

## Influences of Different Ethical Issues on Ethical Decision-Making in an IT Context

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### Abstract

*This paper reports the results of a laboratory experiment involving the discussion of ethical scenarios. Groups discussed five ethical scenarios centered on the use of information technology, involving issues of privacy, intellectual property, use of company equipment for non-work activities, and modification of company software for personal gain. Data were collected via questionnaire before and after the discussion.*

*The results show that ethical decision making processes vary by scenario, with perceived importance of an ethical issue and moral obligation to act being strong, but not all-inclusive influences on the link between attitude toward questionable behavior and intention to engage in the behavior. The results are discussed in the context of several models of ethical decision-making and suggestions are given for future research. Managers are advised on how to limit unethical behavior.*

### 1. Introduction

Recently, the business literature and popular press has given increased attention to ethical issues. Ethical issues are particularly prominent in the information technology field, with reports of widespread illegal distribution of intellectual property, privacy violations, and security breaches recurring on an almost weekly basis in the popular press. Well-known crimes like fraud, forgery, and theft have resurfaced in new forms. For example, on-line auction scams put a new spin on theft and fraud – taking payment for a product and not delivering it or delivering a different product [16]. This has prompted some to say that the rapid development and deployment of IT appears to be outpacing the development of ethical guidelines for its use [13].

Employees remain a very high threat to security for inappropriate use of IT, either through inadvertent misuse of IT or deliberate action. One survey noted that 80% of all computer- and Internet-related crimes

against corporations are committed by individuals from within, causing an average of \$110,000 per corporate victim [5], while another found that 78% of organizations have had to discipline employees for downloading pornography, pirated software, or misusing e-mail [15]. Still another survey in November 2001 found that nearly 30% of business people could be classified as pirating software through electronic methods [18].

Models of ethical decision-making tend to emphasize how the decision maker's attributes and environment lead to ethical decisions (e.g. [23]), but a significant line of theoretical research has emerged from Rest's [19] four-component model of ethical decision-making, shifting the focus to the process of ethical decision making rather than solely on ethical outcomes [24]. However, with the notable exception of Robin et al's [20] study involving ad managers, there have been virtually no empirical studies of the processes that individuals use when making ethical decisions and the issues that affect those processes. The purpose of this study is to compare the ethical decision making processes of individuals as they approach different ethical scenarios involving IT ethics using several models of ethical decision-making.

### 2. Theoretical Background

The central theory of this study is the theory of planned behavior [1]. The theory of planned behavior (TPB) proposes that individual intention to behave is predicted by their attitude toward the behavior, their perceived moral obligation to act against the behavior, and their perceived ability to actually engage in the behavior. The TPB has been successfully applied to ethical situations involving academic dishonesty [3] and IT ethics [2, 10, 11, 12]. In general, TPB-based studies have found that individual intention to behave ethically is predicted by attitude toward the behavior and perceived moral obligation to act against the behavior.

Other theories of ethical decision-making are quite similar to the TPB in that all include a component for forming an attitude toward the behavior before forming a decision to engage in the behavior. Many have additional precedents that explain how attitude and/or behavioral intention are formed. Rest [19] proposed a four-component model for ethical decision-making, with *recognizing the moral issue* being an antecedent to forming an attitude toward the behavior. Jones [8] extended Rest's model by adding environmental and individual moderators and another situation-based construct, *moral intensity* into an "issue-contingent model" that predicted ethical behavior with particular reliance on salient attributes of the situation. This model has become the basis for a significant stream of ethical decision-making literature (see [20, 9, 21]).

### 2.1. Research Model

As was stated earlier, the central theory of this study is the theory of planned behavior (TPB). Several additional constructs were added to capture aspects of other theories; Jones' [8] general model as extended by Jones and Ryan [9] and Street et al [21]. The research model is shown in Figure 1.

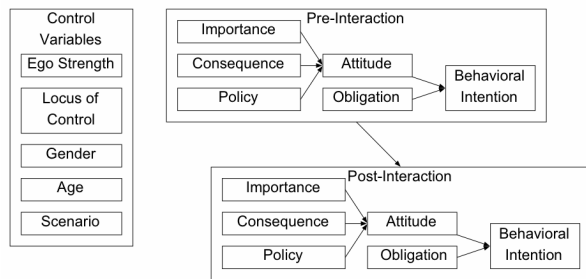


Figure 1: Research Model

In general, an individual's intention to behave ethically or unethically is influenced by 1) their attitude toward the behavior, and 2) their personal feelings of moral obligation to perform or not perform the behavior [3]. Attitude toward the behavior is influenced by perceptions of how important the behavior is perceived to be [20]. Two additional factors that may affect attitude were introduced for this study, 1) whether the actor should have engaged in the behavior if there was a consequence, and 2) the probability that the actor would have engaged in the behavior if there were a stated policy against it.

Several demographic and personality traits are used as control variables: 1) gender, with women tending to judge questionable behavior as immoral [7] and be more ethical [10], and 2) age, with individuals tending to judge questionable behavior as

immoral [7] and be more ethical as they grow older [12]. The personality traits that are believed to influence ethical behavior [23] are 1) locus of control and 2) ego strength, which indicates the strength of an individual's convictions. Because characteristics of the individual scenario are expected to influence ethical decision-making, an analysis of differences among the models for each scenario forms the basis for this paper.

Gathering perceptions after the participants had interacted with others about the scenario is the most significant methodological difference between this study and previous studies of ethical decision making in an IT context [10, 11, 12]. Each participant in this study answered a series of questions about ethical scenarios both before and after discussing the scenario with others in order to gauge their ethical decision-making process when initially confronted with a scenario and after they had given it at least some moral thought while discussing it with others. The hypotheses are focused, as is this paper, on differences among the scenarios rather than the personality traits of the individuals<sup>1</sup>.

### 2.2. Hypotheses

When individuals face an ethical issue, their attitude toward the behavior and whether they will engage in the behavior seem to be strongly influenced by how important they perceive the issue to be [11]. Perceived importance of an ethical issue has been found to influence attitude toward the behavior [20]. Therefore, we hypothesize:

*H1: Perceived importance of the ethical issue will be a significant indicator of attitude toward the behavior.*

The theory of planned behavior proposes that attitude toward a behavior is a significant indicator of intention to engage in the behavior. This relationship has been confirmed in ethical contexts (see [3], [12]), and is an important part of Jones' [8] model of ethical decision-making. Therefore, we hypothesize:

*H2: Attitude toward the behavior in question will be a significant indicator of behavioral intention.*

Moral obligation is an extension of the theory of planned behavior's personal normative beliefs [3], emphasizing an individual's personal obligation to act rather than a social obligation to act. Beck and Azjen found personal moral obligation to be more

<sup>1</sup> Two other papers are being prepared using the same data. One analyzes and discusses factors that lead to differences between pre- and post-interaction responses; the other analyzes and discusses differences in ethical decision-making by personality type.

important than normative beliefs in predicting behavioral intention in an ethical context. Other studies have found a significant relationship between personal moral obligation and behavioral intention (see [2], [10], [12]). Therefore, we hypothesize:

*H3: Moral obligation to take corrective action in response to the behavior will be a significant indicator of behavioral intention.*

Robin et al's [20] study involved two ethical scenarios, and one was perceived to be less important than the other. The less important ethical scenario had a significantly weaker link between attitude toward the behavior and behavioral intention, suggesting that individuals may still engage in behavior they consider unacceptable if the issue is relatively unimportant. Therefore, we hypothesize:

*H4: The link between attitude toward the behavior and behavioral intention will be weaker for scenarios with low perceived importance than for scenarios with high importance.*

Moral certainty [9] is defined as the certainty with which the act in question is judged to be immoral. It is related to moral obligation in that scenarios with high moral certainty would give rise to a high moral obligation to act. Jones and Ryan propose that morally unambiguous situations have a heightened link between judgment and behavior. In terms of this study, scenarios with higher moral obligation (higher certainty) should have stronger links between attitude and behavioral intention. Therefore, we hypothesize:

*H5: The link between attitude toward the behavior and behavioral intention will be higher for scenarios with high moral obligation than for scenarios with low moral obligation.*

The level of cognitive expenditure may influence ethical behavior [21], with scenarios having high levels of personal relevance and moral intensity being thought of in a moral manner while others are not. Unfortunately, a measure of personal relevance was outside the scope of this study, so as a surrogate, the responses among the subjects will be compared before and after they interact with others. Scenarios that are thought of morally should have similar models before and after discussing the scenario with others. Scenarios that are not initially thought of morally should have different characteristics after discussing the scenario with others. Because this analysis will be exploratory, no hypothesis about cognitive expenditure is presented.

### 3. Research Method

The subjects were recruited from students in a junior-level management information systems course at a private mid-western university. The experimental system was entirely web-based, including the questionnaires and chat room. A pilot study group tested the application and indicated that the features of the chat room allowed for normal conversation flow.

First, the subjects filled out questionnaires about their background (gender, major, etc.), ego strength and locus of control, and the research model items for each of the five scenarios. Once all of the subjects had completed the questionnaires, they were divided into groups by the computer. The groups were divided so that each group had at least five members and would have an approximately equal level of influence based on the ego strength scores of the participants in the session. The person with the highest ego strength score in the session was assigned to the first group; the person with the second highest score was assigned to the second group, and so on until all of the groups were formed. This way, all of the groups had an equal number of high and low ego members.

During the chat sessions, each group member was shown a web page with the scenario that they were to discuss along with instructions to reach consensus about the attitude item (was the behavior acceptable?). After discussing the scenario for three minutes, the subjects completed the scenario questionnaire again. The five scenarios were discussed in the order presented in Table 1. The same five scenarios have been used in previous IT ethics research [10, 11, 12] (the complete text of each scenario can be found in [12]). The total time to complete all of the questionnaires and chat sessions was approximately 60 minutes.

**Table 1: Summary of Ethical Scenarios**

No.	Description
1	A programmer modifies a bank's accounting system to fix an overdraft on his account
2	A person receives extra merchandise from a mail-order software company and keeps the merchandise
3	A programmer works on personal projects using company computers on Saturdays
4	A person downloads a copy of a subscription-based software package and uses it without paying the fee
5	A person copies personal data about public school children for use in her company's business

The control variables are background and personality variables that have been shown or proposed to affect ethical decision-making: 1) *age*, 2) *gender*, 3) *locus of control*, and 4) *ego strength*. The mediating variables are the extended theory of planned behavior (TPB) items: 1) *perceived importance*, 2) impact of a *consequence*, 3) impact of a *policy*, 4) *attitude* toward the behavior, and 5) *moral obligation* to act. The dependent variable is *behavioral intention*, with higher values representing a lower probability that the subjects would engage in the behavior if they were the person in the scenario.

#### 4. Results

Structural equation modeling (SEM), specifically Partial Least Squares (PLS), is used to test the research model. PLS was chosen because of its low sample size requirements relative to covariance-based SEM like LISERL or EQS [6]. Chin's "strong rule of thumb" criterion recommends a minimum sample size of ten times the largest number of structural paths directed at a particular construct in the structural model (none of our constructs have formative indicators). In our structural model, the dependent variable with the largest number of independent variables impacting it is post-interaction attitude with 8 (post-interaction perceived importance, post-interaction consequence, post-interaction policy, ego strength, locus of control, gender, age, and pre-interaction attitude). Therefore, the minimum sample size required is 80 (8 \* 10). At 167 observations for each scenario, our PLS analysis has sufficient power.

##### 4.1. Ethical Models by Scenario

A summary of the results of the PLS analysis for scenarios one through five is presented in Figure 2. To save space, the paths from the control variables to the mediating variables and the paths between the pre- and post-interaction mediating variables are left off. Significance of path coefficients was tested using the bootstrap resampling technique [6]. Path coefficients that are significantly different from zero are shown with an asterisk next to the path coefficient. The lines beneath the coefficients are a presentation of significant differences among the path coefficients, which will be discussed in a later section.

Path	Scenario				
	Four	One	Two	Five	Three
iPI – iATT	-.085	-.254*	-.411*	-.485*	-.519*
iCON – iATT	.013	.118	.128	.304*	.380*
iPOL – iATT	-.070	-.051	.049	.143	.155*
iATT – iBI	.479*	.512*	.534*	.625*	.678*
iMO – iBI	.141*	.184*	.234*	.308*	.345*
piPI – piATT	-.310*	-.361*	-.364*	-.399*	-.423*
piCON – piATT	.095	.163	.193	.288*	.317*
piPOL – piATT	.052	.065	.085	.096	.245*
piATT – piBI	.508*	.575*	.676*	.688*	.702*
piMO – piBI	.020	.106	.117	.310*	.313*

\* Path coefficient is different than zero (p<.05)

**Figure 2: Summary of PLS Results and Comparison of Path Coefficients**

The results of the scenarios support hypothesis one, that perceived importance of an ethical issue would be a significant indicator of attitude toward the behavior, with the exception of pre-interaction scenario four. Because scenario four's post-interaction link from perceived importance to attitude is significant, this suggests that the behavior was initially thought of differently and that the subjects changed their reasoning after they had discussed the behavior with others. All of the scenarios support hypothesis two, that attitude toward the behavior would be a significant indicator of behavioral intention.

Hypothesis three, that moral obligation toward a behavior would be a significant indicator of behavioral intention is only partially supported. Pre-interaction, all of the scenarios have significant links from moral obligation to behavioral intention, but post-interaction, the link from moral obligation is not significant for scenarios one, three, and five. This suggests that, in some cases, interacting with others changes the ethical decision making process. Differences among the scenarios were analyzed to test hypotheses four and five.

##### 4.2. Ethical Model Differences

Differences among the models for each scenario are compared using paired t-tests and PLS modeling. Figure 3 summarizes the mean pre- and post-interaction scores for each of the items in the model

(Perceived Importance is the average of the four items). Significant differences between pre- and post-interaction responses for a given scenario were calculated using paired t-tests. Post-interaction perceptions for a scenario that are significantly different than pre-interaction are indicated by an asterisk (\*). Significant differences among the responses to a given item among the scenarios were calculated using paired t-tests. Scenarios that are not significantly different from each other with respect to a given item are underlined. Higher scores indicate a more negative response to the questionable behavior, except for perceived importance, which is reverse-coded with lower scores indicating a higher perceived importance.

Item	Scenario Means				
	Five	One	Four	Two	Three
iPI	<u>2.76</u>	<u>2.92</u>	3.20	3.95	4.88
iCON	Two 5.54	Four <u>5.93</u>	Three <u>6.67</u>	One <u>6.13</u>	Five <u>6.23</u>
iPOL	Two 3.84	One <u>4.31</u>	Four <u>4.59</u>	Five <u>5.07</u>	Three <u>5.29</u>
iATT	Three 2.80	Two 4.32	Five <u>5.22</u>	Four <u>5.25</u>	One <u>5.49</u>
iMO	Three <u>3.38</u>	Two <u>3.62</u>	Four <u>4.60</u>	One <u>4.87</u>	Five 5.28
iBI	Three 3.20	Two 3.63	Four 4.76	Five <u>5.12</u>	One <u>5.42</u>
piPI	Five 2.51*	One 2.86	Four 3.44	Two 4.32*	Three 4.91
piCON	Two <u>5.34</u>	Four <u>5.59*</u>	Three <u>5.72*</u>	One <u>6.01</u>	Five <u>6.08</u>
piPOL	Two 3.94	One <u>4.50</u>	Four <u>4.53</u>	Three <u>5.01*</u>	Five <u>5.14</u>
piATT	Three 2.42*	Two 3.46*	Four 4.63*	One <u>5.33</u>	Five <u>5.60*</u>
piMO	Three 2.99*	Two 3.35	Four 4.40	One 4.80	Five 5.43
piBI	Three 2.93*	Two 3.44	Four 4.58	One <u>5.14*</u>	Five <u>5.49</u>

\* significantly different from pre-interaction (p<.05)

**Figure 3: Comparison of Mean Pre- and Post-Interaction Perceptions by Scenario**

In general, scenarios one (modifying a program to prevent overdraft charges) and five (copying personal data about public school children) are similar to each other in that the subjects found the behavior most important and responded to the behavior least favorably. The behavior in scenario three (using company computers on weekends) was perceived as less important and generally responded to favorably. Perceptions about scenarios two and

four fell generally between scenario three and scenarios one and five, with scenario two (keeping a boxed software package) generally perceived of as more important and the behavior less favorable than scenario four (using a downloaded software package).

Referring back to Figure 2, the scenario with the lowest strength path coefficient is shown to the left and the scenario with the highest strength path is shown to the right. The path coefficients were compared using Chin's [6] multi-group analysis technique. Paths that are not statistically different from each other (p<.05) share the same line beneath the scores.

The differences among the path coefficients do not support hypothesis four, that the link between attitude toward the behavior and behavioral intention will be weaker for scenarios with low perceived importance than for scenarios with high importance. Scenario three, with the lowest pre- and post-interaction perceived importance, contradicts hypothesis four by generally falling in the middle of the others in its link from attitude to behavioral intention; with a significantly higher pre-interaction link than scenario four and not significantly lower than any of the other scenarios. Scenario one, with one of the highest pre- and post-interaction perceived importance scores, also generally falls in the middle of the others in the strength of its link from attitude to behavioral intention; with a significantly lower pre-interaction link than scenario five, but significantly higher post-interaction than scenario four. Scenario five, with the highest perceived importance score pre- and post-interaction and the highest link from attitude to behavioral intention, does not completely discount hypothesis four, but together with the results for scenario three implies that the relationship between perceived importance and the link from attitude to behavioral intention is U-shaped and/or other factors impact the strength of the relationship between attitude toward a behavior and behavioral intention.

Hypothesis five, that the link between attitude toward the behavior and behavioral intention will be higher for scenarios with high moral obligation than for scenarios with low moral obligation, is also generally not supported by the differences among the path coefficients. The moral obligation scores follow the same order as the perceived importance scores and contradict hypothesis five for the same reasons. Scenario three, with the lowest moral obligation, also had the lowest perceived importance. Scenario five, with the highest moral obligation, also had the highest perceived importance. The relationship between moral obligation and the link from attitude to behavioral intention may also be U-shaped and/or

influenced by other factors. The results of the hypotheses tests are summarized in Table 2.

**Table 2: Summary of Hypotheses Results**

Hypothesis	Pre-Interaction Responses	Post-Interaction Responses
H1: Perceived importance – attitude toward the behavior.	All scenarios but scenario four support.	All support.
H2: Attitude – behavioral intention.	All support.	All support.
H3: Moral obligation – behavioral intention.	All support.	Only scenarios two and four support
H4: Attitude – behavioral intention link weaker for low perceived importance than high.	Only scenario five supports. Scenario three contradicts.	Only scenario five supports. Scenario three contradicts
H5: Attitude – behavioral intention link weaker for low moral obligation than high.	Only scenario five supports. Scenario three contradicts	Only scenario five supports. Scenario three contradicts

Referencing the results above, it appears that factors in addition to perceived importance and moral obligation influence individual’s ethical decision-making processes. In an attempt to discern whether the subjects initially exerted greater cognitive expenditure for one or more scenarios when making their decision [21], we present the results of an exploratory analysis of pre- versus post-interaction links for each of the scenarios. Again, no hypotheses were proposed.

Scenarios one and two are generally consistent in their pattern of links from pre- to post-interaction, with increased strength in the link from attitude to behavioral intention for scenario one being the only significant ( $p=.042$ ) change. Scenarios three and five had a proportionally large, but not significant ( $p=.089$  and  $.102$ , respectively) drop in strength for the link from moral obligation to behavioral intention, and scenario five had a significant increase ( $p=.023$ ) in strength for the link from impact of a consequence to attitude. The shift in sign for the link from impact of a policy to attitude for scenario three is significant, but since neither value is significantly different from zero, impact of a policy has little influence on attitude for that scenario. Scenario four had a significant increase ( $p=.001$ ) in its link from

perceived importance to attitude and a significant decrease ( $p=.013$ ) in its link from impact of a consequence to attitude, suggesting that the subjects made their decision differently pre- versus post-interaction. This suggests that the subjects initially exerted less cognitive expenditure for scenario four.

## 5. Discussion

The purpose of this study was to compare perceptions of ethical scenarios using the theory of planned behavior. Generally, the theory of planned behavior provided a good explanation of behavioral intention in ethical situations. However, in the post-interaction models, only scenarios four and two had a significant link from moral obligation to behavioral intention and the link was significantly higher than the other scenarios. Other factors, perhaps related to their low values for impact of a consequence, may help to explain why moral obligation was so much more important in predicting behavioral intention for these scenarios than the others. We discuss differences among the models in the context of several ethical frameworks in the following sections.

### 5.1. Privacy, Accuracy, Property, and Accessibility

Mason’s [14] four ethical issues of the information age: privacy, accuracy, property, and accessibility, can be used to explain some differences among the models on a categorical basis. Specifically, scenarios two and four both involve intellectual property that is easy to reproduce and share. For these two scenarios, moral obligation was a higher influence on behavioral intention than the others. Scenario five had a significantly stronger link from attitude to behavioral intention than scenarios two and four pre-interaction and stronger than scenario four post-interaction, suggesting that privacy issues are considered differently than intellectual property issues. Scenario three does not neatly fit into a single category of Mason’s four ethical issues; however, it could be considered an issue of access to computing resources (a.k.a. the digital divide) and thought of differently for that reason. Scenario one is more related to fraud or theft and does not fit into Mason’s categories unless one considered that the modification to the system might have caused “collateral damage” to other people’s accounts. In that sense it could be considered an accuracy issue, but because the subjects of this study were not systems professionals, they could not be expected to think of this and there is no mention of it in the chat messages.

## 5.2. Perceived Importance

Robin et al [20] present perceived importance as being similar to personal involvement and therefore closer to behavioral intention than Jones' [8] moral intensity. They generate two propositions at the conclusion of their analysis. The first, that perceived importance is a causal variable that precedes attitude toward the behavior (H1), is generally supported by the results of this study, with only pre-interaction scenario four not having a significant link. The second is that at a very low level of perceived importance, the link between attitude toward the behavior and behavioral intention will be weakened (H4). This is not supported in the pre-interaction responses. The scenario with the lowest perceived importance (scenario three – using company computers on Saturday) maintained one of the highest strength links from attitude to behavioral intention, second only to the scenario with the highest perceived importance (scenario five – copying personal data about children). This suggests that the relationship between the perceived importance of an ethical issue and the strength of the link from attitude to behavioral intention is U-shaped; with both low- and high-importance issues having a strong link from attitude to behavioral intention and mid-level issues having a weak link. It should also be noted that scenarios three and five were also among the highest in strength of link from perceived importance to attitude, which suggests that very high or very low levels of perceived importance carry through attitude to behavioral intention.

## 5.3. Moral Intensity

Jones [8] proposes that moral intensity affects all aspects of the ethical decision making process. On its face, scenario three had the lowest moral intensity – lower magnitude of consequences, lower social consensus, lower probability of effect, and lower concentration of effect. Its lower moral intensity is reflected in its significantly lower perceived importance and moral obligation scores. Scenario five seems to have the highest moral intensity, closely followed by scenario one. The participants in this experiment appear to have followed the moral intensity of the issue to form their behavioral intent for these scenarios, resulting in the strong links from perceived importance to attitude and from attitude to behavioral intention, even though the behavioral intention for scenarios one and five was generally that they would not engage in the behavior while for scenario three they would. This would account for the U-shaped relationship between the levels of

perceived importance and moral obligation and the strength of the link from attitude and behavioral intention.

## 5.4. Moral Responsibility

Moral responsibility, or the accountability for one's actions, may account for some of the difference among the models [9]. Moral obligation, as a measure of this construct, does not account for differences in the strength of the link from attitude and behavioral intention. Another key component in moral responsibility is severity of consequences, with more severe consequences having a stronger link between attitude and behavioral intention. The subjects in this experiment had to assume that the actor in the scenario was able to get off scot-free, so the only consequences for the actions in question were social and/or personal. Because students seem to perceive of electronic distribution of software as not having social consequences, the behavior in scenarios two (keeping a software package) and four (downloading and using a software package) would likely have a weaker link between attitude and behavioral intention, leading to a relatively strong path from moral obligation to behavioral intention. This does not completely account for the differences because the behavior in scenario three would also have little social consequences as well. It may be that its unimportance was such a significant driver of its behavioral intention that the moral responsibility component was overridden.

## 5.5. Cognitive Expenditure

Street et al [21] propose that individuals may choose not to expend the mental energy to think about ethical issues in a moral manner, choosing instead to make the decision on the basis of non-ethical considerations. The structure of this experiment was such that pre-interaction the subjects could make their decisions about the scenario in any way they wished and take any amount of time to consider them, although there was also some time pressure on those that took more time to complete the questionnaires about the scenarios because they could sense that other class members were waiting. During interaction the subjects were allocated three minutes to discuss the scenario and answered the same questions, which meant that they were more likely to expend cognitive energy during the discussion and were more likely to think in a moral manner about the scenario. Therefore, if the subjects thought about the scenarios morally during their post-interaction responses, the comparison of differences between the

pre- and post- interaction links among the scenarios gives some clue as to which were thought about morally pre-interaction.

The results of the exploratory analysis suggest that the subjects initially thought about scenarios one and two morally. Scenarios three and five had large, but not significant differences in their pre- versus post-interaction links, suggesting that some subjects did not think about these scenarios morally at first. It may be that scenario five had such a strong emotional component while scenario three had such a low level of importance, that they did not initially think about them as moral situations, responding to scenario five based on an emotional reaction and to scenario three based on their “gut feel” [22]. If the subjects engaged in “peripheral processing” [21] and did not consider ethical issues when making their decision for these scenarios, cognitive expenditure could account for the U-shaped relationship between levels of perceived importance and moral obligation and the strength of the link from attitude to behavioral intention – the subjects’ behavioral intention was so tightly linked with their attitude that no other factors were considered, even after discussing the behavior with others.

Scenario four’s model was the only one whose structure changed significantly, suggesting that it was not initially thought of in the same way as it was after the discussion for most subjects. Scenario four dealt specifically with electronic duplication of intellectual property, which many college students engage in on a regular basis, so initially they may not have considered it a moral issue. As they discussed it with others, some of these moral issues may have become apparent and affected their decision-making process.

## 6. Conclusions and Limitations

The results of this experiment show that the relationship among factors that influence ethical decision-making is complex and that different factors become salient for different ethical scenarios. Taken individually, the extensions of Rest’s [19] ethical decision-making model do not provide a complete picture of ethical decision-making for all of the scenarios. However, they each provided a plausible explanation of differences in decision-making among two or more of the ethical scenarios. Therefore, combining them together into an integrated model may prove fruitful.

Perceived importance and moral obligation are important, but not all-inclusive influences on the link between individuals’ attitude toward ethical behavior and their intention to engage in that behavior. Although this study was limited in the data it

collected about other factors that seem to influence this link (moral intensity, moral responsibility, cognitive expenditure, etc.), it has provided a basis for such empirical research.

One limitation of this study is in its use of college students as subjects. College students have been shown to perceive questionable behavior as being more ethical than information systems professionals [4]. Although this study emphasizes ethical decision-making processes, it is possible that different ethical decision-making processes lead students to less ethical outcomes. If college students’ ethical decision-making processes are different than information systems or other professionals, it limits the generalizability of these results. One obvious opportunity for future research is to perform this experiment using experienced professionals as subjects

### 6.1. Implications for Further Research

Mason’s [14] four ethical issues of the information age: privacy, accuracy, property, and accessibility, provided only a limited framework for judging decision making about ethical issues. Intellectual property issues (scenarios 2 and 4) seem to have strong links between moral obligation and behavioral intention, while accessibility and privacy issues seem to have stronger links between attitude and behavioral intention. Unfortunately, the limited number of each type of issue in this study make definitive statements impossible, and conducting further research of a wide enough variety of each type of issue would be impracticable.

Moral intensity [8] could prove to be a good explanation of differences in ethical decision-making. Unfortunately, perceived importance [20] does not in itself seem to be a good measure of this construct. The relationship between perceived importance and the strength of the link from attitude to behavioral intention is not the linear relationship that Robin et al propose, rather it appears to be U-shaped. Another aspect or aspects of the moral intensity construct may be causing this relationship. Further research should concentrate on measuring other aspects of the moral intensity construct.

Moral responsibility [9] accounts for some of differences in ethical decision-making. Unfortunately, moral obligation did not seem to be a complete measure of this construct. Further research could develop a measure of severity of consequences that, together with moral obligation, may account for more differences in the link between attitude and behavioral intention.

Finally, cognitive expenditure [21] may account for some of the differences in ethical decision-making. Unfortunately, a measure of cognitive expenditure was out of the scope of this study. As a surrogate, subjects could be asked whether they recognize a moral issue, which would indicate they have begun the ethical decision-making process. However, this may sensitize the subjects and make them more likely to engage in ethical decision-making. Further research could measure factors that influence the level of cognitive expenditure for the subjects, including moral intensity.

## 6.2. Implications for Managers

Researchers in IT ethics all suggest implementing codes of ethics and ethical training programs as a means for limiting unethical behavior, and this study is no exception. When such training can be targeted, other studies suggest focusing on personality styles and/or demographics that tend to be less ethical [11, 7, 12, 17]. However, Wyld and Jones [24] note that training efforts might need to be refocused on the decision-making process rather than ethical outcomes.

The results of this study suggest that by gauging the strength of the links for the various scenarios, managers can target policies and training based on the behavior(s) they wish to limit. First, scenario one's strong link from impact of a consequence to attitude suggests that managers that wish to limit the unauthorized modification of programs should focus on having consequences for the behavior and making employees aware of them rather than simply making policies against it. Second, the low importance of scenario three, but its relatively strong links from perceived importance to attitude and from attitude to behavioral intention suggests that if managers wish to limit the use of their equipment for personal purposes, they should focus their attention on raising the perceived importance of it. Third, scenario five was the only scenario to generally show shifts in a desirable direction after interacting with others. Perceived importance had a strong impact on attitude toward the behavior and attitude toward the behavior was a strong indicator of behavioral intention. This suggests that managers who wish to avoid leaking personally identifiable data should focus on the importance of privacy. Group discussion would also tend to convince others of the importance of privacy and increase their negative attitude toward privacy breaches

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