

# Supporting Ethical Problem Solving: An exploratory investigation

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## ABSTRACT

The objective of this research was to investigate the use of decision aid technologies to support ethical problem solving. The decision aid developed for the exploratory study described in this paper was web-based and provided content that summarized and simplified much of moral philosophy (i.e. normative ethical theory) [3, 5, 11, 13, 18, 24, 26]. The ethical dilemma was posed in case format. Participants were asked to write, and revise as necessary, a solution to the case. The decision aid was developed to address five constructs in the research model: (1) Perceived Ethical Problem, (2) Perceived Alternatives, (3) Deontological Evaluation, (4) Teleological Evaluation, and (5) an Ethic of Care. Results from analysis showed that participants that used the decision aid identified the case's main issue, personal information privacy, more frequently than participants that did not use the decision aid. Individuals with support of the decision aid discussed the need to respect equal individual rights more often. Mixed results were found concerning use of other concepts from moral philosophy. An analysis technique was used that generated and statistically analyzed graphs that described how users navigated through decision problems. First, the participants' movements were captured as they went from page to page. These data were then used to construct depth-first-search trees (a particular type of graph). Characteristics of these trees were compared statistically, and the results showed no difference in the way control or treatment users navigated. Web-based ethical decision aids can be built and used, and can improve the solutions developed by students solving cases in a laboratory environment.

## Categories and Subject Descriptors

H.4.2 [Information Systems Applications]: Types of systems --- decision support; H.5.4 [Information Interfaces and Presentation]: Hypertext/Hypermedia --- navigation

## General Terms

Theory, Experimentation, Measurement, Verification

## Keywords

ethics, decision support, action research

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SIGMIS CPR '04, April 22–24, 2004, Tucson, AZ, USA.  
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## 1. INTRODUCTION

The objective of the research was to investigate the use of decision aid technologies to support ethical problem solving. The decision aid developed for the exploratory study described in this paper was web-based and provided content that summarized and simplified much of moral philosophy (i.e. normative ethical theory). The question addressed was: Could this system help students work through and solve a case that presented ethical issues? The study used a case by Chee and Schneberger [6] that focused on one of the main issues of computer use, personal information privacy [21, 23].

Much of the discussion in computer ethics describes scenarios that involve computers [36] and behavior of people in those situations [38]. For example, guidelines, standards, and codes of professional ethics [16, 8, 28, 19] prescribe behavior for these situations. However, the focus of this work is how computers may be used to support people attempting to solve ethical problems (i.e. as decision support systems). For purposes at hand, "solving a problem ethically" is defined as discernable use of well-defined ethical theories, which are discussed in the following section. The goal of the decision aid is practical; reducing ambiguity for people when using ethical theories, and thereby helping them during ethical problem solving and decision making [39].

Other web-based tools that propose to help an individual with an ethical problem exist. These are broken into two categories: *web sites* and *web applications*. The web sites include the "Online Ethics Center for Engineering and Science" [26], the EthicsWeb.ca [9], and the National Institute for Engineering Ethics [25]. A separate category of web sites exists, namely, web applications. The predominant example in this category is PETE - Professional Ethics Tutoring Environment [12]. PETE is an interactive web-based application that helps a student analyze a case in a guided, step-by-step manner. PETE is highly structured; a student cannot move to the next step prior to completing the step before it. However, a student can back up at anytime and revise their earlier responses. PETE also supports a student comparing their responses to those of other students.

The decision aid described in this paper differs from the web sites in that it has been assessed in a laboratory setting. It differs from PETE in that the aid is focused on supporting investigative, free-form ethical problem solving. The aid does this by summarizing and simplifying moral philosophy, and making this information available at any time, while PETE provides a guided, step-by-step decision environment to support case analysis.

The general hypothesis of this research was that participants using the decision aid, and its embedded model, would think more carefully and broadly about ethical problem solving. It was hoped that participants would focus on more than one or two major considerations, such as cost/benefit tradeoffs or individual rights. In accordance with this aspiration, the decision aid was designed so as to enable the participants to consider multiple ethical perspectives, allowing each participant to make a multi-faceted and informed decision regarding the case.

Most ethical theory has been developed on the prescriptive logic of ethical choice. Little empirically testable theory has been developed to describe how ethical problem solving actually occurs. Recently a theory of marketing ethics was applied to the computer use domain [36]. This theory was extended, and a decision aid constructed and assessed based upon the extended theory.

## 2. BACKGROUND

People may best be served by considering a situation from several ethical viewpoints, and concurrently synthesizing a solution. It is proposed that most people are simply interested in making right, good, just, fair, and caring decisions when faced with an ethical problem that they need to solve. The following material presents normative theories that one can use in arriving at a decision.

Traditional moral philosophy has focused on two rationales: (1) promoting the value or good of just actions (teleology such as in [24]) and (2) upholding rightful and just actions, regardless of effect (deontology such as that in [18]). Teleological theories have included virtue theories [3, 13], divine purposes related theories [35], and theories focused on maximizing utility [5, 24]. Deontological theories have been secular [18] as well as religious, such as Divine Command Theory of Ethics [1]. Deontological theories have focused on the inherent rightness or wrongness of actions. There are many more ethical theories and their review here is not possible. Brief synopses of the leading principles in each category are provided below.

Aristotle [3], in his *Nicomachean Ethics* proposes the first form of a Virtue Theory of ethics. He suggests the purpose of human activity is *eudaimonia*. *Eudaimonia* is defined as the promotion and expression of a fully flourishing and happy life. The person who is the most ethical is that person who is most self-realized, most fulfilled, and uses humanity's distinctive purpose (which according to Aristotle is the ability to reason) to become the best that they can be. In the Aristotelian tradition, a person seeks to balance deficiency and opulence of certain personal characteristics when acting within the world so as to reach for *eudaimonia*. For problem solving, this means acting in a way that best expresses the virtues (e.g. honesty, courage, thoughtfulness) that are most relevant to the problem at hand.

*Utilitarianism* [5] seeks the most good for the most people. Rightness or wrongness for acts is determined by the net positive or negative consequences to the general happiness of all people. John Stuart Mill [24] extended this concept by allowing happiness to have differing qualities and substance. Mill suggested that

intellectual happiness, imagination, and feelings are higher in quality than say, enjoying food and drink.

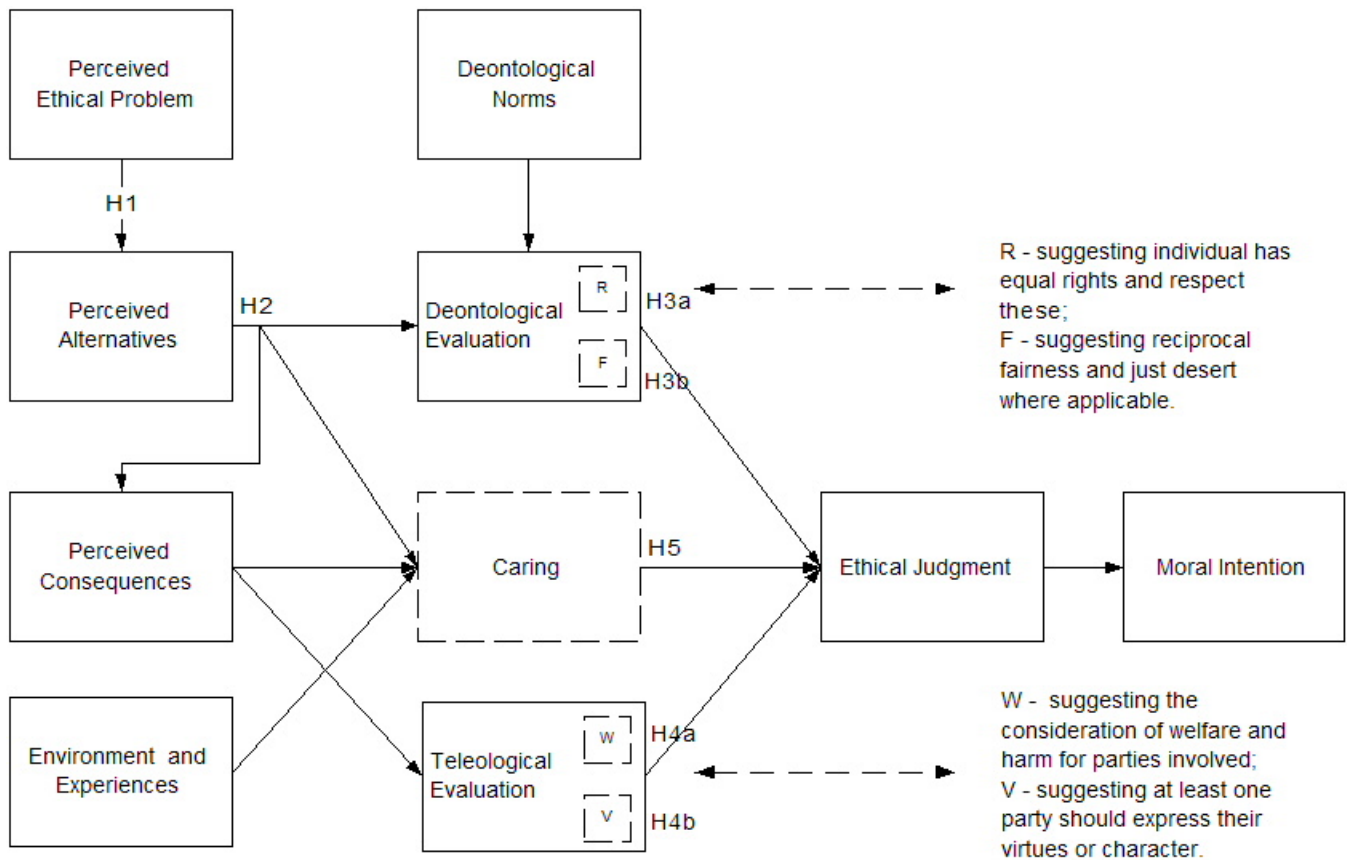
Kant [18] introduced the concept of a *categorical imperative* which implies a respect for persons, in and of themselves. The categorical imperative has two forms: (1) "One should act in such a way that one would be able to wish that all individuals would act this way." Alternatively, (2) "One should treat all persons as ends within themselves, not just a means to an ends."

Recently, fragmentary rationales from the benevolence or generosity tradition have been gathered in an interpersonally sensitive and responsive theory known as an *Ethic of Care* [11, 26]. Instead of thinking about rightness, wrongness, good, bad, or equity etc. (i.e. universal, rational, static rules or justifications), a person acts by expressing experientially trained emotions and skills aimed at supporting and nurturing others' well being.

Three theories considered when designing this study, and that describe ethical behavior as it relates to computers are the Theory of Reasoned Action [2, 31, 20], a situational ethics model [4], and a theory of marketing ethics [14, 37]. The Theory of Reasoned Action, as it relates to computer usage [20], suggests a person's intentions are affected by ethical attitudes towards a behavior, social norms, and the relative importance of each. The research reports that both attitudes and social norms play an important role in determining an individual's intentions to perform computing acts related to privacy and ownership [20]. The decision aid, described in this paper, includes principles that directly support new attitudes. The decision aid also prescribes norms.

Banerjee, Cronan, and Jones [4] proposes a situational model of ethical behavior that merges research on attitudes, ethical behavior, and moral development. This model suggests a person's intention is a result of moral judgment, attitude, and personal normative beliefs. These are moderated by ego strength, locus of control, and organizational ethical climate. The research concludes that the organization-scenario variable (a control variable) was the most important variable describing ethical intention. Other statistically significant variables were personal normative beliefs and the organizational climate. As mentioned above, the decision aid discussed in this paper supports the consideration of normative beliefs that may be new to the user.

Thong and Yap [37] evaluates a theory of marketing ethics proposed in Hunt and Vitell [14]. The theory suggests that ethical decision making can be partially explained by the synthesis of results from a deontological process and a teleological process. Thong and Yap's research extended the theory to ethical problem solving in information technology, and serves as a referent for this work. The model they proposed was extended, by including sub-processes within deontological and teleological evaluation. Teleological analyses can be virtue or utility based, and in the case of deontological, analyses can be rights or justice based. Also, the Ethic of Care as described by Gilligan [11] and later by Noddings [26] was included in the model and used in the research.



**Figure 1: Research Model; Based on model in Thong and Yap [37]. The hyphenated blocks show the extensions to Thong and Yap’s research model.**

## RESEARCH

### 3.1 Hypotheses

The purpose of this research was to determine if a web-based decision aid could influence ethical problem solving and support the development of solutions. The decision aid was developed so as to address five constructs in the research model (Figure 1): (1) Perceived Ethical Problem, (2) Perceived Alternatives, (3) Deontological Evaluation, (4) Teleological Evaluation, and (5) an Ethic of Care.

Two forms of deontological evaluation supported by the decision aid were tested, those based on individual’s rights, and those based on justice. The decision aid was also assessed with regard to support of teleological evaluation forms, specifically, Virtue Theory and Utilitarianism. In addition to traditional ethical theories, the decision aid was also assessed in terms of its ability to support an Ethic of Care. See Figure 1 and Table 1 for research model and primary hypotheses. Several other hypotheses were also tested. Hypothesis 6 theorized that *participants with support will expend more effort*. It was expected that the decision aid would lead to additional mental effort, which in turn would lead to more complete solutions. (The focus during the development of the decision aid was on effectiveness, not efficiency.) Hypothesis 7 theorized that *participants with support will navigate differently*.

**Table 1: Primary Hypotheses**

<i>H1: Participants with support will be able to identify a perceived ethical problem more frequently.</i>
<i>H2: Participants with support will be able to identify more perceived alternatives.</i>
<i>H3: Participants provided deontological information will use this support,</i> <i>H3a: by suggesting each individual has equal rights and respect these;</i> <i>H3b: by suggesting reciprocal fairness and just desert where applicable.</i>
<i>H4: Participants provided teleological information will use this support,</i> <i>H4a: by suggesting consideration of welfare and harm for parties involved;</i> <i>H4b: by suggesting at least one party should express their virtues or character.</i>
<i>H5: Participants provided information about an Ethic of Care will use this support.</i>

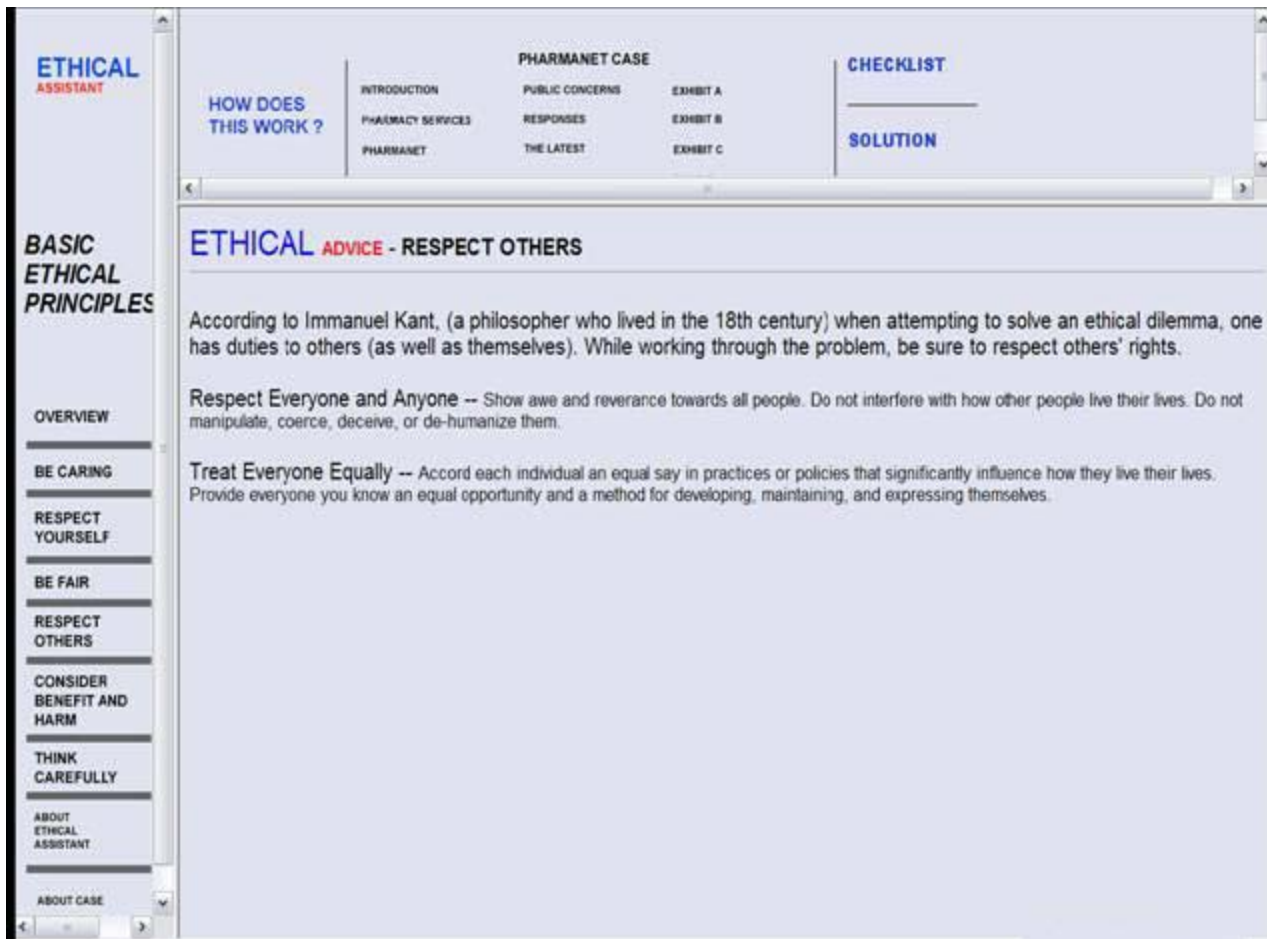


Figure 2: A sample screen from the decision aid. This screen suggests the ethical problem solver to “respect others”.

It was expected that the process of solving the problem would vary between control and treatment users. Therefore, it was hypothesized that navigation processes (moving from one screen to another screen, and so on) would vary between those that used the decision aid and those who did not.

It was expected that the solutions suggested by the authors in the teaching notes to the case [7] and the main issues of the information age as put forth by Mason [21] and others [17], would be identified more often by those using the decision aid. Hypothesis 8 theorized that *participants using the decision aid will identify issues suggested by the case authors more frequently*. Finally Hypothesis 9 theorized that *the participants using the decision aid will identify “main issues of the information age” within the case more frequently*.

### 3.2 Sample

Eighty-seven paid persons participated in this study. Eight of these participants were from an undergraduate Computer Information Systems class, consisting mainly of students concentrating in management information systems. Thirty-eight participants were from an Information Systems class. These students were primarily undergraduates majoring in industrial engineering or information technology. Twenty-six

students were from an Anarchism class (sophomore and junior students associated with no specific program). Fifteen were from a Microcomputers class and were freshman and sophomore management students.

This group of eighty-seven participants was broken into forty [control] group participants and forty-seven [treatment] group participants. The control groups (one for each class) used an information system that contained the case and an interactive web page where a solution could be written, revised, and eventually submitted. The treatment groups (also one for each class) used an information system that contained the same system as the control group, as well as informational pages about ethical principles. Thus, the design was 2 (treatment/control) by 4 (undergraduate classes) factorial. Participants were randomly assigned user ids, to control or treatment groups, and to the seats within the room.

### 3.3 Experimental Protocol

Participants were not coerced into participation and were free to leave at any time. Participants were asked to complete and sign the Institute Review Board form and then select three index cards from three shuffled decks. One of the three index cards had a number printed on it, and participants then seated

themselves within the room by finding a seat with that number. (Seats were also numbered randomly.) A second index card indicated a URL (web site uniform resource locator) for the participant to access. One web site was affiliated with the treatment group; the other was affiliated with the control group. A third index card indicated a unique user id and password to be used by that participant. See Figure 2 for a sample screen.

Participants were asked to write, and revise as necessary, a solution to an ethical dilemma. The ethical dilemma was posed in case format. The case that was used was British Columbia's Pharmanet Project [6]. This case asks a reader to consider how to handle the potential implementation of a widely accessible database of pharmacy prescription records throughout pharmacies in British Columbia. Within the web site that was available to the treatment group, material on Virtue Theory, Utilitarianism, Kantian deontology, and the Ethic of Care, was accessible by clicking on action-oriented verb phrases that were hyperlinked to pages with more information. The action-oriented verb phrases were: (1) Be Caring, (2) Respect Yourself, (3) Be Fair, (4) Respect Others, (5) Consider Benefit and Harm, and (6) Think Carefully. These action-oriented verb phrases simplified the basic tenets of the ethical theories. Each action-oriented verb phrase linked to more information about how a user might implement that action when deliberating about an ethical dilemma. The intent was to make the moral philosophy theories transparent, as suggested in Fleischmann and Wallace [10]. Figure 2 shows an example of a screen that prescribes how to respect others. The decision aid, only available to the treatment group, included "coaching" questions placed on the web pages where the issue was prominent. Since every page was available from any other page, the user could move to the solution screen at any time, and edit their solution.

### 3.4 Data Analysis

Participants were asked to compose a type-written solution to the case. Participant's movements from page to page were

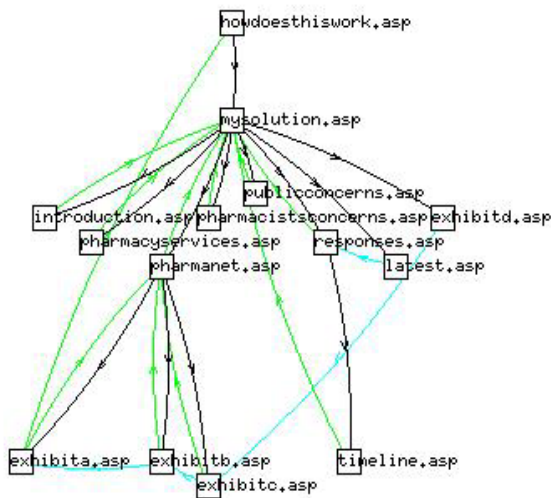


Figure 3: An example of how a user navigated the site.

captured by inserting the page name and a time stamp into a data store each time a page was displayed. Participants were asked to take the Defined Issues Test [32, 33, 34] before and after analyzing the case. The technologies used were Active Server

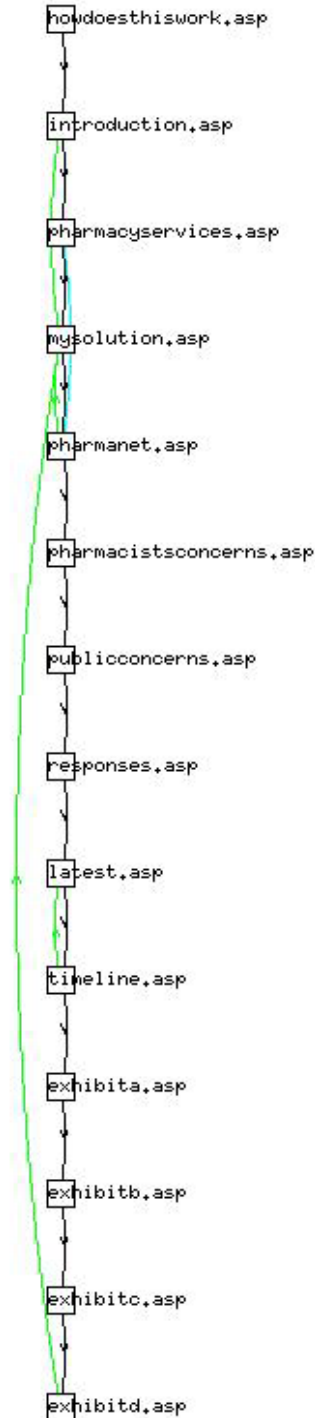


Figure 4: Another example of how a user navigated.

Pages (ASP) 3.0, SQL Server 2000 (database), American National Standards Institute Structured Query Language (ANSI SQL), and HTML. The type-written solutions were analyzed in two ways. First, instances of particular words (or their synonyms) were counted. Second, instances of particular concepts were counted. For example, in the sentence you are reading, the word [example] occurs twice, whereas the concept of [reading] occurs once. (Contact the primary author for instructions given to the coders.)

In order to ascertain how decision aid users were able to identify a perceived problem compared to control users, (Hypothesis 1), the number of times the word “privacy”, or a synonym, was used in the type-written solution was counted. Coding for discussion of privacy “as a central aspect of the case” occurred as well. The issue of privacy was identified as a problem by Chee and Schneberger in their teaching note to the case [7]. Privacy has also been identified as one of the main issues of the information age [21].

To measure the second hypothesis, twenty-two potential alternatives were identified. Next, the actual alternatives written by participants in the control and treatment groups (from the set of twenty-two) were counted and the summary statistics were compared across control and treatment.

The extended research model (Figure 1) includes two types of deontological analyses; (1) recognizing each individual has equal rights (denoted with a capital “R” in Figure 1) and (2) providing for reciprocal fairness and just desert (denoted with a capital “F” in Figure 1). The extended model also includes two types of teleological analyses; (1) considering welfare and harm for parties involved (denoted with a “W”), and (2) the expression of virtues by at least one party (denoted with a “V”). Hypotheses 3a, 3b, 4a, and 4b theorized that the decision aid users would use the forms of deontology and teleology that were summarized and simplified within the decision aid. The researchers counted words as well as concepts associated with each form with each participant’s textual solution. These measures were compared between control and treatment groups. For example, instances of the words (or synonyms) of respect, right, equity and fairness were identified and counted. Also concepts such as a type-written solution supporting “at least one party expressing their virtues and/or character” were identified and counted, and subsequently compared.

To test for inclusion of an Ethic of Care (Hypothesis 5), the instances of the words caring, concern, and need and the concept “At least one party should care for or about other parties” were counted. To measure effort expended by participants (Hypothesis 6), the number of characters, words and sentences were counted and compared across groups.

In order to compare navigation within the web environment between the two user groups (Hypothesis 7), a technique developed by Punin and Krishnamoorthy [29, 30] was used. See Figure 3 and 4 for two sample graphs developed by using Punin and Krishnamoorthy’s technique. This technique involves creating a depth-first-search tree (a type of graph) which describes how a user navigated when using the decision aid. A graph is a combination of nodes (e.g. points) and edges (e.g. links) which describe actual (or virtual) movement through a

particular space. A depth-first-search tree of a web site is a graph that is generated by working through the following steps: (1) start with the initial page viewed, and record this page; (2) record the first page accessed from this page; (3) record the first page accessed from the second page; (4) continue accessing pages in a similar fashion, until you come to a page that doesn’t have any new pages accessed from it, (5) return to the page before it; (6) record the second page accessed from that page; (7) continue until you have recorded all pages visited.

Statistics were generated that summarized the graphs. The statistics developed measured the following attributes: (1) the number of edges actually present versus the number of edges possible (i.e. density), (2) the number of edges between the root node (the first point) and the first node with multiple exits (i.e. the graph’s first branch), (3) the number of distinct paths (sequences of movement from point to point over links) from root (beginning) node to end nodes, (4) the longest length of a path, and (5) the number of links traversed prior to using the page where a solution is entered.

In order to measure whether or not the ethical principles helped the users identify issues other than privacy (Hypothesis 8), coders analyzed the textual solutions for other identified issues such as “government involvement in personal health care”, and “how the proposed system may improve the health of individual persons” [7]. The researchers then compared the number of times these other issues were discussed by the control and treatment users.

In order to measure whether or not decision aid users of the decision aid identified (Hypothesis 9) other main issues of the information age [21], coders looked for these concepts across the control and treatment groups and noted them. These counts were then compared statistically to test hypotheses 8 and 9.

### 3.5 Limitations

Forty-eight of eighty-seven coding worksheets representing whether or not twenty-three characteristics were present were coded using group consensus. Three individuals coded separately and then shared and defended their answers to each other. Thirty-nine of eighty-seven worksheets were coded independently with very high inter-rater reliability rates. (See Table 2 for details.) Thus, there were two coding methods used.

**Table 2: Inter-rater reliability.**

	Initial 10	Last 10
Coder 1 to Coder 2:	86%	86%
Coder 2 to Coder 3:	82%	88%
Coder 1 to Coder 3:	78%	84%

**Table 3: Variable found to be explained by coding method.**

Variable	F	p
C - Analysis for inclusion “At least one party should care for or about other parties.”	<b>18.925</b>	<b>.000</b>

**Table 4(a): Variables with clear effects.**

Hypothesis	Variable	Definition	F	p	Power ( $\alpha=0.05$ )
H2	solution_component22	Analysis for inclusion of the solution component “get more time” in textual solution	6.397	0.013	0.705
H2	solution_component2	Analysis for inclusion of the solution component “make customer participation voluntary” in textual solution	4.391	0.039	0.544
H2	solution_component5	Analysis for inclusion of the solution component “consider all parties’ interests” in textual solution	4.171	0.044	0.523
H3b	e – equity	Instances of word “equity” (or synonym) in solution to case	8.116	0.006	0.803

The “coding methods” were tested to see if they partially explained the statistical differences identified between control and treatment groups. The dependent variable that measured use of the concept “At least one party should care for or about other parties” alone shared a distinct relationship to coding technique.

The significant results are shown in Table 3. Since the measure “At least one party should care for or about other parties” is partially explained by coding technique, the findings are inconclusive regarding whether or not the decision aid supported consideration of an Ethic of Care.

Other limitations within the study include the fact that the participants in this study were undergraduate students and the particular problem was a written case. These factors limit the generality of the research in its ability to understand how a person such as a physician, attorney, engineer, or parent works through an ethical problem.

Also, the Defined Issues Test [32] was used to measure performance before and after use of the decision aid. However, because the instrument is more appropriate for measuring changes in moral judgment over long periods of time (months to years) [32, 33, 34], the DIT results were not analyzed.

### 3.6 Results

The results of our exploratory investigation are summarized in Tables 4(a), 4(b), and 4(c). Participants that used the decision aid identified the case’s main issue, personal information privacy, more often than those not using the decision aid. This analysis was performed three different ways with consistent results. Individuals using the decision aid discussed the need to respect equal individual rights more often. They also used the word or synonyms of the words “right” or “respect” more often. Thus all three measures for hypothesis 3a (inclusion of respect for equal human rights) showed that individuals with support discussed right actions, rights, respect or respect for rights more frequently. Also, individuals using the decision aid used more

effort (Hypothesis 6) as measured by character count, word count, and sentence count.

Mixed results were found concerning use of the concept of “reciprocal fairness and just desert” and “expression of virtues”. In both cases, one of two dependent measures was identified more frequently. Similarly, in the case of an Ethic of Care, the results were mixed. One of the four measures (the use of the word “need”) was more frequently used by the aided users. With regard to the decision aid helping the users in perceiving alternatives, three of twenty-two alternatives were suggested more often by those using the decision aid. The three alternatives suggested more often were “make customer participation voluntary”, “consider all parties’ interests”, and “get more time”.

Hypothesis 7 stated that individuals using the decision aid would navigate differently. It was expected that the process (as described by the navigation of the users) would vary between those with using the decision aid and those solving an ethical case without support. The decision aid was designed to permit the user to move freely among the various web pages. It was hypothesized that treatment and control users would navigate differently. No statistical differences were found between summary measures of the depth-first-search trees that described the navigation. Hypothesis 7 was completely refuted.

However, the results did reveal discernable patterns in user navigation through the aid. Figure 3 and 4 present two very different patterns. Why do certain individuals solve problems in a “highly branched” way and others in a highly “linear” way? This is clearly a subject for further research on the process of ethical problem solving.

## 4. CONCLUSIONS

A web-based decision aid for ethical problem solving was built, and did affect the solutions developed by students solving cases in a laboratory environment.

**Table 4(b): Variables with mixed effects.**

Hypothesis	Variable	Definition	F	p	Power ( $\alpha = 0.05$ )	Note
H1	p – privacy	Instances of word “privacy” (or synonym) in solution to case	12.486	0.001	0.937	
H1 (crosses with H8)	iss3	Analysis for inclusion of the concept of “personal data privacy”	8.936	0.004	0.840	
H1 (crosses with H9)	p1 – privacy	Analysis for inclusion of the concept “What information about one’s self or one’s associations must a person reveal to others, under what conditions, and with what safeguards? What things can people keep to themselves and not be forced to reveal to others?”	8.936	0.004	0.840	
H3a	R – respect	Analysis for inclusion or discussion of “respect for equal individual rights” in textual solution	18.349	0.000	0.988	
H3a	r1 – respect	Instances of word “respect” (or synonym) in solution to case	10.515	0.002	0.893	
H3a	r2 – right	Instances of word “right” (or synonym) in solution to case	22.973	0.000	0.997	
H6	char_count	number of characters in textual solution	7.565	0.007	0.775	
H6	sent_count	number of sentences in textual solution	11.569	0.001	0.919	
H6	word_count	number of words in textual solution	6.624	0.012	0.720	
H4b	V	Analysis for inclusion or discussion of “At least one party should express their virtues or character” in textual solution	61.647	0.000	1.000	1 of 2 dependent measures identified more frequently by those with decision aid.
H5	need_count	Instances of word “need” (or synonym) in solution to case	16.178	0.000	0.978	1 of 4 dependent measures were identified more frequently by those with decision aid.
H8	iss3	Analysis for inclusion of the concept of “personal data privacy”	8.936	0.004	0.840	1 of 14 measures were identified more frequently by those with decision aid.
H9	p1 – privacy	Analysis for inclusion of the concept “What information about one’s self or one’s associations must a person reveal to others, under what conditions, and with what safeguards? What things can people keep to themselves and not be forced to reveal to others?”	8.936	0.004	0.840	1 of 4 measures were identified more frequently by those with decision aid.

**Table 4(c): Variables with no effects.**

Hypothesis	Variables	Definition	F	p	Power ( $\alpha = 0.05$ )	Note
H7	arc_count, df_paths_count, first_branch, longest_length, steps_to_sol	Number of Arcs, Count of DF Paths, First Branch, Longest Length, Steps to mysolution.asp	NA	NA	NA	Navigation on all variables was not significantly different between users with aid and users without aid.



In this research, traditional ethical principles were used for content. There is no reason why professional codes of conduct could not be the basis for the advisory content of a web-enabled tool for supporting ethics education and training. The techniques described in this paper could be incorporated into a tool that could be automated in the sense that it would guide the student in his or her understanding of ethics by analyzing the solution provided by the student and mediate in real time. This role could also be performed by an instructor, supported via ad hoc reports.

Models that describe the process of ethical problem solving are sparse. Those that describe how ethical problem solving occurs in the context of information technology are even rarer. As ethical problem solving becomes more understood, this knowledge will provide a foundation on which to develop tools and techniques that prepare and support people in defining and resolving ethical dilemmas.

## 5. ACKNOWLEDGEMENTS

The researchers wish to thank Prof. M. S. Krishnamoorthy, Prof. T. R. Willemain, Prof. M. Raghavachari, Anurat Chapanond, Chandra Benjamin, Danielle Mullen, and Crystal Ferry. We also gratefully acknowledge NSF for their support through grant ITR/IM-0081219.

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