

# A Quasi-Experimental Study of Moral Reasoning of Undergraduate Business Students Using an Ethical Decision-Making Framework in a Basic Accounting Course

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## Abstract

*This study was designed to identify classroom interventions that can be used by core business course instructors (as opposed to trained business ethicists) to positively affect levels of moral reasoning in undergraduate business students. The quasi-experimental study conducted at a Midwestern university, focused on determining if the utilization of two different approaches to case study analysis in an undergraduate accounting course could positively affect levels of student moral reasoning. The study used a pretest-posttest, control-group design with two intervention groups. The Defining Issues Test-2 was used to assess levels of moral reasoning. The study did not find that either of the interventions positively affected levels of moral reasoning in students. Intrinsic motivation to engage in substantial ethical analysis was found to be lacking if grade points were not related to the effort.*

## Introduction

NEVER IN RECENT HISTORY has the call for ethics education in business schools been more pronounced than in the months and years following the scandals at Enron, WorldCom, Tyco, Arthur Anderson, and others. In the recent report, "Ethics Education in Business Schools," by the Ethics Education Task Force of AACSB International (2004), the commission called for member schools to renew and revitalize their commitment to ethics education:

We must offer courses that introduce ethical frameworks to help challenge students to resolve business and managerial problems; courses that lay out the larger societal context in which business operates; and seminars and workshops that bring executives to campus to focus on the link between leadership and values. (p. 8).

The assumption that business schools are adequately preparing our graduates to grapple with the complexities of ethical leadership in the business environment is questionable. The purpose of this research is to identify effective classroom interventions that can be used by core business course instructors (as opposed to trained business ethicists) to positively affect levels of moral reasoning in undergraduate business students.

## Related Literature

There exists very little disagreement that ethics is a desirable trait in all employees, but there is little agreement among U.S. business schools on how to best teach ethics in the business education environment (Wilhelm, 2005). Some schools reserve ethics education course work only for MBA students while some also teach ethical reasoning to undergraduates. Stand-alone courses are more prominent in business schools that do teach

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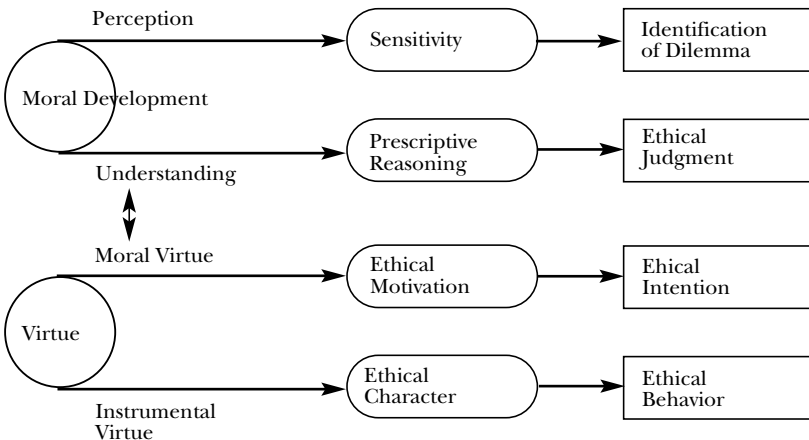
business ethics (Wilhelm, 2005); however, there are schools that have tried to integrate ethics education throughout the business curriculum. Other business schools deliver ethics education through seminars, either required or voluntary.

A problem exists with sustainability when a school uses the integrated approach (Wilhelm, 2005). Beginning in the late 1980s and continuing through the mid-1990s, the Wharton School at the University of Pennsylvania undertook two ambitious projects to integrate ethics education into core functional courses in both the MBA program (Dunfee, 1986) and the undergraduate business program (Robertson, Foglia, & Dunfee, 1993). Today, however, the School has moved away from the integrated approach. As explained by Thomas W. Dunfee, Kolodny Professor of Social Responsibility at the Wharton School and principal investigator for the MBA integration project and consultant for the undergraduate project, the “sustainability” problem for maintaining interest and active participation in the ethics integration projects with newly arrived professors who taught the core courses was too great to overcome and the integrative approach was abandoned (Thomas W. Dunfee, personal communication, May 27, 2004). The Wharton School recently returned to required stand-alone courses in both its undergraduate and graduate programs.

**Ethical Decision Making**

Armstrong, Ketz, and Owsen (2003) examined the literature relating to ethics education in accounting using Thorne's 1998 Integrated Model of Ethical Decision Making, shown in Figure 1.

**Figure 1.**  
*Thorne's Integrated Model of Ethical Decision Making*



From: “Ethics Education in Accounting: Moving Toward Ethical Motivation and Ethical Behavior” by M. B. Armstrong, J. E. Ketz, and D. Owsen, 2003. *Journal of Accounting Education*, 21, 1-16. Used by permission.

Thorne's model integrated the tenets of virtue, ethics theory and Rest's Four-Component Model of ethical behavior. The four components of Thorne's Model are: sensitivity—the identification of ethical dilemmas, prescriptive reasoning—judging which action would be most justifiable in a moral sense, ethical motivation—the intent to act ethically, and ethical character—acting in an ethical manner. Thorne grouped the first two components of his model (sensitivity and prescriptive reasoning) together in a category called moral development. The second two components (ethical motivation and ethical character) were grouped into a category called virtue. Armstrong et al. (2003) found that most of the literature pertains to the first category of Thorne's model, i. e., moral development; not as much emphasis is given to the second category, virtue. They also noted a deficiency in the literature regarding sensitivity and identification of ethical dilemmas and felt that accounting researchers, “should explore ways to enhance sensitivity of accounting students” (p. 13).

Case studies allow for introducing real-world scenarios into the classroom. Case studies allow the students to engage in real-world discussions and reflective analysis in which they typically use an ethical decision-making framework to solve ethical problems and dilemmas. One such decision-making framework was developed for the undergraduate business program at Babson College (DiPiro, 2004). The basic decision-making steps within the framework include:

1. Identifying the issue
2. Gathering information
3. Brainstorming alternatives
4. Evaluating alternatives from various ethical perspectives
5. Making a decision based on the ethical perspectives
6. Proposing a convincing ethical decision
7. Reflecting on the ethics ramifications of the decision

An early study on ethical decision making in accounting education was completed by Fulmer and Cargile in 1987. The study investigated whether senior accounting students who had been exposed to the American Institute of Certified Public Accountants (AICPA) Code of Professional Ethics were more or less likely to view business practices in ethical terms than senior business students in other majors. Utilizing a case-study for student analysis and assessing student moral perceptions through the use of a questionnaire, the research sampled business students with various majors enrolled in a senior business policy course, and concluded that accounting students had higher levels of moral perception. The researchers attributed the differences between the accounting students and other majors to the accounting students' exposure to the AICPA Code of Professional Ethics.

Green and Weber (1997) assessed the levels of ethical reasoning in accounting and other business majors both before and after they had completed an auditing course which emphasized the AICPA Code of Professional Conduct. Ethical reasoning levels were assessed separately by both authors utilizing the Abbreviated Scoring Guide based on Kohlberg's scoring method (Weber, 1991). No differences in ethical development

between junior accounting majors and other junior-level business majors were noted. They did, however, find significant differences between senior-level accounting and non-accounting students' levels of ethical development. The primary difference appeared to be related to the auditing course taken by the senior accounting students. In reference to the accounting students' exposure to the AICPA Code of Professional Conduct, the authors concluded that "the exposure to ethical principles embodied in reasoning slightly above the students' current level of moral maturity provided an effective educational environment conducive for stimulating students' moral reasoning to a higher level" (Green & Weber, 1997, p. 787).

### ***Measuring Moral Reasoning***

The paper-and-pencil instrument that James Rest (1979) devised to measure moral reasoning is called the Defining Issues Test (DIT). The DIT is the most widely used instrument of moral judgment and the best documented in terms of reliability and validity (Rest, 1986). Respondents taking the revised and improved DIT read several short scenarios that describe moral dilemmas. After reading each dilemma, the respondent chooses one of several courses of action offered in the instrument, rates a list of key factors in the dilemma for its relative importance to the respondent, and ranks the top four key factors in order of importance to the respondent. The DIT also gathers demographic data including age, sex, level of education, political posture (very liberal to very conservative), U.S. citizenship and English proficiency. Instruments are tabulated at the Center for the Study of Ethical Development at the University of Minnesota, and results are presented in SPSS-ready format. With the returned tabulated data, assessments about levels of moral development can be undertaken based on Rest's (1979) theory of cognitive moral development.

Since the 1970s, the DIT has been used in countless studies of moral judgment. Published literature on the DIT is plentiful and has accumulated to well over 400 published articles and books (Rest et al., 1999). These studies have measured moral reasoning in relation to a wide array of demographic and behavioral variables too numerous to review in this paper. The most prominent variables that relate to the present study will be discussed briefly.

Rest (1979) presented a discussion of the effects on moral reasoning attributed to the specific demographic variables of formal education, age, socioeconomic status, region of country, gender, religion, and profession. "That discussion concluded that formal education is by far the most powerful demographic correlate of DIT P scores, typically accounting for 30% to 50% of the variance in large, heterogeneous samples" (Rest et al., 1999, p. 70). Blasi (1980) also cited numerous studies using the DIT that demonstrated a strong positive correlation between education and levels of moral reasoning.

Several studies involving use of the DIT have attempted to discern career-related variables in relation to moral reasoning by analyzing college students in different fields of study. Studies that have examined the moral reasoning levels of business students determined that business

students have lower levels of moral reasoning than non-business students (McCabe, Dukerich, & Dutton, 1991). Other studies found no significant differences between the moral reasoning among business majors and non-business majors (Bigel, 2002; Elm & Nichols, 1993).

Professions and occupational groups also have been the focus of numerous studies (see Rest et al., 1999, p. 71-72 for a listing of over 100 citations). Ponemon and Gabhart (1994) reviewed over 15 studies ranging from the early 1980s to the mid-1990s, that focused on the accounting and auditing profession. They concluded that those individuals within accounting and auditing firms that progressed to manager and partner positions tended to possess lower levels of moral reasoning as measured by the DIT. According to Ponemon and Gabhart, "these findings implied that the ethical culture of the accounting firm stymies an individual's development to higher levels of ethical reasoning" (1994, p. 110-111). In a study of business managers, Elm and Nichols (1993) found that managers have lower levels of moral reasoning than non-business professionals.

Utilizing a class in ethics and professionalism (E & P) to introduce an array of ethical instructional interventions ranging from studies in ethical reasoning to analyses of congressional investigations, Armstrong (1993) reported a statistically significant difference in changes in DIT post-conventional scores among students who took the course over those in a control group that did not. Armstrong also reported that students who had taken previous classes in ethics (as reported by the students) demonstrated increased levels of moral-reasoning maturation. The author recommends a "sandwich" approach which would,

. . . contain an introduction to ethical thought (probably taught by faculty in the philosophy department, or an equivalent), followed by ethical discussions of case studies in existing accounting courses. Finally, an E & P course, a capstone course, would tie together previous ethical training with concepts of professionalism. Indeed, the ANCOVA results in this study seem to indicate that neither one stand-alone E & P course nor previous exposure to ethics were strong predictors of students' increases in moral maturity, yet the combination of the two was very predictive of moral development. (p. 89).

Ponemon (1993) used the DIT to measure moral reasoning with a sample containing both graduate and undergraduate auditing students over a two-year period, and observed students' ethical behavior defined as excessive "free-riding" on an economic choice experiment. Through a series of instructional interventions including assigned readings, classroom lecture, ethical case studies, and exposure to videos dealing with ethical behavior in the auditing profession, Ponemon delivered ethical instruction to the students in the sample. The results of the study showed "that ethics interventions did not cause accounting students' level of ethical reasoning to develop (increase) and did not curtail students' free-riding behavior" (p. 185). Earley and Kelly (2004) described their educational intervention that utilized several components:

- AICPA professional standards were covered in the course textbook and through lectures and homework assignments,
- Four case studies requiring critical thinking about ethical dilemmas facing accountants were assigned for homework analysis and discussed during class.
- Several videos relating to ethics were shown. The videos were discussed in class or analyzed by the students through homework assignments.
- An additional take-home project was assigned.

Each student analyzed a case using Mintz's (1997) ethical decision-making framework. There are seven steps to Mintz's framework (p. 58):

1. Determine the Facts
2. Identify the Operational Issues
3. Identify the Accounting Issues
4. Identify the Stakeholders and Obligations
5. Make an Ethical Analysis of the Alternatives
6. Decide on a Course of Action
7. Double-check Your Decision—Question It

These interventions were accomplished in two different semesters with two different groups of students in a senior-level auditing course: one class before the Enron debacle disclosures and another class after the Enron disclosures. The DIT scores did not show an increase in moral reasoning. However, measured by Thorne's Accounting Ethical Dilemma Instrument (2000), an accounting context-specific instrument, the results did demonstrate that educational interventions based on ethical issues were effective in improving students' accounting situation-specific moral reasoning from the beginning to the end of a semester. In the auditing class, the students were better able to relate to accounting-specific ethical situations as evidenced by their scores on Thorne's Accounting Ethical Dilemma Instrument.

### **Purpose of the Study**

Armstrong (1993) stressed that ethics should be part of the context-specific accounting training because moral reasoning is a crucial component of professional judgment. The purpose of this research was to evaluate potential classroom interventions that could positively affect the levels of moral reasoning in undergraduate business students. Because case studies have the ability to engage the learner in reflective analysis of real-world ethical problems and dilemmas, this quasi-experimental study focused on determining if two different approaches to the utilization of case studies in an undergraduate accounting course could positively affect levels of student moral reasoning. It was hypothesized that integrating the use of case studies with ethical content in a minimally intrusive manner into one of the core business courses at a medium-sized Midwestern university would positively affect levels of moral reasoning in students. Further, it was hypothesized that additional instruction in the use of an ethical decision-making framework with which students could evaluate ethical case studies would further improve levels of moral reason-

ing. The objective of this study was to determine if business students' levels of moral reasoning as measured by the DIT could be positively affected by 1) utilizing accounting cases with ethical content but without the use of an ethical decision-making framework, or by 2) utilizing accounting cases with ethical content along with a specific ethical decision-making framework provided by the instructor. Specifically, the hypotheses were:

H<sub>1</sub>: Student engagement of accounting exercises without specific ethical content in a basic accounting course will not improve moral reasoning.

H<sub>2</sub>: Student engagement of case studies with ethical content in an introductory accounting course will improve moral reasoning.

H<sub>3</sub>: Student engagement of case studies with ethical content and the utilization of an ethical decision-making framework in a basic accounting course will improve moral reasoning more than H<sub>1</sub> and H<sub>2</sub>.

### **Methods and Procedures**

This study involved the nonequivalent control group quasi-experimental design (Campbell & Stanley, 1963) which can be used when true randomization of subjects and extraneous variables cannot be achieved. The selection of subjects based solely on their self-selection to the different accounting class sections did not involve random assignment. However, pretest P-score comparisons (see Table 1) showed that the groups were similar. According to Campbell and Stanley (1963), comparable pretest scores help confirm internal validity:

The more similar the experimental and control groups are in their recruitment, and the more this similarity is confirmed by the pretest, the more effective this control becomes. Assuming that these desiderata are approximated for internal validity, we can regard the design as controlling the effects of history, maturation, testing, and instrumentation. (pp. 217-218).

The data-gathering instrument used in the pretest and posttest was the revised version of the Defining Issues Test, the DIT-2, a proprietary instrument purchased from the Center for the Study of Ethical Development at the University of Minnesota. The differences between the DIT and the DIT-2 lie in the format, content, and analytical changes made to the DIT-2. The changes to the content involved reducing the number of dilemmas from six to five, and developing dilemmas that are not dated. The DIT had dilemmas that included one widely known case and one dilemma relating to the Vietnam War as if it were a current event. The methods for detecting bogus data (participant reliability) have been revised in the DIT-2. The DIT-2 has also taken advantage of a recently discovered way to calculate a developmental score. The N2 index takes into account preference for post-conventional schemas and rejection of less sophisticated schemas, using both ranking and rating data (Rest, Narvaez, Thoma, & Bebeau, 1999).

The study sample consisted of predominantly sophomore undergraduate business students from a medium-sized Midwestern university enrolled in a basic accounting course. The control group sample (identified as Group A in the data tables) began with 21 individuals participating in the pretest, with only 15 completing the posttest ( $n = 15$ ). The small sample size did present some problems with regard to the findings, as is discussed later in the article. The first test (intervention) group (identified as Group B in the data tables) began with 35 individuals participating in the pretest and concluded with 28 taking the posttest ( $n = 28$ ). The second test group (identified as Group C in the data tables) began at 32 individuals participating in the pretest and concluded with 29 taking the posttest ( $n = 29$ ), for a total  $n = 88$  for the study. The DIT-2 pretest and posttests were administered voluntarily to all respondents by a professor familiar in its administration and analysis.

All three groups of students were enrolled in a section of a required introductory financial accounting course taught by a professor of accounting. All three sections were taught on the same days of the week for the same length of time with the same textbook. The textbook used was *Principles of Accounting*, by Paul Kimmel, Jerry Weygandt and Donald Kieso (2004). There were a total of 1,000 points possible in the course.

#### ***Control Group A***

The control group (Group A) was taught using the instructor's regular teaching methods for the course which included lecture, instructor demonstrations of accounting principles, and student group and individual exercises. There were no ethical cases used in the control group class. Students in this group were administered the DIT-2 at the beginning of the semester and again at the end of the semester.

#### ***Test Group B***

The first test group (Group B) was also taught using regular instructional methods, but with the added dimension of nine cases with ethical content for discussion. The cases were part of the end-of-the chapter material in the textbook and were labeled as ethics cases. A total of nine cases were discussed during the course for 15 to 20 minutes each. Written answers were not required. Students were administered the DIT-2 at the beginning of the semester and again at the end of the semester.

#### ***Test Group C***

The second test group (Group C) reviewed the same cases as Group B. Following administration of the pretest DIT-2, all students in the second test group (Group C) were given a copy of the Babson College ethical decision-making framework (Livingstone, 2003) as a reading assignment and told that they would have a quiz to assess their grasp of the framework during the next class period. (Babson College generously gave permission for its framework to be used for this research.)

While taking the quiz was mandatory, quiz results did not affect a student's grade. Instead, up to 30 extra-credit points for correct responses on the quiz were offered. Following the quiz, the instructor spent one class period (50 minutes) discussing the ethical decision-making framework contained in the Babson model, and identified it as a



tool that was to be used throughout the course to evaluate cases with ethical substance. The ethical cases were discussed in Group C classes for approximately 20 to 25 minutes each; however, these instructor-led discussions followed the analytical steps specified in the Babson College ethical decision-making framework. Written answers were not required. Students were again administered the DIT-2 at the end of the semester.

Following completion of the posttest, students from Group C were asked to volunteer for an informal debriefing on matters relating to understandability of the ethical decision-making framework and the DIT-2, instructor efficiency and effectiveness, and student motivation to engage the ethical cases. Based on responses from the students who volunteered to be debriefed after the posttest was administered, questionnaires to debrief all students in the study were developed and administered via email. The control group (Group A) received a questionnaire dealing with the DIT administration only. Test group (Group B) received a questionnaire dealing with the DIT, the ethical cases and the classroom environment. Test group (Group C) received a questionnaire dealing with the DIT administration, the ethical cases, the classroom environment, and the Babson College ethical decision-making framework.

### **Data Analysis**

The DIT instruments were tabulated at the Center for the Study of Ethical Development at the University of Minnesota. Tabulated data were analyzed using SPSS, descriptive statistics were derived, and an analysis of variance was used to determine significance of differences between group DIT scores. Paired-sample T-tests were conducted to determine significance of differences between the pretest and posttest DIT scores for each group. While not part of the hypotheses testing, linear regression analysis was used to possibly explain variables affecting the detected difference between Group A's pretest and posttest scores. Effect size was computed using the Eta squared statistic which reflects the proportion of variation accounted for by the differences among the groups. Measures of effect size in ANOVA are measures of the degree of association between the effect and the dependent variable (Becker, 1999).

### **Findings**

In general, according to Rest and Narvaez (1998), DIT scores fall in the 60s for moral philosophy and political science doctoral students, in the 40s for college students, in the 30s for high school students, and in the 20s for junior high students. Table 1 shows the average DIT post-conventional (P) scores and N2 scores for the samples in this study. The comparatively low average scores were confirmed by a previous study conducted at the same institution using the DIT-2 (Wilhelm 2004). That study also found relatively low P scores and N2 scores for freshman through senior business students that averaged in the mid-20s (P score average = 26.04; N2 score average = 24.18). These relatively low DIT scores seem to indicate the likelihood that students in these samples are reasoning more at the pre-conventional or conventional levels than the post-conventional level of moral reasoning.

**Table 1.**  
*Pretest/Posttest DIT Mean Score Comparisons by Group*

|          |                | Group A<br>n=15 |          | Group B<br>n=28 |          | Group C<br>n=29 |          |
|----------|----------------|-----------------|----------|-----------------|----------|-----------------|----------|
|          |                | Pretest         | Posttest | Pretest         | Posttest | Pretest         | Posttest |
| P score  | Mean           | 17.37           | 23.73    | 21.07           | 22.30    | 23.67           | 21.79    |
|          | Std. Deviation | 8.686           | 10.767   | 13.572          | 12.938   | 13.496          | 13.249   |
| N2 Score | Mean           | 14.59           | 23.04    | 17.63           | 20.42    | 23.47           | 24.16    |
|          | Std. Deviation | 10.761          | 10.851   | 13.809          | 14.619   | 13.043          | 12.855   |

While there were no improvements in DIT scores for either of the intervention groups (Group B and Group C), it was somewhat of a surprise that the P scores for Group C (the group using the ethical decision-making framework along with cases) actually decreased (from 23.67 to 21.79). Also surprising was what appeared to be an increase in both the P scores and N2 scores for the control group (Group A) - the group that had no ethical instruction and did not engage in analysis of ethical accounting cases. The analysis of variance (ANOVA) was conducted to test these differences for significance. Results from the ANOVA comparing the differences in DIT scores among the three groups is shown in Table 2.

**Table 2.**  
*Comparisons of the Differences in DIT Scores among the Three Groups*

|                    |                | Sum of Squares | df | Mean Square | F     | Sig. |
|--------------------|----------------|----------------|----|-------------|-------|------|
| Pretest P Score    | Between Groups | 396.503        | 2  | 396.503     | 1.229 | .299 |
|                    | Within Groups  | 11129.901      | 69 | 11129.901   |       |      |
|                    | Total          | 11526.404      | 71 | 11526.404   |       |      |
| Posttest P Score   | Between Groups | 37.607         | 2  | 37.607      | .117  | .889 |
|                    | Within Groups  | 11057.362      | 69 | 11057.362   |       |      |
|                    | Total          | 11094.969      | 71 | 11094.969   |       |      |
| Pretest N2 Score   | Between Groups | 914.446        | 2  | 914.446     | 2.735 | .072 |
|                    | Within Groups  | 11533.140      | 69 | 11533.140   |       |      |
|                    | Total          | 12447.586      | 71 | 12447.586   |       |      |
| Posttest N2 Groups | Between Groups | 205.388        | 2  | 205.388     | .588  | .588 |
|                    | Within Groups  | 12045.770      | 69 | 12045.770   |       |      |
|                    | Total          | 12251.158      | 71 | 12251.158   |       |      |

The one-way ANOVA for Groups A, B and C showed that there is no significant difference between pretest and posttest P and N2 scores (pretest P score = 0.349 sig., posttest P score = 0.810 sig., pretest N2 score = 0.091 sig., posttest N2 score = 0.728 sig.,  $p = .05$ ).

**Findings for Hypothesis H1**

Paired-samples t-tests were conducted to determine if there was a difference between pretests and posttests within groups. Paired-samples t-tests for Groups A, B, and C are shown in Table 3, Table 4, and Table 5

respectively. The paired samples t-test for Group A showed a significant difference between pretest and posttest P scores, and pretest and posttest N2 scores (pretest and posttest P score = 0.025 sig., pretest and posttest N2 score = 0.007 sig.). Therefore, Group A is probably the one that differed from the rest in the one-way ANOVA.

**Table 3.**  
*Paired Samples T-Test, Group A*

|        |                                      | Mean     | Std. Deviation | Std. Error Mean | t      | df | Sig. (2-tailed) |
|--------|--------------------------------------|----------|----------------|-----------------|--------|----|-----------------|
| Part 1 | Pretest P Score - Posttest P Score   | -6.367   | 9.850          |                 | -2.503 | 14 | .025            |
| Pair 2 | Pretest N2 Score - Posttest N2 Score | -8.45087 | 10.32029       | 2.66469         | -3.171 | 14 | .007            |

The paired-sample t-test for the control group (Group A) showed a significant difference between pretest and posttest P scores and N2 scores (Table 3). The difference could be a result of the low sample size (n = 15) which would allow variances in individual scores to have a magnified effect on the average group score, or there may exist a variable or variables that influenced the average group DIT score. A series of linear regression tests were conducted to ascertain the possibility of any variables that may have influenced the showings of significance. Besides assessing levels of moral reasoning, the DIT-2 also obtains demographic data on age, gender, level of education, and political view. These variables were assessed in the regression analysis. The results of the regression analysis showed that for the pretest P score, the resulting F = .263, with a significance = .960. For the posttest P score, F = 3.322; significance = .100. The pretest N2 score F = .245; significance = .967. And for the posttest N2 score, F = 1.274; significance = .415. The results of these tests showed that none of those four variables were significant predictors of the difference identified in the t-test.

It is likely that the influence of another factor such as the small sample size caused the difference. It can be adduced that students in a basic accounting course engaged in accounting exercises that do not have ethical content will not improve moral reasoning as a result of those exercises. Therefore, H<sub>1</sub> is accepted.

***Findings for Hypotheses H<sub>2</sub> and H<sub>3</sub>***

There were no significant differences found between pretest and posttest P scores for either of the intervention Groups B or C. This was, at first, surprising in that Groups B and C both used ethical cases in the course of the semester, and Group C had instruction in use of the Babson College ethical decision-making model. The paired samples t-test for Group B (Table 4) showed no significant difference with the pretest and

posttest P scores significance = 0.562, and the pretest and posttest N2 scores significance = 0.246. Therefore, the second hypothesis, H<sub>2</sub>, that student engagement of case studies with ethical content in an introductory accounting course will improve moral reasoning; and H<sub>3</sub>, that student engagement of case studies with ethical content and the utilization of an ethical decision-making framework in a basic accounting course will improve moral reasoning are rejected.

**Table 4.**  
*Paired Samples T-Test, Group B*

|        |                                      | Mean     | Std. Deviation | Std. Error Mean | t      | df | Sig. (2-tailed) |
|--------|--------------------------------------|----------|----------------|-----------------|--------|----|-----------------|
| Part 1 | Pretest P Score - Posttest P Score   | -1.238   | 11.163         | 2.110           | -.587  | 27 | .562            |
| Pair 2 | Pretest N2 Score - Posttest N2 Score | -2.78259 | 12.42207       | 2.34755         | -1.185 | 27 | .246            |

Table 5 displays the paired samples t-test results for Group C, the intervention group that had the largest amount of ethics education, which showed no significant difference in the pretest and posttest P scores (significance = 0.402) nor in the pretest and posttest N2 scores (significance = 0.653).

**Table 5.**  
*Paired Samples T-Test, Group C*

|        |                                      | Mean    | Std. Deviation | Std. Error Mean | t     | df | Sig. (2-tailed) |
|--------|--------------------------------------|---------|----------------|-----------------|-------|----|-----------------|
| Part 1 | Pretest P Score - Posttest P Score   | -1.878  | 11.889         | 2.208           | .851  | 28 | .402            |
| Pair 2 | Pretest N2 Score - Posttest N2 Score | -.69010 | 8.18879        | 1.52062         | -.454 | 28 | .653            |

Computations of effect size, eta squared, were completed. Eta squared reflects the proportion of variation accounted for by the differences among the groups (Becker, 1999). For example, differences between the three groups account for 3.4% of the variation in pretest P Scores. Differences between the three groups account for 0.3% of the variation in posttest P Scores. Differences between the three groups account for 7.3% of the variation in pretest N2 Scores. And differences between the three groups account for 1.7% of the variation in posttest N2 Scores. These low effect sizes indicate that there is only a small degree of association between the sample groups' pre- and posttest results and their respective treatments.

The student responses to the debriefing questionnaires sent after the

posttest yielded interesting findings important to the researchers for designing future research. The results from all three groups indicate that there was enough time to complete the DIT, the instructions for the DIT were clear and complete, and that students took the DIT seriously. They also agreed that they would have taken the ethical analyses and discussions more seriously if there had been grade points related to the discussions. The students from Group C indicated that they did not refer to the Babson College ethical decision-making framework for any clarifications during the course. The students strongly agreed that the class lecture on the ethical framework, cases, and the framework itself were all clear and understandable. The students indicated that the cases used were easy to decide because they were obvious right-versus-wrong choices as opposed to right-versus-right dilemmas. They did not think the ethical dimensions of the cases were very interesting or challenging. The students from Groups B and C indicated that, in regard to engaging the ethical content in the two classes, they did only what they had to in the class to get by since there were no grade points related to the ethical content and activities in the course.

### **Conclusions and Recommendations**

This study was limited to the students at a single institution. Students at other institutions may manifest different responses to the DIT and may engage in the ethical decision-making process differently. While none of the interventions resulted in increases in moral reasoning, an additional conclusion was derived from this study. Motivation appeared to be a factor in students' desire to engage in reflective ethical reasoning. As was stated by students after the posttest, since there were no grade points of any significance attached to the ethical reasoning activities in the course, students, for the most part, did not take it as seriously as they did the accounting content. This does not conflict with the results from the DITs since the overall low scores reflect that fact that these students' stage levels of moral reasoning were more at the pre-conventional level than at the conventional or post-conventional levels. An explanation for the lack of interest in the ethical reasoning activities might be that there was nothing of perceived value in the activities for the students. This observation serves as a premise for further research.

In order to ensure a greater level of motivation in future studies, it seems reasonable to include similar interventions using cases with ethical content in core business courses, but with the additional requirements for written reflective case analyses with grade points related to each written assignment. Since the findings indicated that a motivational component was needed for students to engage in the ethical decision-making process, further studies in this area of research might be structured such that participation is not voluntary and grades are tied to both the course content and to the reflective ethical case analyses. It may be that the introduction of external motivation in the form of grade points for written reflective analyses, with and without training in the use of a specific ethical decision-making model, may affect increases in moral reasoning in a one-semester undergraduate business course.

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