

**TRAINING FOR ETHICS AWARENESS IN
INFORMATION SYSTEMS TECHNOLOGY:
IMPLICATIONS FOR HUMAN RESOURCES DEVELOPMENT**

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Abstract

The purpose of this study was to measure the impact of professional ethics awareness training on the individual's perception of ethics issues. The study was framed around the neurocognitive model of the ethical decision-making process presented by Reynolds (2006). The quasi-experimental study included 94 information systems (IS) technology students enrolled in a number of colleges from across western Canada. The study found no significant effect of training on perception of ethics awareness. Moderating effects of moral identity and rule orientation, and the mediating effects of professional identity, proved to be non-significant as well. However, post-hoc analysis found significant effects between professional membership and ethics awareness, and semesters completed and ethics awareness. Implications for human resource development, in terms of training for ethics, are discussed.

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Awareness creates an opportunity for dialogue.

Susie Kennedy

Chapter 1

Introduction

An article posted on July 19, 2007 by Computerworld, an online and print based news source, revealed that a contract employee, who processed and filled orders for the Disney Movie club, sold credit card numbers and other account information on the black market (Vijayan, 2007).

A study highlighting ethics in the workplace conducted by LRN Solutions (LRN Solutions, 2007), a corporate ethics and responsibility services provider, states that 73% of Americans employed full-time report encountering ethical lapses on the job, with one in three saying they have been distracted by such an incident.

As society increasingly depends on automated systems to provide services, there are increased opportunities for internal threats to companies and their stakeholders. One third of companies' sensitive data and intellectual property exists in enterprise application databases where it can be readily shared within the organization (Swartz, 2007). In our everyday lives, of concern to the public in general is the safety and security of personal and transaction data which rely solely on information systems and security systems associated with them. System integration, electronic economic transactions including purchasing and banking, computing associated with medical practises, and identity security are just some of the issues related to risk management and ethical practises (Udas, Fuerst, & Paradice, 1996). The Royal Canadian Mounted Police (RCMP), on their Computer Crime Prevention website (Royal Canadian Mounted Police [RCMP], n.d.) note that a simple and common computer related crime involves changing data prior to, or during, input to a computer. This law enforcement agency states on its site, "Data can

be changed by anyone involved in the process of creating, recording, encoding, examining, checking and converting, or transporting computer data” (RCMP, n.d.).

It is likely that many employee groups deal with similar types of ethical issues; one in particular is information systems (IS). However, what is unique about information systems employees according to Udas et al. (1996) is the level of access to data where electronic storage media is easily reproduced, contaminated and stolen. They noted that in addition to common systems issues, IS professionals have a control role in technology development. They have a direct influence on how technology is used in the organization. It is interesting to note that there is a conflict in the attitudes between users and IS professionals. Paradice and Dejoie (1991) point out that while users assume they have total privacy regarding their computer work, computer professionals assume they have total access to anything in the system. This reveals a dichotomous perspective possibly resulting in confusion and conflict within the organization.

Verschoor (2007) stated that firms that pay attention to ethics and use training and compliance as part of their risk management initiatives benefit in a number of ways. He stated that firms are able to build customer loyalty, attract and retain superior employees, and improve investor confidence.

White and Lam (2000) argued that management has the responsibility for ethical behaviour in an organization and they should provide leadership in terms of a culture for ethical practise. They proposed that a company policy on ethical behaviour be created through consensus, and that training, using situational and incident simulations, be developed and implemented (White & Lam, 2000). Udas et al. (1996) stated that through human resources development the organization may provide its employees with

professional ethics awareness training in terms of guidelines and compliance. A code of ethics and professional conduct and its dissemination through training would provide guidelines for employee conduct and would also make a public statement about the organization's responsibility to its stakeholders (Udas et al., 1996).

The purpose of this study is to determine if professional training, guided by a code of ethics and professional conduct, will positively impact ethics awareness.

Chapter 2

Literature Review

Background

In general terms, ethics has been defined as “the study of standards of right and wrong; the part of science and philosophy dealing with moral conduct, duty and judgment” (Avis, Drysdale, Gregg, Neufeldt & Scargill, p. 405). According to Rest (1986), the point at which discussion around ethics research often begins is with the theory of moral development by Lawrence Kohlberg. Kohlberg began the development of his theory and execution of his research in the 1950s (Rest, 1986). Prior to his theory of moral development, morality was defined purely in terms of socialization, learning the norms of the culture, and conforming to them (Rest & Narvaez, 1994). Kohlberg focused on cognition where the individual determined what was right and wrong. His theory highlighted the perception of justice and fairness (Rest, 1986).

Kohlberg’s (1981) widely known method of measurement is the Moral Judgment Interview (MJI) using the Heinz dilemma. The dilemma is a story about a wife who is terminally ill, her husband who is desperate to save her, and a druggist who has a cure but is unwilling to sell it to the husband at a price the husband can afford (Kohlberg, 1981). The research participant was presented with the dilemma and asked to answer semi-structured interview questions. Based on responses to the dilemma, Kohlberg (1981) defined moral development as having three levels with two stages associated with each level as shown in Table 1. A sample response for development level 1 from Kohlberg (1981) is, “If you get caught stealing, you could give the drug back” (p. 121) and “He may not get much of a jail term if he steals the drug, but his wife will probably die before

he gets out, so it won't do him much good. If his wife dies, he shouldn't blame himself, it wasn't his fault she has cancer" (p. 121). A sample response from development level 2 is, "You'd lose other people's respect, not gain it, if you don't steal it. If you let your wife die, it would be out of fear, not out of reasoning it out" (Kohlberg, 1981, p. 122).

Table 1

Kohlberg's Model for Moral Development

Level / Stage	Description
Level 1	Pre-conventional – the individual is rule oriented
Stage 1	The individual focuses on punishment and obedience
Stage 2	The individual's focus is on satisfying his own needs and occasionally the needs of others
Level 2	Conventional – the individual maintains expectations of others, focusing on conformity, loyalty, and identifying with other people
Stage 3	The individual focuses on interpersonal concordance, being <i>good/nice</i>
Stage 4	The individual has a societal orientation, focusing on maintaining social order
Level 3	Post-conventional – the individual is autonomous and principled and makes the effort to define moral values apart from authority
Stage 5	The individual focuses on individual rights and the importance of social contracts, which must be flexible to accommodate change
Stage 6	The individual has a universal justice orientation where being right is a decision of the conscience. The <i>Golden Rule</i> is an example of this orientation. The rule states that if an action is not right for everyone, then it cannot be right for an individual

The Defining Issues Test (DIT) was later developed based on the MJI but as a multiple-choice test that could be group administered and computer scored (Rest, 1986).

Kohlberg (1981) stated that most people are at a single stage despite the dilemma with which they are faced, and that moral development is only achieved one step at a time. His longitudinal, cross-cultural study suggests that to some degree moral development can be predicted based on age, especially in children and teenagers. Through his research he found adult moral development was positively influenced by higher education, not by IQ, but by the education experience itself. His purpose for developing a model for moral development was to use it as a basis of moral education in the schools. Interestingly, he stated that he was concerned that his defined stages would be “exalted into a general theory of moral development” (Kohlberg, 1981, p. 104).

Most research related specifically to ethical decision making is based on Rest’s four-stage process model (Reynolds, 2006). This model has been foundational to the building of most other models related to ethical decision making, including the issue-contingent model (Harrington, 1997; Jones, 1991), the social-cognitive model (Lieberman, Gaunt, Gilbert & Trope, 2002), and the social-intuition model (Haidt, 2001). The goal of the four-component model, as defined by Rest (1986) is a cognitive model used to describe the thinking that must occur in order for moral behaviour to occur. The four components are:

1. The person must be able to recognize the moral dilemma, determine which actions are possible, identify who would be affected, and consider the perception of others based on possible outcomes.
2. The person makes a judgment about which action would be the most correct.

3. The person makes a decision about the action, and gives priority to doing what is morally right.
4. The person engages in the ethical behaviour.

Professional Ethics

Professional ethics is a subset of normative ethics where there is a concern for professional behaviour, judgment and choices (Iacovino, 2002). In terms of a definition for ethics related to the business environment, a literature review conducted by Lewis (1985) determined that there was no one theoretical foundation upon which to base a business ethics definition. A synthesis of existing definitions resulted in a version proposed by Lewis (1985) as “business ethics is rules, standards, codes, or principles which provide guidelines for morally right behaviour and truthfulness in specific situations” (p. 381).

Organizations can rely on codes of ethics adopted by their employees that hold membership with professional groups; medicine and law are two examples (Iacovino, 2002). In the case of recognized professional associations, only those who are members of the association are permitted to practice. The characteristics of a profession include specialized knowledge of a specific domain, formal education and training, service to society, service for public benefit, and governance by a code of ethics or standard of conduct prescribed by the professional association (Iacovino, 2002). “We use the term professional to refer to persons in a work setting with special expertise in which there is some discretion for action involving moral judgment” (Rest & Narvaez, 1994, p. xi).

Teaching for Ethics

A component of ethics awareness has been called for in the business curriculum of post-secondary education by research and industry (Baxter & Rarick, 1987; Brady & Hart, 2007; Desplaces, Melchar, Beauvais, & Bosco, 2007; Enyon, Hill, & Stevens, 1997; Lewellyn & Granger, 1996). Controversy exists around the issue of ethics training and some believe ethics cannot be taught (McKenzie & Machan, 2003). Others believe ethics can be taught but are prescriptive in terms of the content of an effective curriculum, integration of the curriculum, or the necessity of focused, stand-alone courses (Brady & Hart, 2007; Desplaces et al., 2007; Reynolds, 2006; Sims, 2002). Furthermore, there has been discussion around the impact a code of ethics and professional conduct have on the moral behaviour of professionals (Reynolds, 2006; Udas et al., 1996). In their study, Udas et al. measured the influencing power of a code of ethics on ethical behaviour and determined that there was no interaction between membership in a professional association governed by a code of ethics and a member's ethical perception. The study did not include ethics awareness training related to the code of ethics. On the other hand, Reynolds (2006) stated that ethics education must include guidelines for decision making. Finally, Udas et al. noted that public sector IS professionals felt a stronger ethical responsibility to their superiors than to their peers or groups that they served. The study did not specifically measure responsibility to the individuals' profession – only compliance with the professional code of conduct with which the participants may or may not have been familiar.

As discussed earlier, the majority of oft-cited models of ethical decision making define a four-stage linear process based on Rest's (1986) cognitive model where an

individual recognizes an ethical issue, makes a judgement, establishes intention and finally engages in behaviour related to the issue (Jones, 1991). A number of variations on the model exist where relevant variables are added to the model (Reynolds, 2006). This expansion on a single model may be limiting in developing further understanding of ethical decision making. For example, the cognitive model does not consider decisions which are made using “gut feelings” or “intuition” (Haidt, 2001). Reynolds recognized this shortcoming and proposed a theoretical model which attempted to explain how individuals think – literally.

The Neurocognitive Model

The neurocognitive model is a cross-disciplined model based on physiology, psychology, psychiatry, and linguistics. Science within these disciplines has converged to find common ground with the intent to better understand the various operations of the brain, from the simple to the most complex (Reynolds, 2006). The neurocognitive model of the ethical decision-making process “...relies upon connectionist models of neural network functioning to explain certain aspects of the ethical decision making process” (Reynolds, 2006, p. 738).

According to Reynolds (2006), the neurocognitive model of the ethical decision-making process is a two-cycle model; the X-system which is a reflexive pattern matching system, and the C-system which is a higher order conscious reasoning system.

Reynolds (2006) described the X-system as a model for how the human brain is capable of accepting a stimulus, identifying the stimulus based on stored information, and automatically processing for judgement and response. Reynolds identified this auto-processing, where the brain finds an existing pattern associated with the present stimulus,

as intuition. He referred to the patterns as prototypes; “theoretical exemplars” (Reynolds, 2006, p. 738) that are not always exact matches but allow for flexible application. The X-system provides for efficient brain processing through reflexive pattern matching where limited evaluation and cognitive attention is required. In questionable situations, it is the stored prototypes that allow individuals to recognize that the situation may be an ethical one and to act instinctively.

Where no prototype exists or when an individual’s ethical decision is challenged by an external source, such as a supervisor, the C-system is responsible for complex analysis to either create a new prototype or restructure the existing prototype. The C-system is capable of rule based analysis whereby it can receive facts, apply rules, and determine an outcome.

It is the C-system that is responsible for rationalization when an individual’s ethical behaviour is evaluated as inappropriate by the external source. The individual believes the decision was correct due to an existing prototype. The C-system logically analyzes and rationalizes the decision in terms of the exemplar prototypes. The analysis can also be a retrospective exercise which will result in restructuring of the existing prototype.

The systems’ interdependence where the C-system creates and restructures prototypes and the X-system stores the prototypes for matching purposes is critical to a brain’s efficiency because reflexive judgments provide for increased capacity available to deal with new and unfamiliar events where cognitive attention is required. For a more detailed discussion of the X-system and C-system, Reynolds refers readers to the work of Lieberman et al. (2002).

Training for ethics awareness would provide opportunities for active judgement and the creation of correct new prototypes, and would also allow for the restructuring of incorrect prototypes, all based on a code of ethics and professional conduct.

Chapter 3

Problem Statement

The construct of moral/ethics awareness was defined by Butterfield, Treviono, and Weaver (2000) as “[a] person’s recognition that his/her potential decision or action could affect the interest, welfare, or expectation of the self or others in a fashion that may conflict with one or more ethical standards” (p. 982). There appears to be a lack of consensus in the literature in terms of the effect of education for moral awareness. Reynold’s (2006) theoretical model for ethical decision-making suggests that ethics education is possible and ethical decision making can be improved when a set of overarching rules or guidelines are made available on which decisions can be based.

Purpose of Study

The purpose of this study is to determine if professional training, guided by a code of ethics and professional conduct, will positively impact ethics awareness. The study is framed by the neurocognitive model of the ethical decision-making process presented by Reynolds (2006). The study measures the moderating impact of moral identity and rule orientation on the relationship between training and the individual’s perception of ethics issues. The study is also designed to evaluate the mediating power of professional identity between training and the individual’s perception of ethics issues.

Relevance

It is commonly understood that emerging fields like the field of Information Systems (IS) do not govern its professionals through a universal code of ethics. There are associations to which individuals can align themselves through membership, but that is done on a voluntary basis (Canadian Information Processing Society [CIPS], 2005).

Regardless of the level of training, experience or concern for public interest, an individual may provide services in the field of IS without discrimination.

A review of ethics literature related to IS reveals a level of anxiety in terms of moral awareness, ethical compliance and a genuine concern for public interest (Hilton, 2000). There is an extreme level of reliance in our society on IS. It is of concern to organizations and their stakeholders that systems be developed and maintained by employees guided by a code of ethics as part of a risk management strategy.

In recognition of this emerging profession and the pervasiveness of IS in society, this study is conducted within the realm of IS involving first and second year college students, to determine the effect of professional ethics awareness training on perceptions of ethics issues. The students are all IS majors and are expected to be joining the workforce within the next two months to one year. Therefore, the students are considered to be similar to those who would be newly hired in the field of IS. A review of post-secondary IS curriculum identifies the lack of formal ethics training even though it has been identified as essential to the long-term, professional success of individuals, and relevant and necessary to the profession itself in terms of public interest (Hilton, 2000). Given the lack of ethics awareness training as part of a formal post-secondary education, this study will have implications for human resource development programs where there is a desire for ethics awareness training. The goal of the training would be to disseminate information and to enhance successful adoption of a code of ethics and professional conduct.

Two research questions are addressed by this study, where the first question is foundational to the second question.

1. *Considering the neurocognitive model for ethical decision-making, does professional ethics awareness training using the guidance of a related code of ethics and professional conduct increase an individual's perception of ethics issues?*
2. *What impact do moderating variables moral identity and rule orientation, and the mediating variable professional identity, have on professional ethics training in terms of an individual's perception of ethics issues?*

The theoretical lens through which the research is conducted is the neurocognitive model of the ethical decision-making process which reinforces the pedagogical assumption that ethics education must provide overarching rules or guidelines for decision making and that using these guidelines, ethics awareness can be taught (Reynolds, 2006).

Perception of Professional Ethics Issues

Despite the controversy over whether or not ethics training is possible, the neurocognitive model for ethics decision making indicates that ethics education is possible. Through the recognition of the role of prototypes this model describes how the brain recognizes ethical situations, learns and applies ethics rules, and how it can function in both common and novel situations. In his first proposition, Reynolds stated: "Accuracy of ethical prototypes will be positively associated with ethical behaviour" (Reynolds, 2006, p. 743). This study determines if training for the development of accurate prototypes will have an impact on an individual's ethical decision making.

H1: A positive relationship exists between participation in a professional ethics awareness training seminar and perception of professional ethics issues.

Moderating Variables

Rule orientation. Rule orientation is one of the factors which was applied in the issue contingent model of ethical decision making by Harrington (1997). The model was based on the four-stage cognitive model discussed above (Rest, 1986) and Harrington's (1997) issue-contingent model. Both incorporated rule orientation as an individual characteristic which might influence moral judgement. Rule oriented individuals require role oriented rules by which to make an ethical judgment (Harrington, 1997).

Reynolds (2006) defined the term *search* as the process of matching prototypes or applying rules accurately. His second proposition stated: "Search will be positively associated with ethical behavior" (Reynolds, 2006, p. 743). Reynolds noted that it is important that the profession's rules are seen as superior to the existing moral rules (prototypes) to encourage active rather than reflexive judgment. The effort expended in the processes of searching, matching and restructuring for correct prototypes may be related to an individual's affinity for, acceptance of, and application of rules.

Given that rule oriented individuals use role oriented rules to make ethical decisions and that professional ethics awareness training incorporates a code of ethics and professional conduct, it is expected that a higher level of rule orientation will have a greater impact on training in terms of the search for and application of appropriate rules.

H2: An individual's rule orientation moderates the relationship between professional ethics awareness training and perception of professional ethics

issues such that a stronger rule orientation positively impacts an individual's perception of professional ethics issues.

Moral identity. In a later study, Reynolds and Ceranic (2007), empirically examined the effects of moral identity on moral behaviour. Moral identity was described by Reynolds and Ceranic as, “the extent [to which] an individual adopts and/or aspires to moral traits” (p.1611). The study used Aquino and Reid’s (2002) measure for moral identity and determined that moral identity directly influenced moral behaviour. Similarly, this study has adopted Reynolds and Ceranic’s (2007) additional factor of moral identity as it relates to the neurocognitive model. It is expected that an individual with a high moral identity will have an affinity for training related to ethics awareness, and will assimilate the material more readily than an individual with low moral identity. Therefore, it is expected that a strong moral identity will positively impact the effects of training on ethics awareness.

H3: An individual's moral identity moderates the relationship between professional ethics awareness training and perception of professional ethics issues such that a stronger moral identity positively impacts an individual's perception of professional ethics issues.

Mediating Variable: Professional Identity

Hogg and Terry (2000) described how many people align themselves more closely with their profession than with other identities such as ethnicity, race or nationality. This social identity and categorization of self, where one assimilates into the ingroup prototype, causes self-perception and behaviour to align with the relevant ingroup prototypes. These prototypes would include factors such as shared norms and consensus

about collective behaviour. The prototypes “embody all attributes that characterize groups and distinguish them from other groups, including beliefs, attitudes, feelings, and behaviours” (Hogg & Terry, 2000, p. 123). Professional identity, a construct included by Johnson, Morgeson, Ilgen, Meyer, and Lloyd (2006) in their study of multiple professional identities, was based on Mael and Ashforth’s (1992) social identity which they described as, “...salient group classifications ... the perception of belongingness to a group classification” (p. 104).

When members of the same group are exposed to similar information (structuring information), their prototypes will be shared; manipulation of the ingroup social context can be a powerful way to incite change (Hogg & Terry, 2000). Reynold’s third proposition stated: “The ability to structure information to match multiple prototypes will be positively associated with ethical behaviour” (Reynolds, 2006, p. 743). The term *structure* was defined as the process whereby information was used to create or arrange patterns (Reynolds, 2006). Training in professional ethics awareness provides opportunities to build discipline appropriate, intuitive judgments, and exposes individuals to the accepted professional standards when active, deliberate judgment is required.

This study determines if an ethics training program highlighting professionalism, including professional ethics, has an effect on an individual’s professional identity; their social ingroup identity as part of the profession. In addition, it is expected that an individual’s professional identity impacts the degree to which effort is made to align oneself with the profession and apply the profession’s rules accurately.

H4: The relationship between professional ethics awareness training and an individual's perception of professional ethics issues is mediated by professional identity.

The research model is shown in Figure 1.

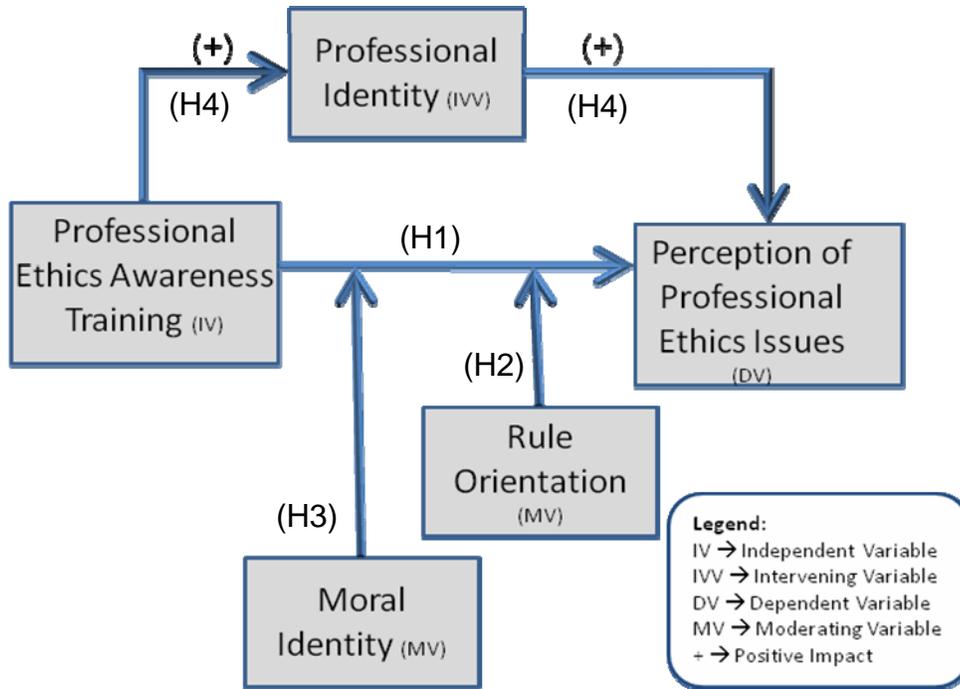


Figure 1. Research model – Effect of professional ethics awareness training on perception of professional ethics issues; moderated by moral identity and rule orientation; mediated by professional identity

Chapter 4

Methods

Research Setting, Participants and Procedures

Students enrolled in computer information systems type diploma programs in five post-secondary institutions in western Canada participated in the study. Program titles were variations of Computer Systems, Computer Systems Technology, or Computer Information Systems. To be included in this study, the institution was required to be a Canadian Information Processing Society (CIPS) Accredited Diploma program to ensure alignment with the CIPS code of ethics (see Appendix A). At each location, students were invited by their program chair via email to a one-and-a-half hour seminar on professionalism and ethics in information systems based on the *Canadian Information Processing Society's Code of Ethics and Professional Conduct*. The seminars took place over a two week period, with one institution offering two sessions (individuals attended one or the other) and the remaining institutions hosting just one session.

In four out of five institutions, the program chair arranged for the researcher to present during designated class time resulting in a 100% participation rate. In the other institution, the chair invited specific classes to attend the seminar outside of regular class time. In this case there was a 92% participation rate. In all, 116 students attended the seminars and were advised that completion of the survey was voluntary. A total of 95 participants (82%) elected to complete the survey in its entirety with 33 surveys completed at one location and 13 to 19 surveys completed at each of the remaining locations; 94 surveys were used in the analysis (see Chapter 5: Results, Background). Respondent ages ranged from 18 to 44 years with the average age of 23.3 ($SD = 6.4$)

years; the median value for age was 21. The average respondent had completed 2.4 semesters ($SD = 1.3$) or about half of their current program and had worked full-time for 3.8 ($SD = 4.4$) years. The median value for previous full-time work was 2.0 years. Women made up 15 % of the respondent group which is representative of the female population in computer related post-secondary programs in North America (ITAA, 2005). In terms of exposure to professionalism and ethics, 10% identified themselves as holding a professional membership in an association and 7.4% responded that they had participated in ethics training in the past.

This study was designed to examine the differences in the perception of professional ethics issues between two groups, a comparison group ($n = 47$) which responded to statements about ethics in IS prior to a training session in professionalism and ethics, and a treatment group ($n = 47$) which responded to the same statements after the training session. The responses to statements about ethics in IS became the dependent variable, ethics awareness, in the study.

All participants were provided with a letter to introduce the study, and to provide consent, confidentiality, and contact information (see Appendix B). Participants were randomly assigned to the treatment and control conditions; individuals received one of two forms of the survey where alternating forms of the survey were distributed along each row of seats. Participants were asked to complete the first part of the survey that they received at the beginning of the session. The comparison group received a version of the questionnaire which included the measures related to moral identity, rule orientation, professional identity and perception of ethics issues (before training). The treatment group received a version of the questionnaire which included measures related

to moral identity, rule orientation, and professional identity (see Figure 2). To balance the length of the survey, the experimental group responded to additional questions on the first part of the survey and the comparison group responded to these same questions on the second part of the survey. These additional questions related to risk aversion.

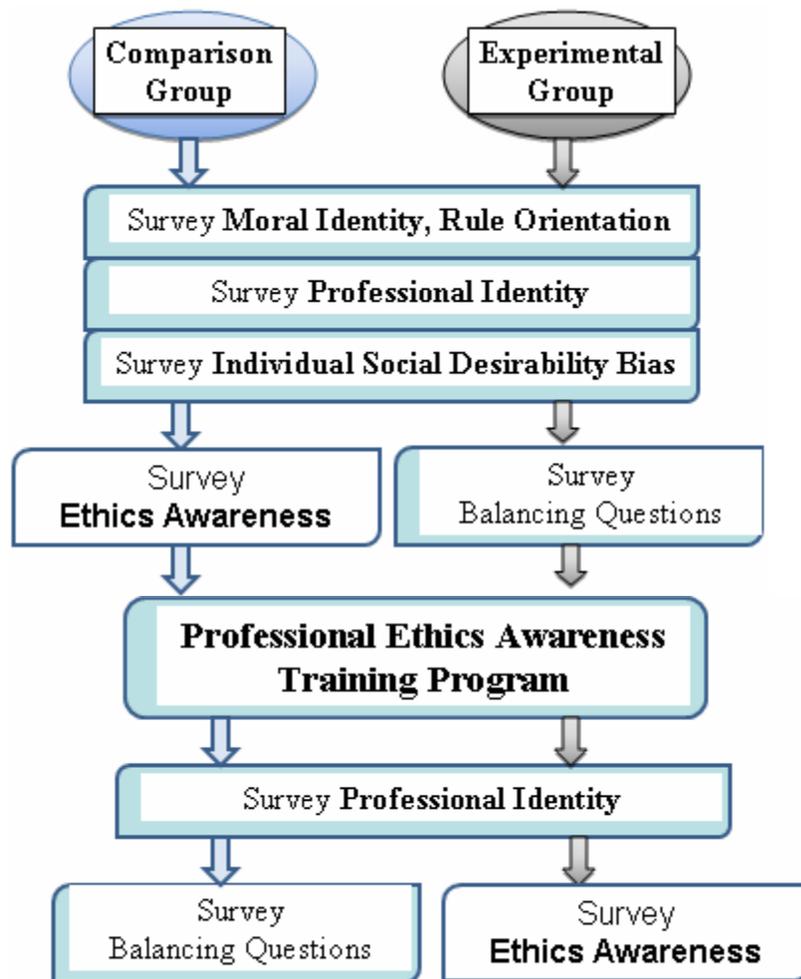


Figure 2. Training session outline – Collection of data and application of training

The procedures appeared to be the same to the participants though they were actually responding to different forms of the same questionnaire. The respondents were advised to put the completed part of the survey into the envelope and to leave the envelope,

unsealed, on their desks. All of the students in attendance participated in the training session. After the training session, the second part of the survey was distributed. The comparison group responded to the risk aversion statements as well as a repeat set of the professional identity statements. The treatment group responded to the perception of ethics issues (after training) as well as a repeat set of the professional identity statements. Each respondent completed the second half of the survey and inserted it into the envelope with the first part. The respondents were advised to seal the envelope and put it on a table as they left the presentation room.

The training consisted of a focus on ethics awareness using the CIPS Code of Ethics and Professional Conduct (see Appendix A). The curriculum had been developed and used in the previous eight years at one of the institutions that participated in the study. (Individual participants at that particular institution had not participated in the training at any time prior to this study.) The current author, with 20 years of teaching experience and a professional designation (Information Systems Professional) from CIPS, presented at each of the locations to ensure consistency in delivery of the content.

As indicated earlier, those who believe that ethics can be taught are generally prescriptive in terms of the design and content of an effective curriculum. Reynolds (2006) recommended a number of important factors in terms of effective training in light of the neurocognitive model of the ethical decision-making process. The training must provide a set of overarching rules to guide the participant's decision making and those rules must be seen as superior to existing rules held by the individual. The training program provided a printed copy of the CIPS Code of Ethics and Professional Conduct and the five principles were reviewed. The definition of professionalism and the

standards required of a professional were discussed. Reynolds (2006) also stated that it is important that the content and delivery method should vary according to which cycle is being used. A selection of seven vignettes from Lorents, Maris, Morgan, and Neal (2006) were integrated into the training session to illustrate situations involving IS where the actors' behaviour was unethical. This method provided for reflexive pattern matching and positive reinforcement where the participants' responses matched the ethical principles associated with CIPS; reflexive pattern matching, negative feedback and pattern restructuring where responses did not match the ethical principles associated with CIPS; and cognitive reasoning and new pattern creation where unfamiliar situations were presented and participants were unsure of an appropriate response. Again, to ensure use of higher order conscious reasoning skills, the participants were referred often to the principles provided by CIPS. Discussion around the principles and the application of the principles through vignettes provided stimulating activities to allow restructuring and forming of prototypes. An outline for the seminar has been placed in Appendix C.

Measures

The measures were distributed as a pencil and paper survey. Items relating to themes (measures) were interspersed to reduce response bias, except the vignettes which were included at the end of each section of each form and placed one after the other.

Dependent Variable: Perception of Ethics Issues

The Defining Issues Test (DIT) is an instrument that uses multiple-choice questions to measure individual differences in terms of attitudes toward unethical behaviours (Ishida, 2006). The instrument has made a significant contribution to the broad ethics literature because of its ease of administration (Ishida, 2006). "By far, for over 20 years,

the DIT has been the most widely used instrument for measuring CMD [cognitive moral development]” (Ishida, 2006, p. 65). The specific DIT used in this study was taken from Woodward, Davis, and Hodis (2007) because it was developed specifically for measuring ethics awareness in the field of IS. The scenarios were specific to the discipline and referred to situations which were timely issues. Twenty-three short statements, related to ethics issues in the IS profession, were evaluated using a five-point Likert-type scale ranging from very ethical to very unethical. Two examples are as follows:

A manager tells a programmer working for him to write a program that he knows will generate inaccurate information for the company’s external auditors.

A maintenance programmer for a loan company finds an error in a program computing interest. She estimates that 25-50 cents is added to each bill per month. She is very busy and decides not to report the error to management since it is such a small amount.

The original questionnaire contained 24 scenarios; one scenario was dropped for the purposes of this study because it was determined to describe a situation where it could be argued that there was an infringement on an employee’s right to privacy in the Canadian workplace. Woodward et al. (2007) used a five item Likert-type scale but the centre value was identified as “3=Questionable” possibly resulting in a statistical imbalance favouring the Unethical side of the scale. The scale was rewritten for the purposes of this study. The scale asked respondents to judge the behaviour of the actor in each of the 23 scenarios using values ranging from Very Ethical (1) to Very Unethical (5) with Neutral

(3) being the centre value. These items had a high alpha level ($\alpha = .85$). Responses to these items were recorded and averaged into an overall perception-of-ethics score out of five for each individual, where a high score indicated high ethics awareness.

Moderating Variables

Rule orientation. Rule orientation was included in the research design as a moderating variable and was measured using Kelman and Hamilton's (1989) ten item questionnaire. The authors stated that those who are rule oriented would be most likely to make unethical judgments in the face of a lack of consensus around an issue. Alternatively, it can be stated that given a professional code of ethics, those who are rule oriented are likely to make ethical judgments based on the code. A sample item is,

If you have doubts about an official order, the best thing is to do what is required of you, so you will stay out of trouble.

The response scale for this and all other measures (except the perception of ethics issues, above) was a five-item Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale had an alpha coefficient of .58. It was determined that by dropping one of the 10 questions, the score increased to .63; this was done while recognizing that the specific item may have reflected correct statistical differences (Nunnally & Bernstein, 1994). Finally, only nine of the ten responses were used in the analysis. Scores were the average of items for each individual where higher scores indicated stronger rule orientation

Moral identity. The construct of moral identity was included in the research design as a second moderating variable and measured using Reed, Aquino and Levy's (2007) ten

item measure. The measure lists a number of characteristics and then asks the respondent to think of someone who has those traits. The measure prompts the respondent first by asking this question because a person's moral identity is presumed to have a social referent (Aquino & Reed, 2002). A social referent is an individual or group with whom one identifies, often in terms of gender, race, or workgroup (Reed et al., 2007). Getting the respondent to think about a social referent primes the individual to consider, uppermost in their mind, their own identity. The traits listed are, "Caring, Compassionate, Fair, Friendly, Generous, Helpful, Hardworking, Honest, and Kind" (p. 191). A sample item is,

Being someone who has these characteristics is an important part of who I am.

The response scale for this was also a five-item Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale had an alpha coefficient of .82. Scores were the average of items for each individual where higher scores indicated stronger or more developed moral identity.

Mediating Variable: Professional Identity

Professional identity was included in the design as a mediating variable between training and perception of ethics issues. It was measured using Mael and Ashforth's (1992) six item measure for organizational identification. The survey wording was adjusted to measure professional identity as opposed to organization identity, as suggested by the authors. A sample item is,

When someone praises the technology industry, it feels like a personal compliment.

(It should be noted that the items were placed in the first half of the survey and repeated in the second half of the survey. The intent was to evaluate whether professional identity changed as a result of the training.) The response scale for this measure was also a five-item Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores were the average of items for each individual both before and after training, where higher scores indicated a stronger or more developed professional identity. This scale had an alpha coefficient of .77 (before training) and .83 (after training).

Control Variables

Social desirability bias, demographic information and background characteristics were measured as controls.

Because ethics may be seen as intimately personal and a reflection of an individual's values, the survey measured participants' level of social desirability, where "higher numbers on this variable reflect a stronger propensity to respond with a socially desirable answer" (Reed et al., 2007, p. 188). Thompson and Phua (2005) reported that approximately 65% of articles published in the *Academy of Management Journal* between 1996-2000 used self-report methodologies, which often fail to account for socially desirable responding (where respondents attempt to respond in a favourable manner). This ten-item measure (Crowne & Marlowe, 1964) was included as part of the survey to control for social desirability and the impact it might have on an individual's responses to questions about their perception of ethics issues. A sample item is,

*You have never been annoyed when people express ideas
very different from your own.*

The response scale for this was also a five-item Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). These items had an alpha coefficient of .64. Scores were the average of items for each individual where higher scores indicated socially desirable responding.

The survey was designed to collect seven types of demographic and background information including age reported in years, gender, current professional association membership (yes/no), previous training in ethics awareness (yes/no), number of semesters completed in current program, number of years of full-time work, and ethnicity. Due to the restrictions imposed by one of the locations, the question related to ethnicity was removed.

Kohlberg's (1981) theory of moral development described stages of development as somewhat related to an individual's age. For this reason, age was collected as a control factor.

It was expected that females would account for a small percentage of respondents because fewer women are enrolling in IS programs and the Information Technology Association of America (2005) noted that the number of women in IT dropped 21% between 1996 and 2005. While Paradice and Dejoie (1991) state that there is no evidence of gender bias in the DIT, Stanga and Turpen (1991) found in their empirical study of ethical judgments in accounting, females tend to respond more ethically. Because there is evidence of conflicting results in previous studies, gender data was collected for this study.

Iacovino (2002) suggested that a group with a common interest, such as a professional group, can make unethical behaviour less attractive to its members through

professional codes. It was anticipated that some individuals might already belong to a professional association and abide by its professional code. Since this membership might affect the individual's perception of ethics issues, membership data were collected (yes/no). It was expected that previous training in ethics might also affect an individual's perception of ethics issues and so data was collected in terms of previous training (yes/no).

Paradice and Dejoie (1991) stated that a person's formal education is highly associated with moral judgment. An adult's score is comparable to the score of a student enrolled at the adult's highest level of education. Another study by Pearson, Crosby, and Shim (1996) suggests that years of work experience correlates to an increased level of moral judgment. Therefore, respondents were asked to report the number of semesters completed in the current program and the number of years of full-time work for this study.

Filler Measure

Questions related to risk-avoidance (Goldberg, 1999) were included to balance the length of the survey so that respondents were spending about the same amount of time completing the survey; otherwise, respondents completing the longer part of the survey may have felt pressured to complete the survey quickly if others appeared to have finished. This measure was not used in the analysis.

Chapter 5

Results

Overview

Of the 116 students who attended the seminars, 95 completed the survey. The majority of uncompleted surveys came from one institution because of classroom time constraints. Otherwise, there were no cases of missing data; initial data analysis was based on a sample of 95 respondents. One of the surveys was removed because the ethics perception score was an extreme outlier. Final analysis was made on a sample of 94 respondents including 79 males and 15 females (see Table 2).

Table 2

Distribution of Respondents by Location and Gender

Location	<i>n</i>	male (0)	female (1)
1	33	26	7
2	19	18	1
3	16	14	2
4	13	11	2
5	13	10	3

Data Preparation

Hypotheses were tested using regression analysis. The assumptions required for regression analysis were applied against the data to ensure an appropriate fit.

Normal distribution. Normal distribution existed for each of the measures used in the analysis.

Variables measured for error. Measures were tested for reliability using Cronbach's alpha; scores ranged from .63 to .85.

Errors. A test for collinearity was applied to the data using the Levene test for equality of error variance. Means centring was applied to the continuous variables used in the analysis except, the dependent variable, *ethics perception*. Aikens and West (1991) state that there is no advantage to centring the dependent variable. In addition, the dichotomous value which represented if the respondent had completed the ethics awareness measure before training/treatment (0) or after training/treatment (1) was also centred. The purpose for centring variables that will be used to analyze interactions in regression is that it reduces the likelihood of multicollinearity (Cohen, 1978; Neter, Westerman, & Kutner, 1989). Indices of collinearity were all above .10, indicating no problems with collinearity in the centred variables (Neter et al., 1989).

An analysis of variance confirmed there was no significant ($p < .05$) difference between the five institutions in terms of the four measures: ethics awareness, rule orientation, moral identity or professional identity.

Descriptive Statistics and Correlations

Table 3 shows descriptive statistics, reliability scores, and correlations for the study variables. Relating to Hypothesis 3, moral identity was positively correlated with ethics attitude ($p < .05$). In addition, the following control variables correlated with ethics attitude ($p < .05$); professional membership, previous ethics training, and social desirability. The control variable, semesters completed, correlated significantly with ethics attitude ($p < .01$).

Hypotheses Testing

Tests of the hypotheses were performed using regression analysis. Regression results are shown in Table 4. The regression analysis included the control variables professional

membership, previous ethics training, and number of semesters completed (step 1). Remaining control measures that were included in the survey were excluded from the model because independent t-tests showed no significant impact ($p < .05$) between those variables and the dependent variable, ethics awareness. Moderating variables, rule orientation, and moral identity followed in the model (step 2). Training was also included as a value in step 2. The final step in the model (step 3) included interaction of rule orientation and training, and moral identity and training. Table 4 shows the model and the results of the regression analysis.

Table 3

Descriptive Statistics, Reliability Scores, and Correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender (M/F)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2. Professional membership (y/n)	--	--	0.04	--	--	--	--	--	--	--	--	--	--	--
3. Previous ethics training (y/n)	--	--	-0.01	-0.10	--	--	--	--	--	--	--	--	--	--
4. Age (years)	21.00 †	--	-0.11	0.06	0.24 *	--	--	--	--	--	--	--	--	--
5. Semesters completed	2.34	1.30	0.00	0.04	0.18	0.33 **	--	--	--	--	--	--	--	--
6. Previous full time work (years)	2.00 †	--	0.02	0.01	0.29 **	0.81 **	0.20	--	--	--	--	--	--	--
7. Social Desirability	3.01	0.49	0.15	0.01	0.07	0.09	0.18	0.10	(.64)	--	--	--	--	--
8. Professional identity	3.19	0.64	0.11	0.00	0.19	0.00	0.13	0.06	-0.01	(.83)	--	--	--	--
9. Rule orientation	2.86	0.54	-0.02	-0.10	0.05	0.07	0.09	-0.04	-0.01	0.13	(.63)	--	--	--
10. Moral identity	3.74	0.53	0.24 *	0.12	0.08	0.08	0.24 *	0.08	0.35 **	0.28 **	0.12	(.82)	--	--
11. Training condition (0/1)	--	--	0.03	0.03	0.12	0.07	-0.17	0.16	0.00	-0.13	-0.07	0.00	--	--
12. Ethics awareness	3.95	0.40	0.18	0.26 *	0.21 *	0.16	0.29 **	0.23 *	0.26 *	0.09	-0.13	0.24 *	0.09	(.85)

Note. $n = 95$. Internal consistency reliabilities are given in parentheses along the diagonal.

* $p < .05$; ** $p < .01$

† median value stated

Table 4

Results of Multiple Regression Analysis

Variables:	Step 1	Step 2	Step 3
Professional membership (y/n)	0.35 **	0.29 *	0.30 *
Previous ethics training (y/n)	0.30 *	0.28	0.27
Semesters completed	0.08 *	0.07 *	0.08 *
Rule orientation		-0.11	-0.12
Moral identity		0.12	0.11
Training		0.05	0.05
Rule orientation X Training			-0.15
Moral identity X Training			-0.02
<i>F</i>	6.71	4.36	3.39
ΔR^2	0.18 **	0.05	0.01
Total R^2	0.18	0.23	0.24

Note. $n = 94$. Tabled values are unstandardized regression weights.

* $p < .05$; ** $p < .01$

When the three control factors were combined in step 1 of the regression hierarchy, previous ethics training and semesters completed were significant in terms of ethics awareness ($p < .05$). Professional membership was also significant ($p < .01$). In step 2 and step 3, professional membership and semesters-completed continued to show significance ($p < .05$). No other variables indicated significant effects at the $p < .05$ level in the hierarchical model. Analyses were also run with the dependent variable scores calculated as a sum rather than the mean; there were no differences in the results.

The change in R^2 indicates that the control variables listed in step 1 accounted for 18% of the variance, in terms of ethics awareness. The moderating variables added in step 2, accounted for an additional 5% in the variance. Finally, step 3 indicates an

additional 1% of the variance accounted for by the interaction of the moderating variables and training, on the construct ethics awareness.

Hypothesis 1 proposed that a positive relationship would exist between participation in a professional ethics awareness training seminar and perception of professional ethics issues. A *t*-test produced no significant difference between the mean average score of ethics awareness before training and after training ($p < .05$). Therefore, H1 was not supported.

Hypothesis 2 proposed that an individual's rule orientation would moderate the relationship between professional ethics awareness training and perception of professional ethics issues such that a stronger rule orientation would positively impact an individual's perception of professional ethics issues. As Table 3 indicates, the regression analysis produced no significant moderating effect of rule orientation on the relationship between training and perception of ethics issues ($p < .05$). It is concluded that H2 was not supported.

Hypothesis 3 proposed that an individual's moral identity would moderate the relationship between professional ethics awareness training and perception of professional ethics issues such that a stronger moral identity would positively impact an individual's perception of professional ethics issues. While Table 2 shows a significant correlation between moral identity and ethics awareness ($p < .05$), a regression analysis showed a non-significant effect when the control variables were applied in the regression model. Therefore, H3 was not supported.

Hypothesis 4 proposed that the relationship between professional ethics awareness training and an individual's perception of professional ethics issues would be mediated

by professional identity. Baron and Kenny (1986) stated that a condition for mediation is that the independent variable must have a direct effect on the dependent variable. If there is no main effect, there can be no mediation effect on the relationship. Testing H1 confirmed no significant difference between ethics awareness before training and after training. Therefore a mediation test was not completed. Variables, professional identity before training and professional identity after training, were included in step 2 of the regression analysis as part of a post-hoc analysis. These variables were assessed for moderating effects, however, results were non-significant. It is concluded that H4 was not supported.

The model shows that the most significant impact on ethics awareness, considering the variables that were included, are the control variables professional membership and semesters completed.

Chapter 6

Discussion

This study hypothesized that training for professionalism and ethics would positively impact an individual's ethics awareness. This hypothesis was framed by the neurocognitive model for ethical decision making proposed by Reynolds (2006). It was also hypothesized that rule orientation and moral identity would moderate the relationship between training and ethics awareness. Finally, it was hypothesized that professional identity would mediate the relationship.

Summary

While it was determined that the research model and/or the treatment in this particular study did not produce significant development in ethics awareness, a number of issues can be addressed as a result of the study. It should be noted that the mean score for ethics awareness in this study was relatively high at 3.95 out of a possible 5. Also, the data did support significant effects of several control variables including professional membership ($\beta = .30; p < .05$), and the number of semesters completed ($\beta = .08; p < .05$), on ethics awareness. In total, the model with control variables accounted for 24% of the variance.

Rest's (1986) cognitive model attempts to describe what an individual is thinking when faced with an ethical dilemma. This focus on the cognitive element has been criticized by Reynolds (2006) because it fails to consider critical decision making which is accomplished based on "instincts, intuition, and reflection" (p. 73). The neurocognitive model for ethical decision making (Reynolds, 2006) focuses on how the brain receives information, processes it and acts upon the stimuli; how the individual thinks. This theory attempts to explain the intuitive processes as well as the deliberate

thinking, which are both key to the neurocognitive model for ethical decision making. Reynolds (2006) defended this reductionistic view because it recognizes the importance of reflexive decision making and makes the important distinction between intuition-based responses and active-judgement-based responses. In addition, this model recognizes one additional stage of ethical decision making referred to as the retrospective process. Reynolds defined this stage as being critical for repeated social interaction. It is a process of post-hoc analysis where prototypes may be restructured after a time of reflection on the experience.

Training for ethics awareness. The lack of support for hypothesis 1 in this study may be explained in part by the lack of time for reflective processing. The respondents participated in the training seminar and then immediately completed the ethics awareness questionnaire. Therefore, respondents may have primarily relied on reflexive pattern matching, based on existing prototypes or patterns. This suggests that a training program for ethics awareness, which is offered in one sitting, may not have a significant effect.

Prototypes are central to the neurocognitive model for ethical decision making, where prototypes exist as a result of experience and socialization. These prototypes can be deeply engrained and well defined, but may also be flexible in their application. Because of the number of possible types of dilemmas, the systems responsible for the search process are able to find patterns which closely match the stimuli instead of requiring an exact match such as a repeat experience.

Given the role of socialization in the development of prototypes, responses to an ethical dilemma may be greatly impacted by the ingroup with which the individual defines himself or herself. Reynold's (2006) model for ethical decision making suggests

that active judgement, the deliberate consideration of a given stimulus, is quite uncommon, and most individuals rely on intuition in response to a stimulus. In his explanations for unethical behaviour, Reynolds states that such behaviour may emerge if the individual “holds prototypes that incorrectly specify broader opinions on the moral appropriateness” (p. 742) or holds socially sanctioned rules. Thus, responses to the ethical dilemmas presented in the vignettes in this study may not have been judged as unethical because the ingroup to which the sample belonged (85% male, median age = 22 years, completed one-half of an IS program) may hold prevailing prototypes that judge the behaviour as more acceptable. The majority of the respondents have had use of e-mail since they were children, unrestricted in any legal terms. Consideration should be given to the fast-emerging technologies which are released before society, government and law-makers can respond with statements about ethical, appropriate, and lawful or unlawful use. On June 11, 2008, the Canadian government proposed a copyright law amendment that calls for a \$500 fine for copying music onto a device if it was not purchased initially by the individual making the copy (Sakuma, n.d.). The proposal also calls for a \$20,000 fine for making available or copying music from the internet, commonly referred to using the benign term, file-sharing. However, one of the first file-sharing sites on the internet was Napster and it went online in June 1999 (Ante, 2000), when many of this survey’s respondents were just 12 years old. Those who have practiced file-sharing have not been restricted and therefore would have accepted the practice as a norm within their social group. Reynolds (2006) stated that unless there is a reason or an opportunity for the higher-order reasoning cycle to be challenged, the similar responses and behaviour will

continue. This issue must be given some consideration during the development phase of a training program for ethics awareness.

The structure cycle of the neurocognitive model is the process that arranges information into patterns for recognition in the reflexive pattern matching cycle. Individuals need to develop skills in structuring these prototypes (Reynolds, 2006). Such skills would allow effective and flexible pattern matching for ethical behaviour. This would suggest that repeated, cognitive, active-judgment may increase an individual's ability to structure prototypes and make more appropriate matches in the reflexive cycle.

Many early studies measured ethics awareness using the DIT but did not incorporate more sophisticated models including other factors that could account for the results. However, these early studies did provide a baseline for future research. This study incorporated three factors believed to moderate and mediate the relationship between training and ethics awareness. In addition, a number of control variables were included to determine and control for their effect on the outcome.

Rule orientation. In the current study, rule orientation showed no significant impact on ethics awareness. Harrington (1997) measured for the construct rule orientation in her research model which studied moral judgement and moral intent. Regression analysis in that study showed that in the first step of the model, rule orientation had a significant impact on moral judgement ($p < .01$), but that the effect became non-significant when other factors were included in the model. Harrington suggested that where there is weak social consensus, subjects tend to go along with unethical moral judgment. Future research may show that an ongoing training program which is modelled to include

recurrent training sessions, may be effective in helping to form a social consensus around professional moral issues within the organization.

It should be noted that while Kelman and Hamilton (1989), developers of the rule orientation scale, reported the 10-item scale to have a Cronbach's alpha of .79, Hamilton (1997) reported a score of .67, and this study (9 items) scored just .63 for reliability.

Moral identity. Moral identity was found to have a non-significant impact on ethics awareness in the current study, which used vignettes to collect responses related to the perception of ethics issues. Reynolds and Ceranic (2007) measured for the construct moral identity as part of their study of moral identity and moral judgement on moral behaviour. Moral identity was found to have a significant impact on (self-reported) moral behaviour ($p < .01$) but non-significant effects on vignette responses/judgement. The researchers suggested that the vignettes used in their study involved issues not high in social consensus, whereas the moral behaviour scale was considered to include issues where there might be greater moral consensus (Reynolds & Ceranic, 2007). Reynolds and Ceranic stated that moral identity is only effective where there is social consensus around the issue. "The tone of previous work has implied that moral identity is 'good' in that it is associated with and motivates individuals toward socially desirable outcomes. The findings here demonstrate that this motivational force needs direction and ... proper guidance" (Reynolds & Ceranic, 2007, p. 1622). The vignettes within the current study varied by themes that were defined 'unethical' by the authors (Woodward et al., 2007). Themes included internet file sharing, spamming, internet surfing on the job, and using corporate resources for personal use or volunteer work. In addition, the participants in this study may or may not have developed a consensus around issues of appropriate

computer use and training did not produce significant development in ethics awareness. However, the regression analysis in this study showed an impact of semesters completed on ethics awareness, which suggests that a subculture with norms around computer use may develop as part of the education process. Society in general has yet to form consistent expectations around many of these issues and activities and therefore, organizations may want to incorporate standards of conduct around the issues of computer use.

The vignettes were originally developed by Harris (2000) using five categories which were: accessing data, changing data, software use, programming, and illegal use of hardware. The Woodward et al. (2007) measure contained four more items than the Harris measure. These items were labeled for the purposes of post-hoc analysis as additional categories, music, and corporate theft, resulting in seven categories.

In terms of the hypotheses, regression analyses were used to determine the impact of training, rule orientation, and moral identity on ethics awareness for each category of vignette. Control variables professional membership, previous ethics training, and semesters completed were included. In addition, gender was included as a control variable as it showed an impact in the category music ($p < .05$) and corporate theft ($p < .05$).

The results of the regression analysis (step 3) for the category software showed that, related to hypothesis 1, training had a significant impact on ethics awareness ($\beta = .40$; $p < .01$). The analysis also showed that moral identity had a significant impact on ethics awareness ($\beta = .34$; $p < .05$). Reliability for the measure was low ($\alpha = .66$).

Another finding related to hypothesis 2 and the music category. Analysis showed a significant impact of the interaction between rule orientation and training ($\beta = -.57$; $p < .05$). However, the reliability was very low for this measure ($\alpha = .48$).

Each of the seven categories scored low reliability with Cronbach's alpha ranging from .48 to .66. Further research around the development of appropriate and reliable measures in terms of IS categories would prove useful in pursuing study in the area of IS and ethics awareness.

Professional identity. This study used training to expose individuals to professional association membership and related ethics and standards of conduct. Training was hypothesized to lead to increased professional identity (H4). A *t*-test confirmed a non-significant difference between professional identity before training and professional identity after training. In addition, a post-hoc analysis showed no impact of professional identity as a moderator between training and ethics awareness.

Kohlberg (1981) stated that socialization plays a role in the moral development of the individual. Professional identity is a form of socialization whereby the self is defined by group membership and produces group-conforming behaviour (Hogg & Terry, 2000). Iacovino (2002) suggested that membership in a professional organization may dissuade individuals from participating in unethical behaviour. A study, by Udas et al. (1996), found non-significant effects in terms of professional membership and perception of ethics issues.

The lack of effect that training had on ethics awareness in this study may be attributed to the enduring qualities of in-group membership, and the timeframe required for socialization and the internalization of new norms to effect change. An additional

concern in this study is the timeframe in which the same measure was administered. Participants responded to the same professional identity measure before training and after training which may have introduced a repeated measure bias (Cooper & Schindler, 2006).

Control variables. It is interesting to note that in this study, existing or current professional membership, which was measured as a control variable, did have a significant impact ($p < .05$) on ethics awareness. This suggests that socialization for professional identity happens over time as described by Kohlberg (1981). The survey did not specify membership in any specific association (did not require that membership be in an IS related association); however, it is evident that those who hold membership in a professional organization take the codes seriously. This finding suggests support for the efficacy of a code of ethics.

In terms of level of education, this study found a significant difference between participants' ethics awareness based on the number of semesters completed in their current program. These results confirm a study by Calluzza and Cante (2004), which measured ethics awareness in students, and found a significant difference between undergraduate and graduate responses, such that those with more education were more sensitive to the ethical dilemma.

It should be noted that in this study there was a correlation between previous ethics training and ethics awareness ($r = .21$; $p < .05$). Table 4 shows a significant impact of previous ethics training on ethics awareness ($p < .01$) in step 1 of the regression model, though it did not maintain its significance in step 2. This may suggest that an organization's culturally supported, ethics awareness training or mentoring sessions,

repeated over time, requiring active-judgement for the correction of existing prototypes and the organization of new prototypes, may impact ethics awareness.

Contributions to Management Theory and Research

This research study contributes to the management literature by replicating previous studies, but also by incorporating theory and by examining the constructs of moral identity and rule orientation in the context of ethics awareness. Also, while most previous studies have used participants from a single institution, this study included participants from five separate institutions. This wider, cross-institutional scope adds both depth and contrast to this investigation.

Ethics awareness has often been recommended for inclusion in post-secondary programs (Baxter & Rarick, 1987; Brady & Hart, 2007; Desplaces et al., 2007; Enyon et al., 1997; Lewellyn & Granger, 1996). Paradice (1990) was one of the earliest to measure ethics awareness in IS subjects. His study found significant differences between undergraduate business students in the IS major and students in other business majors. A further study by Paradice and Dejoie (1991) found that the IS student's decision making processes were more socially oriented than other business students. Howard, Davis, and Hodis (2007) examined the *level of ethical reasoning* of undergraduate IS students, but did not consider the effects of education in the model. However, the authors did call for ethical training for increasing student awareness for discipline specific dilemmas. By so doing, the current study broadens this research area such that the focus is not on the individual alone, but on the effects of training on the individual, considering other factors as well.

Limitations and Directions for Future Research

A number of both self-imposed and externally-imposed limitations on the current study should be noted to help guide future research.

All participating institutions were required to be CIPS accredited diploma programs. This allowed CIPS to be used as an example of a professional association and the CIPS code of ethics and professional conduct used in the training session as appropriate professional standards. However, other related professional associations were acknowledged.

Due to the expense related to travelling to administer treatment and collect data, the number of institutions was limited to five, and the geographical location was limited to western Canada. On the positive side, many previous studies have used participants from just one institution, which may suggest that results from this study may be more generalizable.

Rest and Narvaez (1994) suggest that the DIT is non-significantly correlated with personality trait measures, but may be moderately correlated with cognitive measures, given the cognitive nature of moral judgment. Therefore, it may have been useful to include more constructs related to cognitive ability, especially in light of the neurocognitive model of the ethical decision-making process. Some suggestions are aptitude and IQ (Rest & Narvaez, 1994).

Externally imposed limitations were primarily related to time constraints. The organizations were unwilling to host a three-hour session; therefore, the session was reduced to one-and-a-half hours. In some of the larger sessions, more time allowing greater participation would have been of value. Also, reading abilities vary within the

population and undoubtedly some participants may have felt rushed to complete the survey in the time allotted. Both of these factors resulted in the loss of 20 surveys at one location where the attendance was high and the room was booked by another class immediately following the session.

Another limitation which was imposed on the study was the inability to collect ethnic information at one of the institutions.

A longitudinal research design, using pre- and post-testing of ethics awareness, would best fit this type of research. Ideally, responses would be collected early in the school year for the complete survey including control variables, independent variables, and benchmark responses for the dependent variable, ethics awareness. Treatment/training sessions would be administered once in the fall term and repeated with the same subjects in the winter term. Training would be reinforced by the faculty either through formal integration in course curriculum or informally through class discussions. Finally, data related to the dependent variable would be collected again prior to the end of the school year. This type of implementation would address the weakness in the current model which did not allow for the retrospective component of Reynold's (2006) neurocognitive model. Time allotted for the retrospective component would allow for the development of professional identity and possibly moral identity. It would also address cultural impact on an individual's ethics awareness in terms of the in-group adoption and support of the ethics related norms.

Finally, Reynolds (2006) provides an extensive section related to studying ethical behaviour, and insight would be gained by reviewing this section prior to engaging in

research related to Reynold's neurocognitive model of the ethical decision-making process.

Implications for Practice

This study indicated a significant impact between semesters completed and ethics awareness. This result aligns with previous studies that have found that the level of education is related to an individual's moral development (Kohlberg, 1981; Paradice & Dejoie, 1991). In light of this finding, an organization may consider education level as a factor within the employee selection process.

An organization's culture is somewhat defined by the structures which it creates and administers such as compensation systems and performance appraisal systems (Reynolds, 2006). These systems are often managed by the human resources function. Ensuring appropriate prototypes in terms of ethics awareness within an organization in part requires that moral rules permeate throughout the related structures and systems where human resources management plays a key role (Reynolds). Beatty, Ewing and Tharp (2004) stated that "HR's fundamental role is to influence behaviour in organizations. The HR function must understand the issues and determine what the organization can do to reward positive behaviours and deter behaviours not in the firm's or customers' best interests" (p. 257). These interests include customer and employee safety, corporate publicity, ownership earnings, and legal issues (Beatty et al., 2004). Individuals may come to an organization with deeply engrained prototypes which do not align themselves well with what the organization believes to be a morally appropriate approach or outcome. Existing employees may harbour prototypes which are no longer appropriate. Feedback and the support of opportunities to redefine prototypes can be implemented

through mentoring, appraisal systems, training, and discipline where appropriate. While the current study did not indicate that the treatment session had a significant effect on ethics awareness, it did indicate that previous ethics training had some impact on ethics awareness. An organization's culturally-supported, ethics awareness training or mentoring sessions, repeated over time, may be expected to impact ethics awareness.

Finally, the current study also indicated that professional membership had an impact on ethics awareness. Therefore, in light of this finding, it may be in the best interests of an organization to support its employees in pursuing and maintaining membership in an employment related, professional association, where ethical standards are defined. In addition, consideration may be given to assigning those employees who hold professional membership to tasks which may be considered to be ethically sensitive and to have a greater impact on the welfare of the organization and its stakeholders.

Concluding Remarks

Even with its limitations, this study can be useful to both the academic community and the business community. For the academic community, this study was one of the first framed by the neurocognitive model for ethical decision making (Reynolds, 2007). Future research incorporating refinements of the research model as recommended by this study may further explore the value of Reynold's theory of ethical decision making as it relates to training for ethics awareness.

For the business community, the results of this study provide some insight into the structure of corporate programs that might be necessary for training for ethics awareness. This study suggests that ethics awareness is impacted by an individual's level of education and participation in previous ethics training. Using this information could

assist management in making project assignments where sensitivity to ethics is warranted.

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Appendix A:

Canadian Information Processing Society – Code of Ethics and Professional Conduct



Code of Ethics and Professional Conduct

This document describes the Code of Ethics and Professional Conduct to which all CIPS members must commit.

Preamble

The Information Technology profession has developed over the years to meet the need for IT services delivered on a professional basis. In order to satisfy this need, IT professionals and the quality of service they provide must command the confidence and respect of the public. This can only be achieved if IT professionals establish and maintain a reputation for both integrity and competence.

The Code of Ethics and Professional Conduct establishes ethical and enforceable standards, deals with matters subject to judgment, and those other matters that may be difficult to state absolutely. It is to be understood and applied in light of its primary concern for the protection of the public interest.

Inevitably, the application of the Code of Ethics and Professional Conduct will reveal gaps, ambiguities, and apparent inconsistencies. In such cases, the principle of protection of the public interest will serve to guide the CIPS member.

Principles:

- 1. Protect Public Interest and Maintain Integrity**
- 2. Demonstrate Competence and Quality of Service**
- 3. Maintain Confidential Information and Privacy**
- 4. Avoid Conflicts of Interest**
- 5. Uphold Responsibility to the IT Profession**

1. Protect Public Interest and Maintain Integrity

- CIPS members must protect the public interest and discharge with integrity all duties and services owed to the public, CIPS members, other IT professionals, and clients.
- The obligation to protect the public interest is paramount and must prevail when there is conflict with other obligations.
- Integrity and trustworthiness are the fundamental qualities of every CIPS member and are key elements of each requirement of the Code of Ethics and Professional Conduct. If integrity and trustworthiness are lacking, then the CIPS member's usefulness to the client and reputation within the IT profession will be destroyed regardless of how competent the CIPS member may be.
- Dishonourable or questionable conduct, including conduct that may be adverse to the public interest or lacks integrity, will reflect adversely on the member, the integrity of CIPS, and the IT profession as a whole. If the conduct is such that knowledge of it would be likely to impair trust in the member as a professional, then CIPS will be justified in taking disciplinary action.
- CIPS members must:
 - carry out their work with due regard for public health, public safety, and the environment;
 - make all reasonable efforts to counter misinformation that could bring CIPS and/or the IT profession into disrepute;
 - report problems that might result in serious damage to persons, organizations, property or the economy, to the relevant authority; and
 - not discriminate in any manner based on grounds such as race, sex, sexual orientation, nationality, social origin, family status, or disability.

2. Demonstrate Competence and Quality of Service

- CIPS members owe their client a duty to be competent to perform any IT services undertaken on such party's behalf.
- CIPS members must serve their client in a conscientious, diligent, and efficient manner so as to provide a quality of service at least equal to that which other IT professionals would expect of a competent IT professional in a like situation.
- Competence has to do with the sufficiency of the CIPS member's qualifications to deal with the matter in question. It includes knowledge, skill, and the ability to use them effectively in the interests of the client.
- CIPS members must not undertake a matter without honestly feeling either competent to handle it, or able to become competent without undue delay, risk, or expense to the client.
- CIPS members must:
 - conduct themselves in a professional manner and exercise uncompromised professional judgment;
 - be honest and candid when providing service to clients;
 - maintain professional competency and remain current in their area(s) of practice;
 - demonstrate knowledge required to undertake the work at hand and remain cognizant of and be compliant with relevant legislation, standards and bodies of knowledge; and

3. Maintain Confidential Information and Privacy

- CIPS members have a duty to hold in strict confidence all information concerning the business and affairs of the client acquired in the course of the professional relationship, and should not divulge such information unless disclosure is expressly (or implied to be) authorized by the client or otherwise required by law.
- CIPS members cannot render effective service to clients unless there is full communication between them about the matter at hand. At the same time, clients must feel completely secure and entitled to proceed on the basis that without any express request or stipulation on the client's part, information disclosed to the member will be held confidential.
- CIPS members owe a duty of secrecy to every client without exception, regardless of whether it is a continuing or casual client.
- CIPS members must:
 - not disclose having been retained by a client unless the nature of the matter requires such disclosure or the client has expressly given the member the authority to disclose such information;
 - not repeat any gossip about the client's business or affairs that was overheard by or recounted to the member;
 - treat all client business information as confidential, and respect copyrights, tradesecrets, privacy and terms of license or other applicable agreements;
 - understand and comply with any obligations that may be imposed on them under applicable privacy legislation, including *The Personal Information Protection and Electronic Documents Act*, and any amendments to or successor legislation; and
 - avoid disclosure to one client of confidential information concerning or received from another client, and decline employment that might require such disclosure.

4. Avoid Conflicts of Interest

- CIPS members must avoid situations where there is a significant risk that the interests of the member may conflict with the public and/or client. A conflicting interest is one that would be likely to affect adversely the CIPS members' judgment or service on behalf of, or loyalty to, a client or prospective client.
- CIPS members must:
 - not place personal or professional interests or those of colleagues above interests of the public or those of clients;
 - make reasonable efforts to notify all parties involved to make full disclosure to the relevant authority if any conflict might be seen to occur by an independent third party;
 - not create hidden reciprocal relationships with third parties who stand to gain as a result of their work; and
 - inform clients of any interests which might be seen to impair their professional judgment.

5. Uphold Responsibility to the IT Profession

- CIPS members must assist in maintaining the integrity of CIPS and the IT profession and should participate in its activities.
- CIPS members' conduct toward other CIPS members and IT professionals should be characterized by courtesy and good faith.
- CIPS members have an obligation to support and advance the interests of CIPS and the IT profession, and to respect the rights and professional aspirations of their colleagues. This obligation includes upholding the integrity, dignity and image of CIPS and the IT profession.
- CIPS members should:
 - participate and act with integrity in a manner that upholds the reputation and good standing of CIPS, and the IT profession in general, in relationships with anyone with whom they work;
 - participate with and support fellow CIPS members in their professional development, and provide opportunities for the professional development of new CIPS members, potential CIPS members, colleagues and subordinates;
 - make reasonable efforts to volunteer time and expertise by participating in activities that promote the advancement of CIPS and/or the IT profession; and
 - exemplify the values of equality, tolerance, and respect for others.

Definitions

- **Conduct:** The way a person behaves toward people or organizations.
- **IT:** Acronym for Information Technology.
- **Public:** Of or having to do with the people as a whole.
- **Public interest:** What is considered beneficial to the public.
- **Client:** Some person or organization paying for goods or services.
- **Integrity:** Quality or state of being of sound moral principle; uprightness, honesty, sincerity.
- **Relevant authority:** A person or group with jurisdiction over directly related areas of concern.
- **Competent:** Properly or sufficiently qualified or capable.
- **Body of Knowledge:** The prescribed aggregation of knowledge in a particular area an individual is expected to have mastered to be considered or certified as a practitioner.
- **Legitimate rights:** Entitlements assured in accordance with recognized or accepted standards or principles.
- **Trustworthy:** A characteristic of the professional whose intentions and competence can be trusted by colleagues, clients, employers, and the public.
- **Third party:** A general term that includes anyone not a party to a contract, agreement, instrument, etc.

NOTE: This Code of Ethics and Professional Conduct should not be construed to deny the existence of other ethical, privacy or legal obligations equally important, although not specifically mentioned.

Appendix B:

Survey Cover Letter

SURVEY

Introduction:

This survey is being administered as part of a research project conducted by Susie Kennedy which is a requirement for a Master of Science in Management degree at the University of Lethbridge (2007-2008). The project is being conducted to examine human resource development in information systems technology.

This survey is made up of three parts. The purpose of the first part is to collect general information. The remaining two parts are designed to collect your opinion about given statements. Part 1 and 2 will be administered before the seminar and will take approximately 5 minutes. Part 3 will be administered after the seminar and will take approximately 10 minutes. Please read each question / statement and record your response as indicated.

Consent:

Your participation in this study is voluntary. You do not need to answer questions that may make you uncomfortable or that you do not want to answer. If you prefer not to participate, please return this package to the facilitator. If you choose to withdraw your participation at any time, please return this package to the facilitator. The package will be destroyed. There are no risks related to this research.

Confidentiality:

If you choose to participate in this study your responses will be pooled with other participants' responses. The individuals and colleges that participate will not be specifically identified. This data will be used for analysis which will be included in the researcher's thesis project and may be in a future journal publication.

Contact Information and Follow-up:

If you have comments or questions about this project, please contact the researcher: Susie.Kennedy@ULETH.ca If you would like to review the results of this survey, please view the following website which will be active on or after July 1, 2008.

Address → <http://myweb.lethbridgecollege.ab.ca/~s0000345>

Questions regarding your rights as a participant in this research may be addressed to the Office of Research Services, University of Lethbridge (Phone: 403-329-2747).

Please retain this page for future reference.

Appendix C:

Seminar Agenda

Title: Professionalism and Ethics in IT

- Who is the Canadian Information Processing Society (CIPS)?
- What Makes a Profession?
- Professionalism in IT
 - CIPS Code of Ethics and Professional Conduct
 - Certification of Professionals
 - Accreditation of Post-Secondary Programs
- Ethics in Practice
 - Ethical Dilemma Defined
 - Applying the Code of Ethics
 - Scenarios (Dilemma Discussions)