality. The *personal domain* is "outside the realm of societal regulation and moral concern" (Nucci 1981, p. 114), and is based upon personal preferences and tastes (Schweder et al. 1987). In other words, the interpersonal consequences relate mainly to the individual and are a matter of personal preference, taste, and/or psychological state. In this domain of morality, individual actions are learned through exposure to others (e.g., during childhood) and outcomes of past behaviors (Schweder et al. 1987). An example of a computer activity that could be categorized as residing in the personal domain is the use of encryption software for sending and receiving e-mail, so individuals keep their information secure and maintain their privacy (Gattiker et al. 1996).

Conventional Knowledge Domain of Morality. The *domain of conventional knowledge* includes acts that are not harmful, but have interpersonal consequences, and are meaningful in a specific social context (e.g., junk mail). Here, social norms, values, and attitudes play an important role in determining the meaning of a particular action in a specific social context. Individual behaviors in the conventional knowledge domain of morality are perceived as acceptable by virtue of social consensus (e.g., social uniformities and regularities, food, and clothes), and are learned through exposure to group consensus (Schweder et al. 1987). For example, designing a harmless virus and distributing it to friends as a prank may be perfectly acceptable to one social group (e.g., computer punks and computer hackers), but may be objectionable to another social group (e.g., IS managers and practitioners and some Internet users) (Gattiker et al. 1996). Likewise, depending upon norms and values, using e-mail addresses for advertising purposes may be tolerated in one country but not in another (Avrahami 1996).

Moral Domain of Morality. Harmful acts, such as violence and theft, pertain to the *moral domain*. Intrinsic harm is perceived directly or is inferred from direct perceptions (Turiel 1983). Both children and adults reason that an act is universally wrong because the harm is intrinsic to the act (Haidt et al. 1993, Logan et al. 1990), and, hence, the act is not tolerated. Individual actions that are classified as the moral domain of morality are learned through the injustice precipitated by an offense or direct observation of the harm caused by the transgression (e.g., hitting another individual) (Schweder et al. 1987). The objective obligations used for assessing the interpersonal consequences of the actions or behaviors are justice, harm, rights, welfare, and allocation of resources (Schweder et al. 1987). An example of a computer activity that is categorized as residing in the moral domain is a person who makes available a game that is considered to be illegal because of its violent, sexual, and/or racist content (see Appendix 2). Here, the interpersonal consequences of the events involve the subject matter of the game and/or the distribution of the game—in other words, the endorsement of civil liberties over legal concerns. In this IS context, the intrinsic harm for the user, who distributed the game, ranges from the minor consequence of admonishment from a member of one's social group (i.e., the receiver of the illegal game) to more serious repercussions, such as criminal charges and investigations (Gattiker and Kelley 1994).

Moral Issues Associated with Computer Technology and the Internet

Feinberg (1973) stated that people should be free to engage in harmless offenses in private even if those offenses breach a country's social or moral codes. The rationale for this view is the notion that private actions should be free from external constraints, especially

when opinions about who and what should be included in the moral domain are inherently personal. Sproull and Kiesler (1991) indicated that users found the recognition process and the identification of potentially harmed individuals more abstract and difficult when computer technology was introduced into a situation. This implies computer users may not be able to recognize an ethical dilemma, because it is hard, or even impossible, to identify the material and psychological consequences to other users, individuals, and entities. However, we propose that users will recognize and identify unethical computer behavior with ease because the utilization of computer technology has become a part of our everyday lives (similar to the telephone or calculator), and has spawned a "new species of ethical issues" (Johnson 1989, p. 37). Thus, the first hypothesis of this study is as follows:

HYPOTHESIS 1. *Computer users will differ from each other in their assessments within each of the domains of morality—personal, conventional knowledge, and moral—when they describe ethical dilemmas involving computer technology.*

Morality and Individual Differences/Characteristics

Kohlberg (1969) theorized that individual differences (e.g., age, gender, socioeconomic status, ethnicity, and culture) would lead to differences in moral development amongst people. Previous research has provided support for the premise that relationships between moral development and individual differences exist (e.g., Darley 1993, Haidt et al. 1993, Haste and Baddeley 1991, Matsueda and Heimer 1987, Turiel et al. 1987). Loch and Conger (1996) reported on both the limited depth and breadth of our understanding of the interaction between individual differences and computer ethics, and the need for future research to explore this phenomenon. Due to this gap in the computer ethics literature, we have drawn upon, when necessary, attitudinal research in IS to provide logical support for our hypotheses.

Age. Several studies on moral development have examined the relationship between age and moral judgment (e.g., Haidt et al. 1993, Turiel 1983, Turiel et al. 1987). This stream of research indicated that the emergence of morality in children and young adults revealed correlations between age and how moral judgments were applied. Usually, older individuals are more concerned about moral issues and the welfare of others than younger people (see Rest et al. 1986 for an extensive review of this issue).

We have no empirical evidence to suggest that age differences lead to different ethics regarding computer use. However, age differences in user attitudes have been investigated. For example, Igbaria and Parasuraman (1989) reported that older managers' attitudes toward computer technology were more unfavorable and significantly different from younger managers. Kelley et al. (1994) found a positive relationship between age and respondents' attitudes regarding an information system's ease of interaction (e.g., interactive commands). Extrapolated to a computer ethics context, this research suggests that older users' judgments of ethical dilemmas involving computer technologies will be different from those of younger users. Thus, the following hypothesis is offered:

HYPOTHESIS 2. *Younger and older computer users will differ in their moral judgments of ethical dilemmas involving computer technology when situations are categorized as residing in the personal, conventional knowledge, and moral domains.*

Gender. Support for gender-based differences in attitudes toward computer technology has been reported by several researchers. For example, Gattiker and Nelligan (1988) and Gutek and Larwood (1987) demonstrated an association between gender and attitude. Specifically, women were reported to be more concerned about the effects of computer-based technology on the quality of work life than men. Women were reported to be more concerned about feelings and, therefore, more careful about how their actions would affect others. In contrast, men focused more on being realistic and goal oriented (Dawson 1995). Khazanchi (1995) found that women were better able to recognize unethical behavior in disclosure, integrity, and conflicts of interest than men were. Moreover, Bear (1990) reported that women were more concerned than men about privacy rights, copyright violation, and equity issues, as related to computers.

To our knowledge, only one empirical study has investigated gender-based differences and ethical decision making involving computer technology. Loch and

Conger (1996) reported that women's conception of appropriate computer use followed prevailing cultures and societal norms, whereas men followed their own personal attitudes and beliefs regarding appropriate computer use. If this outcome extends to users' moral judgments about computer activities, it follows that men and women who use computer technology will differ in their moral judgment of ethical dilemmas involving computers. Therefore, this study also intends to investigate the following hypothesis:

HYPOTHESIS 3. *Women and men will differ in their moral judgments of ethical dilemmas involving computer technology when the situations are categorized as residing in the personal, conventional knowledge, and moral domains.*

Previous Computer Use. There was no direct evidence suggesting that users with previous computer experience would differ in their judgment of computer ethics than users without previous computer experience. However, Loch and Conger (1996) reported mixed results for computer literacy. For example, the degree of a user's computer literacy had a significant positive relationship to ethical decisions that involved taking technical application documentation home; conversely, a relationship between computer literacy and an ethical decision regarding using a program at work for a friend, or reading other individuals' e-mail was not supported (Loch and Conger 1996). They concluded that levels of computer literacy may no longer factor into an ethical decision once users become computer literate. We do not agree with Loch and Conger's conclusion regarding computer literacy. Their mixed results suggest that the relationship may be dependent upon the type of ethical situation in question and upon prevailing social and organizational norms. Therefore, it seems reasonable to assert that individuals with various levels of computer experience and knowledge may judge ethical dilemmas involving computer technology differently. Thus, Hypothesis 4 is formulated as follows:

HYPOTHESIS 4. *Computer users with different levels of computer use will differ in their moral judgments of ethical dilemmas involving computer technology when the situations are categorized as residing in the personal, conventional knowledge, and moral domains.*

Socioeconomic Status. The influence of socioeconomic status on moral judgment has not been studied in an IS context, but has received limited investigation by researchers in the field of moral psychology. Haidt et al. (1993) reported a link between an individual's socioeconomic status and his or her judgment of actions involving moral dilemmas (e.g., how to treat a country's flag, and if one should eat certain foods). For instance, Haidt et al. (1993) found that individuals self-rated as having a higher socioeconomic status were more tolerant about violating society's moral standards. This research, when applied to the domain of computer ethics, implies that an individual's judgments of ethical dilemmas involving computer technology will vary depending on his or her socioeconomic status. Consequently, we propose the following hypothesis:

HYPOTHESIS 5. *Computer users from different socioeconomic backgrounds will differ in their moral judgments of ethical dilemmas involving computer technology when the situations are categorized as residing in the personal, conventional knowledge, and moral domains.*

Advancing our understanding of the domain theory of moral development will have numerous positive implications for both applied activities and research streams in computer ethics and moral issues associated with computer technology. The research community will benefit from this endeavor in two ways: (1) The application of a theory from a reference discipline (i.e., moral psychology) to assess individuals' perception, prejudgment, and discrimination of computer ethics, abusive computer actions, and the moral issues associated with computer technologies; and (2) The empirical exploration of the relationships between individual differences and moral development. The applied community can realize significant benefits by better understanding how users perceive the moral issues associated with computer technologies and the new type of ethical issues created by those technologies. This knowledge will facilitate the identification of ethical situations associated with computer use by determining which organizational policies and procedures, and which legislative and industry regulations, will or will not be accepted and adhered to by most users. We believe that success in finding germane solutions for addressing ethical issues and situations associated with

computer use requires the development of a better understanding of the moral decision-making process.

A high level of interest exists in computer ethics and moral issues associated with computer technology at both the academic and practitioner levels. Any positive strides by the IS field, and new research efforts towards understanding moral judgment in situations involving computers, are additional steps towards promoting awareness of the importance of appropriate and ethical use of this technology. The increasing incidence of computer-related crime, and the controversial effectiveness of ethical policies to deter computer abuse, speaks loudly to the significance of using moral frameworks (e.g., domain theory of moral development) to assess ethical situations involving computer technologies. In an IS context, the domain theory of moral development may facilitate the development and subsequent regulation of ethically acceptable computer use, and a postregulation assessment of users' moral judgment of these policies.

In summary, the domain theory of moral development is used to test users' assessments of ethical dilemmas involving computer technology. Specifically, this empirical study investigated the following: (1) *Whether users judged ethical dilemmas involving computer technology as being either morally wrong or appropriate;* (2) *Whether users differentiated among computer actions that were categorized into three domains of morality (i.e., personal, conventional knowledge, and moral); and* (3) *whether individual characteristics of users affected their assessments of the ethics of computer use.* Our empirical study represents an important contribution to research on computer ethics because it extends the "domain of morality" model into an IS context, filling a gap in the IS literature.

Method

The objectives of this research were accomplished by using an electronic medium to survey Internet users. The use of vignettes to describe the ethical dilemma was selected for three reasons. (1) Vignettes are useful in eliciting attitudes by personalizing a situation (Couger 1989), (2) they are a less intimidating method for respondents who are confronted with sensitive issues (Harrington 1996); and (3) they avoid problems with internal validity (e.g., subjects trying to gain experimenter approval) (Harrington 1996). A multimethod approach was utilized to develop the vignettes and questionnaire. Instrument development, description of the instrument, data collection, and characteristics of the sample are outlined below.

Instrument Development

Instrument development comprised two phases. (1) review of prior morality research, and (2) an iterative process of pretests, evaluations, and pilot tests. The design of the probe questions and the structure of the vignettes were based on moral development theory and typology. The six probe questions were adopted from Haidt et al. (1993) and Miller et al. (1990), and the structure of these questions was similar to that used by Turiel (1983) and Turiel et al. (1987). The conceptual appropriateness of this approach (e.g., Nucci 1981, Turiel 1983), and the validity of the probe questions are discussed in previously published articles on moral reasoning (e.g., Haidt et al. 1993, Miller et al. 1990). Based on the responses received during the preliminary testing process, the research instrument was revised and the vignettes were restructured several times prior to distributing the survey electronically.[1]

[1]Pretests of the research instrument were conducted with five academics, practitioners, and undergraduate management students. The questionnaire was completed by each of the respondents. In addition, each of the respondents provided feedback regarding the wording and content of the action included in the probe questions and the three vignettes, and provided their reactions to the process of completing the questionnaire. All suggestions regarding the overall structure of the survey and wording of the action described in the probe questions and vignettes were incorporated into the revised instrument. Following survey completion, debriefing sessions were completed with three individuals to review questions and further validate the instrument.

The pilot-test phase of the preliminary testing of the research instrument involved three iterative stages, and followed the procedures outlined by Sudman and Bradburn (1982). The purpose of the pilot study was to obtain additional information regarding the probe questions and three vignettes. The pilot test involved three stages, and a total of 26 individuals completed the research instrument at least once. Respondents used electronic means to complete the survey and provided feedback on the content and structure of the research instrument. After each stage of the pilot test, the research instrument was revised based on the feedback from the respondents. During stage one, 17 individuals completed the survey; during stage two, five individuals from stage one plus five new respondents from

Description of the Research Instrument

The stimuli created for this study were three stories describing ethical dilemmas involving the use of computer technology. Neither harmful consequences nor mischievous intentions were described in the vignettes (see Appendix 2). Each scenario was developed to manipulate the stimulus—an ethical dilemma involving computer technology—and was designed to represent each of the three domains of morality.

Vignette 1 described a situation addressing a person's desire to maintain his/her privacy and secure his or her electronic communication by using encryption technology. To reduce confusion on the part of the participants, we included an example and a description of encryption software in the vignette. The encryption scenario represented the personal domain, because it portrayed computer technology in a manner that neither harmed anybody nor was regulated by society, and illustrated the personal preferences of the users (i.e., use of an encryption device to protect their electronic communications).

Vignette 2 dealt with a common issue for most computer users: the computer virus. This scenario represented the conventional knowledge domain (i.e., an act that can have interpersonal consequences and that is meaningful in a specific social context). Social consensus plays the dominant role in determining the acceptability of individual actions and behaviors in the conventional knowledge domain of morality. The uploading of a computer virus onto a BBS (Bulletin Board System) or an EDL (Electronic newsletter/Listserver) is not intrinsically harmful to the creator and may be viewed as acceptable by his or her social group (e.g., cyber punks and computer hackers). Unsuspecting and conscientious computer users would probably view the virus scenario as wrong by virtue of their social consensus. The virus vignette only described the computer actions of developing and loading the virus onto a BBS or EDL; it did not indicate whether the virus was a hoax, a prank, or malicious (see Appendix 2). Respondents were asked only to assess the computer behavior outlined in the vignette—developing and uploading the virus—not the potential risks to users who may accidentally infect their computer systems.

The novel stimulus of the third vignette involved using computer technology to access and distribute a banned game containing violent, sexual, and racial material. This vignette represented the moral domain (i.e., intrinsically harmful acts). According to Feinberg (1973), people should be free to engage in harmless offenses in private, even if the offenses breach a country's social or moral code. However, passing on a banned game to an individual from another country introduces a different value system into the analysis. Even though the game may be legal abroad, the action may have intrinsically harmful consequences (i.e., perceived directly or inferred from direct perceptions (Turiel 1983, pp. 41–43)). The computer behavior was universally wrong because the harm was intrinsic to the action—sending a friend a disgusting game or the encouragement of civil liberties over social or moral behavior (see Appendix 2). The sender may be castigated and admonished by a member of his or her social group, because the game and/or promotion of his/her civil liberties offended his/her friend.

Data Collection Method

To obtain a stratified sample, we distributed the survey via electronic means using either listservers or electronic newsletters. The stratum for this study was defined as information technology users who have knowledge and experience using the Internet. Our reasons for using a stratified sample were to reduce the amount of variation within the stratum regarding the moral categorization of computer-related behaviors, to minimize the introduction of confounding variables, and to improve the preciseness of the results (Mansfield 1987, p. 203).

The use of electronic means to distribute surveys is becoming popular because its benefits (e.g., ease of use,

several different countries completed the instrument; during the final stage, three respondents from stage one, all the respondents from stage two, plus four new respondents completed the revised instrument. In addition, four respondents were interviewed to ensure that the probe questions were consistent with moral development theory and typology, and that the vignettes provided realistic scenarios that place each respondent in an ethical dilemma. Overall, the respondents' suggestions from the electronic completion of the research instrument and interviews required minor revision of the vignettes and probe questions.

reliability, and minimal costs) outweigh its disadvantages (e.g., context of question answering, inability to answer respondents' questions, and motivational problems). Several characteristics associated with mailed surveys also apply to electronically distributed surveys: (1) Respondents who choose to will complete the questionnaire (Pitkow and Recker 1995); and (2) The characteristics, behaviors, and/or attitudes of the respondents are relevant to the investigation (Christensen 1991, p. 100).

We approached three electronic newsletters requesting their assistance with the distribution of the research instrument, and all three agreed to distribute the electronic survey to their members. The subjects addressed by these electronic newsletters were safety, security, privacy, and sociological, political, and business issues with computers and IS involving organizations and private users. In total, about 1,000 Internet users (approximately 700 in the U.S., of which about 30% were women) received the survey from the three newsletters, and 120 completed questionnaires were returned (a response rate of 12.7%). Those surveys, distributed via a technology journal's listserver to 127 individuals—of which 38% were women and 64% were Americans—generated 17 additional responses (a response rate of 13.4%). This listserver included editorial board members and reviewers representing business people, as well as researchers interested in technology matters. In total, we received 137 responses from computer users with network experience (an overall response rate of 11.4% for usable surveys). The response rate for the electronically distributed survey was low; however, other researchers have reported similar response rates when electronic methods were used to distribute surveys (e.g., Pitkow and Recker 1995). The response rate associated with the type of electronic distribution employed in this study may have been underestimated for two reasons: (1) The actual number of subscribers to the three newsletters was an approximation; and (2), The assumption that all members of the newsletters and technology journal listserver received the electronic survey (i.e., no dead accounts). Another problem with electronic distribution was that follow-up mailings, or reminder notices, were not employed. According to Dillman (1978), "response rates would be less than half those normally attained" (p. 180), regardless of how impressive the survey or interesting the subject matter, without the utilization of follow-up mailings or reminder notices.

Sample Characteristics

The sample of Internet users was heterogeneous. Detailed demographic information is outlined in Table 1. More men than women completed the electronic research instrument. The majority of the respondents resided in the United States, were employed on a full-time basis, and had used computers for over ten years. Since the respondents all had previous computer experience, they were believed to be representative of the population of Internet users. The more experience respondents have with computer technology, and the fact that our sample was stratified, suggested that the respondents' odds of encountering some type of ethical dilemma involving computer technology were high.

Table 1 Demographic Profile

	Mean	Std. Dev.	
Age	35 years	11.48	
Education	18 years	3.83	
	n		*n*
Country of Residence		Gender	
United States	85	Female	24
United Kingdom	12	Male	104
Canada	9		
Australia	4	Employment	
New Zealand	4	Full-time	95
Other	9	Part-time	16
		Unemployed	14
Computer Use		Occupation	
<10 years	18	Professional	45
10–19 years	62	Semi-professional	50
20–29 years	11	Blue-collar	4
30–39 years	3	White-collar	19
Socio-Economic Status			
Poor	2		
Below Average	16		
Average	49		
Above Average	43		
Rich	2		

Results

The following summary outlines the research design employed in this empirical study: respondents were asked to answer a series of six probe questions for each of the three vignette encryption, virus, and banned game (vignettes are outlined in Appendix 2). Respondents, depending upon their interpretations of and attitudes toward the situation described in each vignette, selected their responses from measures designed to answer each probe question.

Hypotheses and conclusions are summarized in Table 2a. The primary variables of interest for the study were the permissive and bothered probe questions for each vignette; additional information was ascertained with the harm, interference and universal probe questions (Response options for each of the probe questions are presented in Table 2b.) The probe questions and independent variables are described in Table 2b, and the descriptive statistics for the permissive and bothered variables are outlined in Table 2c.

The hypotheses were analyzed using multivariate analyses of variance (MANOVA) and chi-square tests for two independent samples.[2] The rejection criterion for the overall test of significance in the MANOVA and chi-square was set at 0.05. The p-values for the multiple comparison analysis of the MANOVA were adjusted using the Bonferroni post-hoc procedure. The rejection criterion for the univariate F-tests was considered statistically significant when the p value was less than or equal to 0.017 (i.e., alpha = 0.05/3 vignettes).

Domain of Morality

Overall Evaluation. The first hypothesis stated that users would differ from each other in their assessment within each of the domains of morality (i.e., personal, conventional knowledge, and moral) when they described ethical dilemmas involving computer technology. As expected, we found highly significant differences, $p < 0.001$, among the three domains of morality (see Table 3a).

The *permissiveness probe* determined whether respondents had developed a moralizing stance toward the ethical dilemma involving computer technology by asking whether or not the action was wrong. Responses to the question, based on a three-point measure, ranging from *perfectly acceptable* to *a little wrong* to *wrong*, served as an initial measure of permissiveness. The three domains of morality were significantly different for the permissiveness probe ($F = 974.445$, $p < 0.001$) (see Table 3a).

We anticipated the following responses: the encryption vignette would be judged as *perfectly acceptable;* the virus vignette would be judged as a *little wrong;* and the banned game vignette would be judged as *wrong*. As expected, respondents judged the encryption scenario (personal domain) as perfectly acceptable (mean = 1.05; see Table 2c). However, the respondents' judgments about the virus vignette (conventional knowledge domain) and the banned game vignette (moral domain) were unexpected. Specifically, computer users viewed the virus vignette as morally wrong (mean = 2.55; see Table 2c), and viewed the banned computer game as a little wrong (mean = 1.53; see Table 2c).

The *bother probe* served as a manipulation check on the affective content of the vignettes by asking respondents to judge the computer behavior described in each vignette using a three-point measure ranging from *bothered* to *did not care* to *good*. We found highly significant differences among the three domains of morality for the bother probe ($F = 951.067$, $p < 0.001$) (see Table 3a). Respondents were bothered by the virus scenario (mean = 1.20; see Table 2c). In contrast, respondents' assessments of the encryption and game vignettes indicated that they *did not care* (mean = 2.38 and 1.80, respectively; see Table 2c).

Harm, Interference, and Universal Evaluation. The *harm probe* explored whether anyone was harmed by the computer actions described in each of the three vignettes by asking respondents to judge the individual's behavior as either *not harmful* or *harmful*. The domain theory of moral development postulates that respondents would view the moral domain vignette (i.e., banned game) as harmful, and the personal domain (i.e., encryption) and conventional knowledge (i.e., virus) scenarios as not harmful. As expected, the majority of the respondents, 96%, viewed the encryption sce-

[2]MANOVA is robust to modest violations of normality as long as the violations are due to skewness rather than to outliers (Tabachnick and Fidell 1989).

Table 2a Hypotheses

Hypotheses	Conclusion
Hypothesis 1. Computer users will differ from each other in their assesments within each of the domains of morality—personal, conventional knowledge, and moral—when they describe ethical dilemmas involving computer technology.	Supported
Hypothesis 2. Younger and older computer users will differ in their moral judgments of ethical dilemmas involving computer technology for each of the domains of morality.	Partially Supported i.e., Moral Domain
Hypothesis 3. Women and men will differ in their moral judgments of ethical dilemmas involving computer technology for each of the domains of morality.	Partially Supported i.e., Moral Domain
Hypothesis 4. Computer users with different levels of computer use will differ in their moral judgments of ethical dilemmas involving computer technology for each of the domains of morality.	Not Supported
Hypothesis 5. Computer users from different socio-economic backgrounds will differ in their moral judgments of ethical dilemmas involving computer technology for each of the domains of morality	Not Supported

Table 2b Dependent Variables

Dependent Variables	Probe Question	Source
Evaluation	What do you think about this situation [*description of the act that coincides with the novel stimulus presented in each vignette*] Response Options: *Okay: A Little Wrong:* and *Wrong.*	Haidt et al. (1993)
Bother	Imagine that you actually saw someone [*performing the act that coincides with the novel stimulus presented in each vignette*]? Would you feel bothered, not care, think this is good? Response Options: *Bothered; Did Not Care;* and *Good.*	Haidt et al. (1993)
Nominal Variables	**Probe Question**	**Source**
Harm	Is anyone hurt by what your friend did? Response Options: *Harmful;* and *Not Harmful.* Who? How?	Haidt et al. (1993)
Interference—Stopped	Should the person be stopped? Response Options: *Stopped;* and *Not Stopped.*	Miller et al. (1990)
Inteference—Punished	Should the person be punished? Response Options: *Punished;* and *Not Punished.*	Miller et al. (1990)
Universal	Suppose you learn about two different foreign countries. In country A, people doing [*description of the act that coincides with the novel stimulus presented in each vignette*] are quite common, and in country B, one never does [*description of the act that coincides with the novel stimulus presented in each vignette*]. Which one of these customs (if either) is bad or wrong? Both customs are wrong; Country A's custom is wrong: Country B's custom is wrong; neither one, both customs are okay. Response Options: *Both Customs Okay; Country A's Customs Wrong; Country B's Customs Wrong;* and *Both Customs Wrong.*	Haidt et al. (1993)

nario as not harmful (see Table 3b). However, respondents' judgment about the harmful consequences of the banned game and virus vignettes were unexpected. The banned game scenario was viewed as harmful by 29% of the respondents, whereas 80% of the participants viewed the virus vignette as harmful

Table 2b (Continued) Dependent Variables

Independent Variables		Source
Hypothesis 1		
Personal Domain	Encryption vignette (See Appendix A).	Developed by Authors
Conventional Knowledge Domain	Virus vignette (See Appendix A).	Developed by Authors
Moral Domain	Game vignette (See Appendix A)	Developed by Authors
Hypothesis 2		
2 Age Categories	Presented in Table 4.	
Hypothesis 3		
2 Gender Categories	Presented in Table 5.	
Hypothesis 4		
4 Computer Use Categories	Presented in Table 1	
Hypothesis 5		
5 Socio-Economic Status Categories	Presented in Table 1.	

Table 2c Descriptive Statistics for the Three Domains of Morality–Personal, Conventional Knowledge, and Moral Domain

	Encryption		Virus		Banned Game	
Probe Questions	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Permissiveness	1.05	0.32	2.55	0.68	1.53	0.74
Bother	2.38	0.56	1.20	0.46	1.80	0.57

Note: The coding for the dependent probe questions were as follows: Permissiveness—1 = okay, 2 = a little wrong, 3 = wrong; and Bother—1 = bothered, 2 = did not care, 3 = good.

(see Table 3b). The majority of the respondents (i.e., 59%) indicated that the actor and others were harmed by the virus action.

Similar results were found for the *interference probes*, which assessed whether the action was the actor's own business or whether outside interference was appropriate. For each vignette, respondents were asked whether the actor or friend should be *stopped* or *not stopped*, and then asked whether the actor or friend should be *punished* or *not punished*. The majority of respondents indicated that the actor should not be stopped or punished for the actions described in the encryption and banned game vignettes (see Table 3b). Most of the respondents, 71%, indicated that the actor in the virus vignette should be stopped, but participants' opinion on whether the virus action was punishable was almost an even split (i.e., 54% of respondents indicated the actor should be punished).

The *universal probe* asked the respondent whether it was "acceptable" for countries to differ on the custom

Table 3a Multivariate Analysis of Variance for Permissive and Bothered Probe Questions

	Multivariate of Hotelling's T²[a]		Univariate F-test[b] (Domains of Morality)		
Probe Questions	*df*	*F*	Encryption (Personal)	Virus (Conventional)	Game (Moral)
Permissiveness	3,117	974.443***	1270.252***	1672.965***	509.725***
Bother	3,119	951.067***	2157.782***	828.22***	1192.864***

[a]*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

[b]A Bonferroni post-hoc analysis was utilized to calculate the alpha level for the univariate *F*-tests. Based on this calculation (alpha = 0.05/3 stories), the *p*-value was considered significant at a level < or equal to 0.017. *$p < 0.017$, **$p < 0.01$. ***$p < 0.001$.

Table 3b Percentage for the Three Domains of Morality–Personal, Conventional Knowledge, and Moral Domain

	Encryption	Virus	Banned Game
Probe Questions	%	%	%
Harm	4	80	29
Interference-Stopped	2	71	19
Interference-Punishment	1	54	12
Universal[a]	82	36	63

Note: The coding for the descriptive probe questions were as follows: Harm – 1 = not harmful, 2 = harmful; Interference, Stopped – 1 = not stopped, 2 = stopped; and Interference, Punishment – 1 = not punished, 2 = punished; and Universal – 1 = both customs okay, 2 = country A wrong, 3 = country B wrong, 4 = both customs wrong.

[a]The Universal variable was collapsed into two groups: universal acceptance (i.e., both customs okay), and moralizing (i.e., custom or customs wrong).

in question by using a four-point measure ranging from *both customs okay* to *country A's custom wrong* to *country B's custom wrong* to *both customs wrong*. The four-point measure was collapsed into two groups: universal acceptance (i.e., both customs okay) and moralizing (i.e., custom or customs wrong). This probe was important because it assessed whether respondents viewed the computer activity described in each vignette as a social convention (i.e., moralizing) or reflective of a broader moral principle (i.e., universal). The majority of the respondents, 82%, universalized the encryption scenario (see Table 3b). The results for the banned game and virus vignettes were unexpected. The majority of the respondents, 64%, adopted a moralizing stance for the virus vignette (i.e., customs were wrong), whereas 63% of the participants universalized the banned game (i.e., both customs were acceptable; see Table 3b).

In summary, Hypothesis 1 was supported. The analyses of the three domains of morality indicated that users' judgments of the ethical dilemmas involving computer technology differed among the personal, conventional knowledge, and moral domains. For example, computer users assessed the encryption vignette as constituting acceptable, universal behavior. In the case of the banned game scenario, computer users believed that the situation was mildly wrong, but they were not bothered by the action, nor did they view it as harmful. In contrast, computer users viewed the virus scenario as wrong, harmful, and bothersome, and indicated that the individual behind the virus propagation should be stopped and punished.

Age

Overall Evaluation. Hypothesis 2 proposed that younger and older computer users would differ in their moral judgments of ethical dilemmas involving computer technology. To determine the main effect of age, MANOVA: tests employing a 3 × 2 (Vignette *X* Age Categories) design were conducted for the permissiveness and bothered probe questions. The age categories for the probe questions are outlined in Table 4a. The main effect for age was significant for both the permissive ($F = 3.574$, $p < 0.05$), and bothered ($F = 4.726$, $p < 0.01$) probes (see Table 4a). The results of the univariate *F*-Tests indicated the main effects of age were in the moral domain (i.e., banned game); the permissiveness probe ($F = 8.916$, $p < 0.01$) and bothered probe ($F = 11.222$, $p < 0.001$) were significant (see Table 4a). Examination of the means revealed that younger respondents' moral judgment of the banned game was permissive, whereas older respondents assessed it as wrong (see Table 4a).

Harm and Interference Evaluation. The results of the chi-square test indicated a relationship between age and the moral domain (i.e., banned game). The banned game was viewed as harmful by 44% of older respondents (over 35 years of age), compared to 22% of younger respondents (under 36 years of age) ($X^2 = 6.161$, $p < 0.05$) (see Table 4b). A higher level of older respondents, 33%, in contrast to younger respondents, 11%, indicated that the actor should be stopped ($X^2 = 8.195$, $p < 0.01$). The relationships between age and harm, and age and interference were weak (Phi = 0.23 and 0.27, respectively).[3]

Although both age groups viewed the virus vignette as morally wrong, the chi-square tests indicated several interesting age differences for the harm and interference probes. A higher level of older respondents (i.e., 92%), compared to younger participants (i.e., 72%), viewed the virus action as harmful ($X^2 = 7.506$, $p < 0.01$) (see Table 4b). The strength of the relationship between age group and harm of virus was weak (Phi = 0.25). Age differences for the interference probes (i.e., stopped and punished) were found as well. Older respondents adopted a higher level of interference (i.e., 83%) and punishment (i.e., 68%). In contrast, 64% of younger participants indicated that the person should be stopped ($X^2 = 4.578$, $p < 0.05$) and only 46% felt the person should be punished ($X^2 = 5.152$, $p < 0.05$). The strength of the associations between age and interference (Phi = 0.20), and age and punishment (Phi = 0.22) was weak.

In summary, the main effects for the age categories were found for the permissive and bothered probe questions. Older computer users' judgment of the banned game (i.e., wrong) was found to be opposite to that of younger users (i.e., acceptable). Based on these statistical results, we concluded that Hypothesis 2 was partially supported—younger and older respondents did differ in their moral judgment of ethical dilemmas involving computer technology when the situation was categorized as belonging in the moral domain.

Gender

Overall Evaluation. Hypothesis 3 stated that men and women would differ in their moral assessment of ethical dilemmas involving computer technology. Gender effects were assessed by a 3 × 2 (Vignette *X* Gender) MANOVA design for each of the probe questions. For the bothered probe, a significant effect of gender ($F = 3.142$, $p < 0.05$) was found (see Table 5a). The results of the univariate *F*-tests showed significant gender effects for only the moral domain (banned game) ($F = 7.082$, $p < 0.01$) (see Table 5a). Examination of the means indicated that men did not care that someone distributed a banned computer game, whereas women judged the banned game as bothersome.

Harm and Interference Evaluation. The harmful and interference opinions of men and women varied for the moral domain (i.e., the banned game). Specifically, 59% of the women, compared to 23% of the men, viewed the banned game vignette as harmful ($X^2 = 11.000$, $p < 0.001$) (see Table 5b). A higher level of male respondents viewed the banned game as the actor's personal business and nonpunishable (i.e., 86% and 93%, respectively). In contrast, 43% of the women stated that the actor of the banned game should be

[3]A suggested rule of thumb for interpreting the Phi coefficient for 2 × 2 tables is the following: 0.90 to 1.00 = very strong; 0.70 to 0.89 = strong; 0.50 to 0.69 = moderate; 0.30 to 0.49 = low; and 0.00 to 0.29 = weak (Pett, 1997).

Table 4a Multivariate Analysis of Variance for Age and Group Means for Age Categories

	Multivariate of Hotelling's T^{2a}		Univariate *F*-test[b] (Domains of Morality)		
Probe Questions	*df*	*F*	Encryption (Personal)	Virus (Conventional)	Game (Moral)
Permissiveness	3,111	3.574*	1.598	4.028	8.916**
Means 10–35			1.029	2.435	1.391
36–69			1.109	2.696	1.804
Bother	3,113	4.726**	5.704	0.844	11.222***
Means 10–35			2.486	1.229	1.929
36–69			2.234	1.149	1.574

Note. *n:* 10–35 = 72; 36–69 = 51.

[a]*$p < 0.05$. **$p < 0.01$, ***$p < 0.001$.

[b]A Bonferroni post-hoc analysis was utilized to calculate the alpha level for the univariate *F*-tests. Based on this calculation (alpha = 0.05/3 stories), the *p*-value was considered significant at a level < or equal to 0.017, *$p < 0.017$, **$p < 0.01$, ***$p < 0.001$.

Table 4b Chi-Square Test for Age Categories

	Encryption		Virus		Game		
Probe Questions	%	*X*2	%	X^2	%	X^2	
Harm			0.779[a]		7.506**		6.161*
	10–35	3		72		22	
	36–69	6		92		44	
Interference-Stopped			2.928[a]		4.578*		8.195**
	10–35	0		64		11	
	36–69	4		83		33	
Interference-Punishment			1.545[a]		5.152*		2.634
	10–35	0		46		9	
	36–69	2		68		19	
Universal			0.294		1.526		2.523
	10–35	17		60		29	
	36–69	21		71		44	

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

[a]The Fisher exact test is recommended when cells have expected frequencies of less than 5 (Pett 1997).

stopped ($X^2 = 9.349$, $p < 0.01$), and 35% of the women felt the actor should be punished ($X^2 = 11.622$, $p < 0.001$). The strength of the gender relationships between harm (Phi = 0.31) and punishment (Phi = 0.32) was low, and the gender and interference association was weak (Phi = 0.25).

In summary, the actions described in the banned game scenario bothered female respondents. They viewed it as harmful and expressed a higher rate of interference and punishment. Male computer users viewed the banned game vignette more liberally (i.e., they did not care about the computer act). Men believed that distributing the banned game was not harmful and was the actor's personal business. We

Table 5a Multivariate Analysis of Variance for Gender and Group Means for Gender Categories

	Multivariate of Hotelling's T^{2a}		Univariate *F*-test[b] (Domains of Morality)		
Probe Questions	*df*	*F*	Encryption (Personal)	Virus (Conventional)	Game (Moral)
Permissiveness	3,113	2.416	0.035	2.731	6.104
Means Female			1.048	2.762	1.905
Male			1.063	2.490	1.469
Bother	3,115	3.143*	3.295	3.146	7.082**
Means Female			2.182	1.045	1.500
Male			2.423	1.237	1.856

Note. See Table 1 for number of female and male respondents.

[a]$*p < 0.05$. $**p < 0.01$. $***p < 0.001$.

[b]A Bonferroni post-hoc analysis was utilized to calculate the alpha level for the univariate *F*-tests. Based on this calculation (alpha = 0.05/3 stories), the *p*-value was considered significant at a level < or equal to 0.017. $*p < 0.017$. $**p < 0.01$. $***p < 0.001$.

Table 5b Chi-Square Test for Gender Categories

		Encryption		Virus		Game	
Probe Questions		%	$X2$	%	X^2	%	X^2
Harm			1.423[a]		0.926[a]		11.000***
	Female	8		87		59	
	Male	3		78		23	
Interference-Stopped			1.220[a]		1.490		9.349**
	Female	4		82		43	
	Male	1		69		14	
Interference-Punishment			0.211[a]		0.046		11.622****
	Female	0		53		35	
	Male	1		55		7	
Universal			0.242[a]		0.271		1.685
	Female	22		68		48	
	Male	17		62		33	

$*p < 0.05$. $**p < 0.01$. $***p < 0.001$.

[a]The Fisher exact test is recommended when cells have expected frequencies of less than 5 (Pett 1997).

concluded that Hypothesis 3 was partially supported—men and women did differ in their moral judgment of ethical dilemmas involving computer technology when the situation was categorized as belonging in the moral domain.

Levels of Computer Use

Hypothesis 4 examined how levels of computer use related to the three domains of morality. The categories created for computer use were presented in Table 1. To assess this hypothesis, a 3 × 4 (Vignette *X* Levels

of Computer Use) MANOVA design was employed for the permissiveness and bothered probe questions. This hypothesis was not supported.[4]

Socio-Economic Status

Hypothesis 5 predicted that computer users from different socio-economic backgrounds would differ in their assessments in the three morality domains. This hypothesis was tested utilizing a 3 × 5 (Vignette X Socio-Economic Status) MANOVA design for the permissiveness and bothered probe questions. Hypothesis 5 was not supported.

Discussion and Conclusion

This study had two primary objectives: (1) To determine if respondents' assessments differed among the three domains of morality when the vignettes described ethical dilemmas involving computer technology; and (2) To determine if individual differences (i.e., gender, age, level of computer use, and socio-economic status) affected people's moral judgment of the personal, conventional knowledge, and moral domains when computer technology was involved. Overall, computer users did differ in their moral judgment of ethical dilemmas for each of the domains of morality when the situation involved computer technology. Results according to individual characteristics were mixed. Specifically, age and gender differences for the moral domain (i.e., banned game) were supported, and supplementary examination of the moral domain data highlighted several interesting age and gender variations; however, level of computer use and socio-economic status were not supported. The following sections discuss only the significant findings.

Domain of Morality

This paper utilized the theory of moral development to determine whether users develop a *moralizing* or a *permissive* stance regarding ethical dilemmas involving computer technology (i.e., computer viruses, distribution of a violent, sexual, and racial game, and encryption). The results of our study are important for four reasons: (1) They apply the theory of moral development to an IS domain; (2) They provide an important contribution to the current discussion on possible regulation of the Internet; (3) They increase our understanding regarding the moral judgment of end users; and (4) They provide useful information for designing organizational and industry policies regarding the ethical use of information technology. Because the effectiveness of codes of ethics is inconsistent, the results reported in this study on the moral judgment of end users are valuable for the development of more effective policies and procedures on computer ethics. The theory of moral development appears to be a useful framework for identifying which computer policies and regulations will be accepted, and adhered to, by most users of this technology. Without a better understanding of the moral judgments of computer users, ethical use of the Internet seems unlikely. Increasing our knowledge of the moral judgment of computer users is also salient because of the consistently reported significant link between moral judgments and behaviors (Rest and Narváez 1994).

Darley (1993) pointed out that most individuals are susceptible to immoral socialization. Unfortunately, this "insight has received relatively little attention in the moral issue literature" (Darley 1993, p. 356). A high degree of immoral socialization in a sample of experienced users would indicate that legislators should consider this factor carefully when developing legislation for the Internet (e.g., while software pirating is illegal, it is often done and is not necessarily perceived as being immoral within certain social groups). Vigorous support for effective codes of conduct is needed from top management (Oz 1994b). Legislators and managers may have to find additional ways to enforce laws, standards, and policies regarding the ethical use of computer technology. They will also need additional methods to limit information losses and organizational costs when certain computer actions and behaviors are viewed as acceptable by virtue of the social consensus of a user group (see Appendix 1).

The results of this empirical study indicate that computer users distinguish between the personal, conventional knowledge, and the moral domains (cf. Appendix 2) when the ethical dilemmas involve computer technology. Our findings do not support those of

[4]To keep the presentation of the results to a manageable size, the statistical results for the hypotheses not supported are not presented in the manuscript. These results can be obtained from the authors upon request.

Sproull and Kiesler (1991), who reported that computer users might not be able to recognize and identify the material and psychological consequences of ethical dilemmas involving computer technology. The results of this study indicate that the domains of morality may be useful for explaining computer behaviors and morals.

The empirical results involving the banned computer game, classified as belonging in the moral domain, and the computer virus, categorized as belonging in the conventional knowledge domain, were unexpected. Two possible reasons may explain these unexpected results. One potential reason is that computer users tend to deindividualize their moral judgments. When computer users deindividualize their attitudes and moral judgments, they are less aware of others, feel greater anonymity, and have lower thresholds of inhibition for socially unacceptable acts (Loch and Conger 1996). This may result in computer users developing a permissive attitude toward the banned computer game.

Another possible reason is that the virus and banned computer game were incorrectly categorized: the virus vignette represents the moral domain rather than the conventional knowledge domain, and the banned computer game characterizes the conventional knowledge domain instead of the moral domain. Operationalizing the three domains of morality is difficult because of the subtle nuances among the three domains of morality. For example, respondents were only asked to judge the action of the individual who developed and loaded a computer virus onto a BBS or EDL. However, it appears that respondents may have included the potential risks of virus contamination by unsuspecting computer users in their evaluation of the computer action because they assessed the virus vignette as harmful, requiring outside interference, and punishable. Respondents' evaluation of the virus vignette as harmful is interesting given that most computer viruses are hoaxes or pranks, and neither destructive nor malicious if usual precautions (e.g., using virus checker) are used (Gordon 1998).

The subtler content of the illegal game vignette may have been misinterpreted as well. One reason why respondents may have assessed sending the disgusting game to a friend more liberally, and not assessed it to be intrinsically harmful, is that values toward violence and racism are linked to specific cultures, not universally. As a computer game is not real, it is, therefore, not intrinsically harmful. However, the disproportionate number of men, compared to women, who responded to the survey may have biased the results (see Table 1 and following discussion on gender). The majority of women viewed the banned game as harmful and bothersome, whereas the majority of men viewed the distribution of the illegal game as harmless and the actor's personal business. Future research is needed to help refine the affective content of scenarios describing ethical or moral actions and behaviors when social transgressions involve computer technologies.

Age. An important finding in this study is that older respondents are more likely to take a moralizing stance and to be bothered by certain computer acts (i.e., banned game). The effects reported in this study extend previous empirical research. Turiel et al. (1987) reported in their literature review that moral and immoral behaviors are less stable and less generalizable for younger adults than for older adults.

The results indicate that younger people feel it is acceptable to obtain and distribute a banned game, whereas older respondents feel it is wrong. Every year, millions of young users join the Internet by obtaining access through schools and universities. If they feel that obtaining and distributing an illegal computer game is acceptable and a personal preference, then governments may have difficulty mustering public support to prevent access to violent, sexual, and racist materials on the Internet.

Gender. Walker reported that gender differences in moral orientation are infrequent, and "that such differences can be best attributed to dilemma content" (1991, p. 333). In this study, gender differences were detected for the banned game scenario. Men appeared more tolerant than women of the distribution of a banned computer game to individuals abroad, even when it was illegal.

Based on the findings reported in this study, it appears that women are more likely to refrain from distributing illegal games that might have content that could be considered indecent and/or immoral (see Appendix 2, Vignette 3). Women appear more cautious regarding certain moral and immoral acts of computer

users. The effects reported in this study provide support for the gender-based differences found in previous research as well. Women's use of computer technology followed prevailing societal norms and cultures, while men followed their own personal attitudes and beliefs regarding appropriate computer use (Loch and Conger 1996). Women were more concerned about feelings and more careful about how their actions affected others (Gattiker and Nelligan 1988, Gutek and Larwood 1987).

Limitations of the Present Study

One of the limitations of this study may have been the limited control we had regarding who responded to the survey. In contrast, using a mail-out survey would have improved control, while reducing the likelihood of receiving responses from individuals for whom the vignettes represented contextual or specific situations (e.g., knowledge or experience with computer-related actions). Other potential limitations are that (a) these data are from a field study, and (b) the sample is relatively small, albeit large enough to justify the making of inferences using parametric statistics (Tabachnick and Fidell 1989). Using the electronic distribution method for gathering data assured that the vignettes and issues addressed in the survey were context-related and not simply abstract for participants (McClosky and Brill 1983). Mailing out the survey may have provided us with responses from individuals with little or no practical experience in these matters, threatening the validity of the data (cf. Turiel et al. 1987). The low response rate limits the conclusions based on the data and the generalization of respondents' characteristics because of the unknown bias from extensive nonresponse (Judd et al. 1991). However, we believe the low response rate was due more to the limitations of the electronic distribution of the questionnaire (e.g., no follow-up mailings), rather than the design and subject matter of the research instrument. If follow-up mailings or reminder notices had been used, the response rate may have increased by at least half of what was attained (Dillman 1978). A second consideration of response rate was a strong sample design. Although the sample response rate was low, the results were meaningful because the sample was properly designed and constituted a representation of the larger population of interest (Judd et al. 1991).

Another limitation of this research may be the utilization of first-person measures (e.g., what would you do) rather than third-person questions (e.g., what would others do) typically utilized in psychometric literature. Although this may be viewed as a limitation to this study, we viewed it as a strength for several reasons. One of the primary objectives of this study was to assess respondents' moral judgment of incidents involving the unethical or ethical use of computer technology by another person. To accomplish this research objective, we felt it was necessary to use probe questions that asked the respondent to make a moral judgment of the action described in each vignette. The series of probe questions utilized in this study were adopted verbatim from previous research investigating moral reasoning (e.g., Haidt et al. 1993, Miller et al. 1990), and their structures were similar to the probe questions developed by Turiel (1983) and Turiel et al. (1987). Finally, Miller et al. (1990) indicated that an emerging assumption in the morality literature holds that both rational and emotional processes are involved in the formation of moral judgments. Because psychological processes, such as moral judgment, include emotions, defined as thoughts that reflect the understanding that "I am involved" (Miller et al. 1990), framing probe questions in the first person allowed for the assessment of a respondent's moralizing stances and of his or her thoughts regarding the various dilemmas. Consequently, the utilization of first-person artifacts in the probe questions should not have created a bias, especially since the action was done by another individual (i.e., a friend or acquaintance). Nisan (1991) suggested that, as a bystander, a person is less likely to invoke unrealistic moral stands since values and personal benefits are less likely to be in conflict. Within these acknowledged limitations, this study did produce significant results and the design did permit the elimination of generally recognized threats to validity (e.g., study design and content validity) (Mansfield 1987, Sudman and Bradburn 1982).

Practical and Research Implications

One major objective of this research is to highlight and test issues addressed in the psychological literature regarding moral development. A further objective is to

determine how they relate to computer ethics issues that are gathering more and more attention from the media and the public because of the widespread diffusion of the Internet and World Wide Web. The current discussions about software piracy and the Internet, the mushrooming of information exchange and electronic commerce, and society's dependency upon computers, IS, BBSs, and EDLs make this research timely.

Moral reasoning often exists for individuals as representations of their collective beliefs regarding what is just or unjust. While past research has primarily addressed the development of moral reasoning in children, this study has carried these issues into the area of IS and the Internet in particular, by asking experienced computer users to state their moral judgments about issues that are of interest to the media, managers of organizations, IS practitioners, members of parliaments, and judicial systems around the world. Nevertheless, if the computer and Internet issues that respondents are asked about are kept general and/or abstract, participants who have limited or no experience with the subject matter will likely endorse a response that maximizes civil liberties (e.g., 1994 TIME/CNN public opinion poll about privacy of phone calls). Our study, however, suggests that such research may be irrelevant for the real-life decisions that people have to make when working with computers and when participating on networks.

The Internet has made geographical boundaries less important. Therefore, it would be interesting to determine how the findings of this study may differ among countries, since this sample comprised primarily American and Canadian respondents. For instance, there is a growing degree of convergence between the legislative efforts of the European Union, Canada, and the United States to regulate the Internet and protect individual privacy, secure databases and computerized information, and facilitate electronic commerce (Bennett 1992, Flaherty 1989). Our study indicates that younger individuals and men are much more tolerant of certain computer behaviors than older respondents and women. If these patterns of responses and differences are replicable across countries and domains, universal enforcement and endorsement of computer and Internet legislation, standards, and policies may be difficult (Gattiker 2000). Future research can provide legislators, policy makers, managers, and IS professionals with important answers to this issue.

For managers and researchers, this study raises interesting issues about computers and network security. To successfully administer ethical standards and policies for computers and related technologies, IS professionals, managers, and policy makers must consider gender and age differences in users assessments of ethical dilemmas involving computer technology. One would hope that successfully implemented ethical standards and policies would eliminate some of these differences among groups. Further research on this issue is needed.

With respect to technology-related risks and vulnerabilities, the findings of this study suggest that, unless individuals have context-specific experience with computer abuses (e.g., viruses), users appear to be more tolerant of some computer acts. Our research would suggest that a system's vulnerabilities, and the associated risks of those vulnerabilities, might be exacerbated by employees' moral categorization of their actions (e.g., endorsing civil liberties over legal concerns by passing on an illegal game). The application of the domain theory of moral development makes a strong contribution to the IS field because this framework may facilitate the identification of computer situations where policies, standards, and regulation would be accepted, and adhered to, by most users (e.g., computer viruses). The domain theory of moral development also plays an important role by identifying computer situations where the majority of users would reject and rebuff policies, standards, and regulations (e.g., illegal games).

The lack of international law may also increase the threat to individuals and organizations because of insufficient knowledge or lack of social conscience regarding national legislation or social boundaries of moral conduct within a country (e.g., decent versus indecent conduct/information) (Gattiker and Kelley 1994). Research can help in further advancing our understanding of these issues by using real-life situations instead of hypothetical ones (Rest 1986, Rest et al. 1986). How moral reasoning will relate to subsequent actions and other values (e.g., privacy and personal

freedom) is an important research question awaiting further investigation.

Although we have increased our knowledge of users' moral judgments of computer activities, a great deal remains to be discovered and synthesized. To guide future research on, and policy development for the Internet, we must develop a better understanding of the moral development of the growing numbers and varieties of computer users, especially with respect to the social transgressions committed by some. Uncovering the subtler aspects of the moral judgment process associated with computer situations and the ethical use of computer technologies requires additional investigation. This study has provided us with important information about users' attitudes and moral categorization of certain behaviors regarding the use of computers and the Internet, and the utility of the domain theory of moral development. The development of ethical standards and regulations that are perceived as acceptable and appropriate by the majority of users is needed to facilitate compliance with legislation and with company and industry policies for the ethical use of computer technology.[5]

[5]This study was conducted in part while the second author was a Masters student at the University of Lethbridge, Alberta, Canada. She is now a doctoral student at the University of Western Ontario, Canada. The authors gratefully acknowledge the useful and insightful comments of the Editor, Associate Editor, and three anonymous reviewers in the preparation and revision of this manuscript for publication.

Appendix 1 A Social and Interactional Approach to the Domain Theory of Moral Development

	Moral Domain	Conventional Knowledge Domain	Personal Knowledge Domain
	Learned through direct observation of harm or injustice caused by a transgression	Learned through exposure to group consensus	Learned through exposure to others (e.g., during childhood) and past behaviors' outcomes
Material Conditions	*Objective obligations:* Justice, harm, rights, welfare, allocation of resources	*Actions that are right or wrong by virtue of social consensus.* Social uniformities and regularities, food, clothes, forms of address, sex-roles	Psychological states, personal tastes and preferences
Formal Conditions	Rational, universal, unalterable, objective, self-constructed, more serious	Arbitrary, relative, alterable, consensus-based, socialized, less serious	Rational and irrational, arbitrary, relative, alterable, self-constructed
Description	Intrinsically harmful acts are perceived directly, or are inferred from direct perceptions	Acts that are not harmful, have interpersonal consequences and are meaningful in a specific social context	The domain is outside the realm of societal regulation and moral concern
Infractions	1. Hitting another individual 2. Software piracy	1. Junk mail 2. Loading a computer virus program onto an electronic newsletter/list server	1. Indecent acts 2. Use of encryption devices
Consequence	1. Social group may castigate 2. Legal or institutional (e.g., school—suspension, work-warning)	1. People may be puzzled or upset about behavior 2. Individual may be encouraged to change or face the consequences (e.g., social outcast)	1. Individual may feel uneasy or good about behavior 2. Based on input from reference group(s) or close friends/family, person may feel uneasy/good about behavior

Note. Adapted from Schweder et al. (1987, p. 24) and adopted by Gattiker et al. (1996). It is generally assumed that if something is considered harmful by the majority of a society, such behavior/action will be outlawed, thus resulting in legal sanctions if the person committing the action is caught. In contrast, a substantial minority of people may perceive something as being immoral, but such behavior may be quite common and in some cases accepted.

Appendix 2

Situation 1: Data Encryption. One of your friends is a technical whiz and has just developed a new data encryption device (i.e., similar to a phone scrambler, as the device helps to protect conversations against wiretapping) and related software. Your friend quickly demonstrates how the device works by sending an encrypted message to you. Your subsequent decoding efforts fail, illustrating that the encryption device does its job very well. You and your friend then proceed to install this device and software on both of your machines for use when communicating with each other.

Situation 2: Virus. One of your friends is a real computer nut and has just written a new computer virus program. Your friend then proceeds to load the Virus program onto a BB or an electronic newsletter/listserver (EDL).

Situation 3: Illegal Computer Game. Your friend has just received a new computer game through an EDL located abroad. The game is banned in this country because of its violent, sexual, and racist content. Your friend tests the game. Although he or she finds it somewhat disgusting, your friend sends a copy to another friend abroad, where no regulation exists banning the game. Your friend does not keep a copy of the game.

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