

BUSINESS TRAINING, REASONING SKILLS, AND PHILOSOPHICAL ORIENTATION: CORRELATES OF ETHICAL DECISION-MAKING

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ABSTRACT

In today's business world it is essential that managers/employees engage in ethical thinking and behavior in making the decisions that are part-and-parcel of operating a successful business. Therefore, it would benefit businesses to understand, as much as possible, the various characteristics, influences, or factors which induce or predict ethical decision-making. This paper describes a study in which students at a mid-south USA university were used as proxies for "business-trained" persons versus "non-business-trained" persons, to explore the issue of whether a business background, i.e., training, makes a difference in the ethical decision-making of persons engaged in business situations. The major finding of the study is that "yes", in some instances, business-trained versus non-business trained persons do render statistically significant different decisions in business-oriented scenario. Reasoning skills and philosophical orientation were also examined as co-variates. Although the statistical evidence was not as strong, results indicated that reasoning skills and philosophical orientation also explain some of the variation observed in ethical decisions/judgments in business-oriented scenarios.

KEYWORDS: Ethical thinking, ethical decision making, business ethics, philosophical orientation

INTRODUCTION

Ethics can be defined as a set of standards of conduct that guide moral behavior and ethical decisions (Wood, 2002). Studies have found relationships between student characteristics and level of ethics and moral reasoning (Bligh, Thomas, & McNay, 2000). Understanding the characteristics that influence moral decision-making might benefit universities who are training students for the workforce and the businesses or companies to which they are going. In the current study the primary research question being addressed is, "Does business training, and/or reasoning skills, and/or philosophical-orientation have an influence on ethical decision-making in business related scenarios?" We survey business students versus non-business students to identify differences in decision-making behavior. We find evidence that indeed, business trained individuals do make different decisions. We conclude the paper with a call for additional research into this phenomenon.

There are four major parts to this paper. After this introduction, we discuss some related literature. Next we present a description of the subjects used and the data generated for the study. Then we describe, in detail, the various methodologies used to explore the relationships between our constructs and the results of those methodologies. And in the final section we summarize and give our conclusions, including a discussion of the limitations of this study and our suggestions for future research.

LITERATURE REVIEW

When studying business ethics, it is important to examine the factors related to the decision-making process. The literature suggests some of these factors may be external to the individual, like the type of issue being decided (Jones, 1991). Other literature suggests that personal factors, like gender (Gilligan, 1982; Dawson, 1997), personality (Perry & Kane, 1990), business training (Hanson & McCullough,

1995; Lindsay, 2002) and personal moral philosophies (Schlenker & Forsyth, 1977; Barnett, Bass, & Brown, 1994) could play a role in an individual's decision outcome.

Stevens (1993) found that business majors are different from non-business majors in their ethical rationalizations in that their ethical principles might lose out to the almighty dollar. Lindsay (2002) found that business students spend about 95% of their time learning how to maximize wealth but only half a semester in an ethics course. Hanson and McCullough (1995) found that students in the helping fields, like nursing or social work, had higher levels of altruism and higher ethical standards of conduct.

Lawrence Kohlberg (1983) developed a stage theory of moral thinking and reasoning based on Jean Piaget's work on moral judgment. At the earliest stage of development, or the pre-conventional stage, moral decisions are based on a fixed set of rules that people follow to be unquestionably obedient. Compliance is based on an individual's need to avoid punishment. As one moves into the conventional stage, the immediate people in a person's life become more important and social order and keeping society running smoothly are now main goals when making moral decisions. He emphasized that the main difference in the earlier stage compared to the later stage is that focus shifts from the person to society. In the last stage, the post-conventional stage, one starts to think about how to make society better and questions rules and laws that they have followed up to this point to keep society running smoothly. Near the end of this stage a person may feel that civil disobedience is required to increase justice for all.

Differences in moral philosophies are also said to play a key role in ethical decision-making. Schlenker and Forsyth (1977) described two basic personal factors related to ethical decision-making. First they discussed the degree to which one accepts or rejects the idea of universal moral rules and called this relativism. A second factor, called idealism, was related to the outcome of a decision and how others may be affected. According to Forsyth, people high on relativism do not believe in moral absolutes but examine situations on a relative basis. Individuals high on idealism believe that moral actions should have positive consequences and do not believe that others should be harmed in the pursuit of a goal. Less idealistic individuals believe that sometimes other people may get harmed in the pursuit of a greater good (Forsyth, 1992).

Forsyth (1980) discussed how personal moral philosophies can be represented by one of four possible quadrants. According to Forsyth individuals can be represented by one of four ideologies depending on whether they were high or low on idealism as well as relativism. Forsyth labeled as Subjectivists those who are high on relativism and low on idealism. These people tend to consider actions based on their personal values and gains. Exceptionists believe in moral absolutes but are open to some exceptions and are low on both dimensions. Those who were high on both dimensions are labeled as Situationists, or those who reject moral universals and prefer outcomes where no one individual get hurt. Absolutists are low on relativism and high and idealism so they also believe that the best outcome can be achieved by following universal moral rules.

The current study draws on several aspects of the aforementioned prior research to address the question of whether business training, reasoning skills, and philosophical-orientation have an influence on ethical decision-making in business related scenarios. Next, we discuss the subjects and data collection methodology.

METHODOLOGY, DATA AND SUBJECTS

A survey instrument (see Appendix) was administered to a little over two hundred students at a mid-sized public university in the mid-south, USA. In terms of primary area of study, 73 respondents declared themselves business majors, and 131 declared themselves non-business majors. The business students were drawn primarily from upper-division business courses, and the non-business students were from

introductory psychology courses. Therefore, the business students represented persons with “business training” and the non-business majors were not exposed to business training. Since this was a non-experimental research design, a large sample size increased power of the analyses.

The survey consisted of five sections. Parts-I & II were composed of twenty reasoning skills questions, adapted from a Law School Admission Test (LSAT) study guide (Orton, 2001). The LSAT asks two types of reasoning questions, 1) analytical, or deducing spatial and numerical relationships from groups of conditions or statements; and 2) logical, or deriving logical conclusions and relationships from a variety of situations or passages. Ten specific questions of each type were chosen for the current study. For each respondent, the answers to the twenty individual questions were coded as either “0” = incorrect, or “1” = correct. A composite score was calculated out of the ten questions of each section.

In Part-III of the survey, fifteen short business-related ethical-decision-making scenarios were presented (University of Central Arkansas, 2007). Using a Likert scale (“0” = always acceptable, to “7” = never acceptable), respondents were asked to make judgments as to the acceptability of the actions/decisions described in the scenarios.

Part-IV of the survey, entitled “Personal Philosophy”, presented to the respondents a summarized version of Forsyth’s 4-quadrant model (Forsyth, 1980) of philosophical orientation. As mentioned earlier, this model categorizes people according to four group-types: 1) Subjectivists, 2) Exceptionists, 3) Situationists, and 4) Absolutists. Respondents were asked to categorize themselves as to which of these four groups most described themselves.

The last part of the survey asked for demographic questions, like major, gender, and academic classification. Various statistical methodologies were used to explore the relationship between business training, reasoning skills, philosophical orientation and ethical decision-making in business scenarios.

RESULTS

Group Differences (Business versus Non-Business) and Business Ethical Decision-Making Scenarios

The first issue addressed was whether business-trained people versus non-business trained people differ in their judgments in business related ethical decision-making scenarios. A series of independent samples t-tests was performed with the 15 business scenarios as the test variable and major, business versus non-business, as the grouping variable. The business scenarios were structured on an eight point Likert scale, with 0 = “always acceptable” and 7 = “never acceptable”. The results are presented in Table 1.

It is interesting to examine the decision-making scenarios when they are separated into those that are legal versus those that are illegal. Eight scenarios are definitely or most likely illegal (scenarios 1, 2, 4, 5, 6, 8, 12, and 14); the other seven (scenarios 3, 7, 9, 10, 11, 13, and 15) are generally legal. The mean of the average business-major respondent scores for all illegal scenarios is 5.40; while the average non-business respondent score for all illegal scenarios is 4.88. The independent sample t-test comparing these two means is 3.495, which is significant ($p=.001$). The mean of the average business-major score for all legal scenarios is 4.29 versus 4.66 for the non-business majors. Comparing these two means produces a t-test statistic of 2.306, which is also significant ($p = .023$). Interestingly, the business trained people are more unforgiving, on average, of illegal actions than are the non-business people. However, the non-business people are more critical, on average, than the business people if the scenario involves an action that is legal, though ethically challenged. Notice that the order of the average total ratings, from most unacceptable to least unacceptable, is first, business majors, illegal actions (5.40); second, non-business majors, illegal actions (4.88); third, non-business majors, legal actions (4.66); and fourth, business

majors, legal actions (4.29). This order prevails in the data of this study regardless of whether one is looking at all fifteen of the decision-making scenarios, or just those scenarios that show statistically significant differences between the two groups. It should also be noted that for both groups, the business majors and the non-business majors, t-tests indicate that there is a statistically significant difference ($p \leq .001$) between their average scores for the legal scenarios versus the illegal scenarios.

Table 1: Group Differences (Business vs. Non-Business) Business Ethical Decision-Making Scenarios

	Means		t	SIGNIF
	Business	Non-Business		
S1	5.73	4.62	4.289	0.000**
S2	6.28	5.95	1.663	0.098*
S3	4.76	4.93	(0.741)	0.460
S4	6.26	5.95	1.545	0.124
S5	4.78	3.68	3.427	0.001**
S6	4.04	3.01	3.547	0.001**
S7	3.01	2.99	0.091	0.928
S8	5.74	5.18	1.979	0.049**
S9	5.22	5.12	0.404	0.687
S10	6.19	6.28	(0.514)	0.608
S11	3.96	4.18	(0.746)	0.457
S12	5.16	5.76	(2.119)	0.036**
S13	3.92	4.97	(3.605)	0.001**
S14	5.14	5.03	0.376	0.708
S15	2.90	4.23	(4.537)	0.000**

Mean scores on the 15 business-related ethical-decision-making scenarios, for the business major compared with non-business major. Independent samples t-tests were performed on each scenario by major; significant differences are indicated. *Significant at $\alpha \leq 0.10$, **Significant at $\alpha \leq 0.05$

The results indicate that for eight of the fifteen scenarios, the business majors gave statistically significantly different judgments than did the non-business majors. Of the statistically different judgments, the business people indicated less acceptance for the actions described in scenarios 1, 2, 5, 6, and 8 while the non-business majors felt 12, 13, and 15 were most unacceptable.

This result begs the question of whether there might be some commonality in these two groups of scenarios. To address that issue, a principal components analysis (PCA) was performed on just the eight scenarios that showed statistical significance in Table 1. An unrestricted Varimax rotation was used with PCA being the designated extraction method. A Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (.631) indicated that the eight variables were acceptable for factor analysis. Also, the Bartlett's Test for Sphericity indicated that the correlation matrix for these variables was not an identity matrix, again, an indicator of acceptable conditions for conducting a factor analysis. Results are presented in Table 2.

Table 2: Factor Analysis on Significant Business Scenarios

Scenario	Component	
	Factor 1	Factor 2
1	0.656	(0.092)
2	0.532	0.245
5	0.747	0.103
6	0.676	(0.151)
8	0.474	0.351
12	0.011	0.726
13	0.184	0.671
15	(0.066)	0.799

A Factor Analysis using a Varimax rotation was performed to reduce the 8 scenarios shown to be significantly different in table 1 into comprehensive factors. Two factors emerged and the loadings are presented here.

As seen in Table 2, the eight variables loaded onto two components, with all loadings over .500 (except for Scenario 8, whose highest loading is .474). This appears to represent a clean grouping of variables into two distinct types. But do these two distinct factors have sufficient “face validity” that we can say that they are representative of logically distinct underlying constructs? Scenario 1 involves padding expense accounts; scenario 2 entails engaging in an illegal production process in order to increase profits; scenario 5 concerns paying a bribe in order to enhance profits; scenario 6 is about suppressing competition in order to enhance profits; and scenario 8 is about insider stock trading to achieve gain. These five scenarios involve financial enrichment to either the company or an individual employed by the company. Therefore, hereafter, they will be regarded as the “financial” scenarios. On the other hand, the issues addressed by the last three scenarios are of a quite different nature. Scenario 12 has to do with gender discrimination; scenario 13 is about deceptive advertising; and scenario 15 concerns the exploitation of young women as scantily clad waitresses. These last three scenarios do not seem to have much to do with immediate money or profits. Therefore, these three scenarios will be designated as the “people” scenarios. Implications of these two types of scenarios, financial versus people, will be discussed in subsequent sections of this paper.

Group Differences (Business versus Non-Business) and Reasoning Skills

As described in the preceding section, statistical evidence suggests that business trained students may be different from non-business trained students in their business-related ethical judgments. Before coming to this conclusion, other possible underlying factors like intellect should be considered.

To explore this possibility further, chi-squares were performed on major (business & non-business) on each reasoning question (correct & incorrect). Also, two independent sample t-tests were performed between the majors on the total analytical and logical scores. The results are presented in Tables 3-A and 3-B.

Table 3-A: Group Differences (Business vs. Non-Business) Analytical Reasoning

Means				
	Business	Non-Business	χ^2	Signif.
Q1	0.78	0.59	2.87	0.005**
Q2	0.96	0.70	4.57	0.000**
Q3	0.77	0.54	3.35	0.001**
Q4	0.84	0.68	2.47	0.014**
Q5	0.82	0.67	2.44	0.015**
Q6	0.91	0.87	0.70	0.405
Q7	0.84	0.75	1.53	0.127
Q8	0.70	0.54	2.40	0.017**
Q9	0.93	0.88	1.20	0.231
Q10	0.84	0.58	2.08	0.039**
Total	0.84	0.67	5.93	0.000**
Analytical				

*A Chi-square was performed on the outcome of an analytical question (correct or incorrect) by major (business or non-business). Total number correct was computed and compared with an independent samples t-test. Significant differences are indicated. **Significant at Alpha \leq 0.05*

For seven questions of the ten questions, on both the analytical and the logical sections, major (business versus non-business) was **not** independent from reasoning skill. Of the analytical questions, 1, 2, 3, 4, 5, 8, and 10 showed statistical significance; of the logical questions, 11, 13, 14, 15, 17, 18, and 20 were statistically significant. Also, the t-test of the continuously measured TotalANALYTICAL-percent-correct ($p=.000$) and the TotalLOGICAL-percent-correct ($p=.000$) variables strongly indicated statically significant differences, business people versus non-business. The interesting thing to note is that for every question, whether statistically significant or not, the business people, on average, scored higher than

the non-business people. This is strong evidence that reasoning skills do, to some degree, delineate business people from non-business people. Whether this reasoning-skills difference permeates to help explain differences in ethical decision-making is another topic addressed later on in this paper.

Table 3-B: Group Differences (Business vs. Non-Business) Logical Reasoning

	Means		χ^2	Signif.
	Business	Non-Business		
Q11	0.80	0.68	1.89	0.061*
Q12	0.42	0.34	1.17	0.243
Q13	0.76	0.48	4.05	0.000**
Q14	0.95	0.77	3.37	0.001**
Q15	0.58	0.45	1.82	0.069*
Q16	0.35	0.31	0.62	0.539
Q17	0.84	0.49	5.21	0.000**
Q18	0.95	0.78	3.17	0.002**
Q19	0.36	0.31	0.45	0.655
Q20	0.82	0.58	3.69	0.000**
Total	0.68	0.51	5.62	0.000**
Logical				

A Chi-square was performed on the outcome of a logical question (correct or incorrect) by major (business or non-business). Total number correct was computed and compared with an independent samples t-test. Significant differences are indicated. *Significant at Alpha \leq 0.10, ** Significant at Alpha \leq .05

Differences Between Business Training, by Philosophy-Type

Another possible confounding factor, besides business training, that could influence ethical decision-making is philosophical background. This is, obviously, a very wide-ranging and broadly defined area, and a thorough investigation of such is well beyond the limited scope or space allotment of this paper. Forsyth's (1980) taxonomy of ethical ideologies is one example of a model of philosophical orientation. Therefore this model was used to explore whether philosophical orientation has an impact on ethical decision-making. Respondents classified themselves as to membership of the category of philosophy they most identified with. Their responses are presented in Table 4.

Table 4: Chi-Square: Business/Non-Business Verses Philosophical Type

		Major		Total
		Business	Non-Business	
Subjectivists	Count	26	29	55
	Expected Count	22.1	32.9	55.0
	Residual	3.9	(3.9)	
Exceptionists	Count	23	32	55
	Expected Count	22.1	32.9	55.0
	Residual	0.9	(0.9)	
Situationists	Count	14	24	38
	Expected Count	15.3	22.7	38.0
	Residual	(1.3)	1.3	
Absolutists	Count	9	22	31
	Expected Count	12.5	18.5	31.0
	Residual	(3.5)	3.5	
Total	Count	72	107	179
	Expected Count	72.0	107.0	179.0

The table shows the actual number of respondents (Business and Non-Business) falling within each of the four philosophical types. Differences between expected and observed are presented and a Chi-Square indicated these counts are not dependent of each other, so major classification was not dependent on philosophy classification.

Of the 179 total useable responses, approximately 31% classified themselves as Subjectivists, 31% as Exceptionists, 21% as Situationists, and 17% as Absolutists. The Pearson Chi-Square statistic computed to be 2.990 (p=.393). Thus, major and philosophy-type are independent of each other.

Differences in Reasoning Skills by Philosophy –Type

The previous section yielded evidence that business people do **not** differ by philosophy-type from non-business majors, and therefore philosophical orientation may not have a direct affect on ethical decision-making. But perhaps philosophy-type has an indirect affect on ethical decision-making via the route of affecting reasoning skills. The direct relationship between reasoning skills and ethical decision-making will be addressed in section 6. The results of the crosstabs between the four philosophy types and the outcome on the individual reasoning questions are presented in Table 5.

Table 5: Chi-Square of Philosophy Type by Reasoning Outcome (corrector or incorrect)

Analytical			Logical		
Question	χ^2	SIGNIF	Question	χ^2	SIGNIF
1	7.789	0.051*	11	6.840	0.077*
2	1.222	0.748	12	0.645	0.886
3	3.160	0.368	13	2.363	0.500
4	6.302	0.098*	14	5.589	0.133
5	4.003	0.261	15	3.662	0.300
6	0.365	0.947	16	4.200	0.241
7	3.035	0.386	17	1.080	0.782
8	8.865	0.031**	18	8.506	0.037**
9	4.726	0.193	19	8.187	0.225
10	5.723	0.455	20	15.436	0.017**

*This table summarizes the results of a chi square of whether an individual was correct/incorrect on each of the 20 reasoning questions compared to the four philosophy types. A Chi-square statistic was calculated to determine if these two variables were independent of one another. Each question was analyzed individually and significance is indicated. Significant at Alpha ≤ 0.10 ; **Significant at Alpha ≤ 0.05*

Table 5 shows the results of running a crosstabs of the categorically coded (0=incorrect, 1=correct) reasoning skills questions on the four-segmented philosophy-types. Note that when looking at the group of analytical-reasoning questions (Qs 1, 4, 8) and the group of logical-reasoning questions (Qs 11, 18, 20), the Chi-Square statistic indicates that in those six instances, the correctness of answers is, on average, different depending upon the philosophical orientation of the respondent. Interestingly, when run as an ANOVA (the individual reasoning questions as the DVs and philosophy-type as the IV), and looking at the contrast combinations of philosophical-type for the six reasoning questions showing statistically significant differences, they all involve the Absolutists (and sometimes the Exceptionists). For all six of the questions, these two philosophical-types answer with disproportionate incorrectness relative to the other two philosophy-types. Recall that the common definitional component of the Absolutists and the Exceptionists is that they both believe in moral absolutes. Could it be that these two types of “absolutists” are inferior in their reasoning skills? And might inferiority in reasoning skills then spill over to indirectly affect ethical decision-making? This issue will be addressed in subsequent sections of paper.

Differences in Ethical Decision-Making, by Philosophy-Type

Next, the question of whether respondents differ in their ethical decision-making depending upon philosophical orientation was addressed with a one-way ANOVA. The fifteen ethical-decision making scenarios were the criterion variables with philosophy-type designated as the independent variable. Results are presented in Table 6.

In just four of the fifteen scenarios did philosophy-type have a statistically significant impact. Of the four, only scenarios 2 and 8 also showed statistical significance when Major was the IV (See section 1). This suggests that perhaps philosophy-type has little direct influence in driving differences in respondents’ ethical decision-making.

Correlations: Reasoning Skills and Ethical Decision-Making

Throughout this paper, evidence has suggested that business majors differ from non-business majors in their ethical decision-making and their reasoning abilities. The next step was to see if there is a direct correlation between reasoning skills and ethical decision-making. Bivariate correlations were performed

Table 6: Differences in Ethical Decision-Making by Philosophy-Type

Scenario	F	SIGNIF	Scenario	F	SIGNIF
1	0.785	0.504	8	2.257	0.083*
2	2.836	0.040**	9	1.061	0.367
3	0.244	0.866	10	0.267	0.849
4	2.163	0.094*	11	0.915	0.435
5	0.153	0.928	12	1.125	0.340
6	1.257	0.291	13	1.581	0.195
7	0.680	0.565	14	2.125	0.099*
			15	1.978	0.119

The table indicates the results of an ANOVA for self-reports out of 7 (with 1 being always acceptable and 7 being never acceptable) on the 15 individual decision-making scenarios by the four-philosophy types group. Significant differences are indicated. **Significant at Alpha ≤ 0.05 *Significant at Alpha ≤ 0.10

between the scores on the ethical decision-making scenarios and, first, the overall-percent-correct on the analytical reasoning questions and, second, on the overall-percent-correct of the logical reasoning questions. Interestingly, correlations were present between the eight key scenarios discussed earlier, with just one exception. The total analytical score correlated with scenario #4, which was not one of the eight scenarios that showed differences by major. For this reason, focus was placed on the correlations between reasoning skills and the five key financial scenarios and the three key people scenarios. Results are presented in Table 7.

In six of the eight scenarios there was a statistically significant correlation between ethical decisions and at least one type of reasoning skill. For scenarios 1, 2, 5, 6, and 8 (the “financial-oriented” scenarios), the correlations were positive and for scenarios 12, 13, and 15, (the “people-oriented” scenarios), the correlations were negative. This suggests that as the reasoning skills increase, respondents judged the ethical actions of the financial-oriented scenarios to be more unacceptable but judged the people-oriented scenarios to be more acceptable. The purpose of this paper is not to claim that those with better reasoning skills would find the financial scenarios unacceptable and the people scenarios as acceptable; however this pattern might be suggestive of something systematic linking the association between reasoning skills and ethical decision-making. Further investigation is warranted.

Table 7: Correlations: Reasoning Skills with Ethical Decision-Making

Business Scenario	Correlation Coefficient		Business Scenario	Correlation Coefficient	
	Analytical Reasoning	Logical Reasoning		Analytical Reasoning	Logical Reasoning
1	0.278*	0.174*	8	0.125	
2	0.178*	0.123	9		
3			10		
4			11		
5	0.125	0.197*	12		(0.126)
6	0.184*	0.167*	13		(0.178)*
7			14		
			15	(0.167)*	(0.164)*

This table shows Pearson-correlations (one-tailed) between individual rankings out of 7 on the ethical business decision-making scenarios, paired with percent correct on the 10 analytical questions and then paired with the percent correct on the 10 logical questions. Only the 8 scenarios found to be significant in Table 1 were considered in this analysis. *Significant at 0.10

Regressions

It appears that all three of the research constructs of business training, reasoning skills, and philosophical-type do have some impact on ethical decision-making. There is, however, some degree of multicollinearity amongst the three constructs, suggesting that analyses should be conducted to determine how much influence each have on ethical decision-making. To answer this final question, regression analyses were performed with each of the eight ethical scenarios previously determined to be significant as criterion variables and analytical-reasoning-percent-correct, logical-reasoning-percent-correct, philosophy-type, and major as predictors. Results are presented in Table 8.

Table 8: Results of Regressions

Scenario	(F-test) R ²	Standardized Beta Weights (t -test for independent variables coefficients)			
		Analytical	Logical	Phil-Type	Training
1	0.180* (9.559)	0.314* (3.678)	(0.013) (-.156)	0.167** (2.360)	(0.191)** (-2.493)
2	0.080* (3.758)	0.244* (2.698)	0.055 (.621)	0.094 (1.255)	(0.015) (-.186)
5	0.077* (3.640)	0.083 (.917)	0.104 (1.155)	0.023 (.304)	(0.168)** (-2.063)
6	0.082* (3.891)	0.089 (.986)	0.055 (.612)	(0.042) (-.567)	(0.194)** (-2.396)
8	0.039 (1.765)	0.083 (.903)	(0.028) (-.309)	0.111 (1.459)	(0.143)*** (-1.728)
12	0.037 (1.668)	0.102 (1.103)	(0.145) (-1.574)	(0.001) (-.018)	0.137*** (1.646)
13	0.103* (4.981)	0.184** (2.067)	(0.177)** (-1.994)	0.093 (1.264)	0.248* (3.102)
15	0.077* (3.573)	0.000 (.003)	(0.058) (-.637)	0.065 (.860)	0.232* (2.832)

The table shows the results of separate regressions with each of the significant ethical business decision-making scenarios from Table 1 as the dependent variable and percent correct on the 10 analytical questions, total percent correct on the reasoning questions, philosophy-type, and major as predictor variables. Significant predictors are indicated separately for each scenario. *Significant at 0.01, **Significant at 0.05, ***Significant at 0.10

The models were not particularly strong, with the R², ranging from a low of .037 to a high of only .18. However, six of the eight were statistically significant. The beta weights are standardized and indicate which of our three predictors was most influential. The results indicated that overall analytical score was a significant predictor in 3 of the 8 scenarios, overall logical score in 1 of the 8, philosophy-type in 1 of the 8, and major in 7 of the 8. As far as the construct exerting the most influence, the overall analytical score had the highest standardized beta in 2 of the 8, overall logical scores had the highest in 1 of the 8, and major was most influential in 5 of the 8 scenarios.

SUMMARY AND CONCLUSIONS

To summarize, the objective of this study was to relate business training, reasoning skills, and philosophical orientation to ethical decision-making. In the first section, an initial link was made between business training and ethical decision-making in eight of the fifteen scenarios. In the next section it was found that business people scored higher on analytical and logical reasoning. In the third section business training and philosophical orientation were found to be independent of each other, but in the next section a relationship was found between philosophy-type and reasoning skills. The next sections found evidence that ethical decision-making differed by philosophical orientation and also was related to reasoning skills. Finally, due to possible intra-correlations between business training, reasoning skills, and philosophical-orientation, multiple regressions were performed with ethical decisions as the dependent variable. Business training, reasoning skills, and philosophical-orientation were loaded as independent variables.

Summarizing the primary research question: “Do business training, and/or reasoning skills, and/or philosophical-orientation have an influence on ethical decision-making in business scenarios?”, it was determined that all three factors had some impact. Evidence suggested that business training, in most instances, was the pre-dominant influence, followed next by reasoning skills, and finishing with philosophical-orientation having the least influence.

An exploratory paper, such as this, naturally has several limitations. At a fundamental level, the major limitations revolve around the basic statistical notions of validity and reliability. Therefore, the issue of internal validity must be raised. Also, due to the correlational method of collection, cause and effect cannot be suggested, only trends and relationships. External validity and generalizability may also an issue. The question of whether the study has sufficient reliability (i.e., will the results replicate in duplicate studies) must also be raised. Although these problems may exist, nevertheless, the statistical significance displayed and observed in various parts of this study do indicate specific relationships do exist that are systematic and not merely random fluctuations. The evidence suggests that there is a connection between the business training, reasoning skills, and philosophical orientation, as they are operationally defined and measured here, and ethical decision-making in business related scenarios. Moreover, we do not distinguish between decisions that involve a violation of the law and those that do not violate the law.

Future research should focus on ameliorating the limitations delineated in the preceding paragraph. Particularly important is developing validated scales to measure the several constructs dealt with in this paper. Using real world business practitioners, rather than student proxies, would enhance validity for business training. Also, this area of research is critical for the development of relevant college business curriculum. In addition, distinguishing between decisions that involve a violation of the law and those that do not violate the law could provide significant additional insights into decision making behavior. Most importantly, for businesses it would be beneficial to be able to predict which people, as employees, will conduct themselves in the most ethical manner.

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APPENDIX – SURVEY INSTRUMENT

I. Analytical Reasoning

Please choose the best answer to each of the following questions. Fill in the letter on the scantron that matches your answer.

1. Eight adults are seated around the perimeter of a square table. The following conditions are true about their seating: An equal number of adults sit on each side of the table. A woman is always seated next to a man. Half of the adults are women. A woman is always seated between two men.

Given the above facts about the seating arrangement, all of the following must be true **EXCEPT**:

- A. A man is always seated directly across from a woman.
 - B. A man is seated between two women.
 - C. Two men never sit in adjacent seats.
 - D. People of the same sex sit directly across from each other.
2. A group of nuclear scientists have been working with six nuclear particles – AB, AQ, AZ, BM, BO, and BV. The following is known about their relative speeds: AQ is the same speed as BM. BV is 300 mph slower than BO. None of the “B” particles is faster than any of the “A” particles. AB is 400 mph faster BM.

Given the above facts about the relative speeds of the particles, which of the following must be true?

- A. BO is faster than BV.
 - B. AZ is faster than AB.
 - C. BV is faster than BM.
 - D. BV is faster than BO.
3. Seven groups of campers (A, B, C, D, E, F, & G) embark on a hiking expedition into the Sierra Madres. At the first sign of nightfall, the campers set up campsites around a well, as follows: Campsite A is due south of the well. Campsite B is due east of campsite A and due south of campsite C. Campsite G is west of the well. Campsite D is east of campsite C.

How many campsites **must** be east of the well?

- A. 2
 - B. 3
 - C. 4
 - D. 5
4. Three flags (1, 2, and 3) are to be designed using nine colors: red, orange, yellow, green, blue, indigo, violet, white, and pink. The design of the flags must not violate any of the following conditions: Each flag must contain exactly three colors. Each color must be used (but only 1 time). Flag 2 contains blue and green. Flag 3 contains yellow, but since it contains yellow it **MUST ALSO** contain violet. Any flag that contains yellow **CANNOT** contain red. A flag containing green or violet **CANNOT** also contain pink. Flag 1 contains indigo and orange.

Given the above, what is the third color, besides green and blue, of flag 2?

- A. white
 - B. red
 - C. pink
 - D. violet
5. Two self-contained teams (Alpha and Beta) work simultaneously in a factory, each team constructing the same vehicle composed of 3 separate sections: X, Y and Z. Assembly takes place on Tuesday, Wednesday, and Thursday of every week. For the week’s production, each team may assemble in whatever order they choose, as long as they follow these restrictions: Each team can assemble only one section on any given day. Each unit of output contains only one of each of the three sections. Beta must assemble section Z on Thursday. Alpha must assemble section Z a day before Beta does. Alpha assembles section X on Tuesdays. Beta must assemble section Y two days before Alpha does.

What part must Beta assemble on Wednesday?

- A. X
 - B. Y
 - C. Z
 - D. possibly Y, but definitely NOT X
6. Two men (Ben and Arnold) and two women (Lydia and Dolly) have four different professions: dancer, magician, violinist, and salesperson, but not respectively. A game show contestant is trying to match the people with their professions. He is given the following information: Ben is not the dancer. The violinist is a woman. The dancer is not a woman. Dolly is the magician.

From the information given, the contestant can deduce that Lydia must be the

- A. magician
- B. dancer
- C. violinist
- D. salesperson

7. Tina's Doberman has a litter of six puppies. Each of the puppies is a solid color. The puppies have the following characteristics. Exactly three of the puppies have floppy ears. Exactly five of the puppies are female.

Which of the following must be true?

- A. At least two of the females have floppy ears.
- B. Three of the females have floppy ears.
- C. One of the female puppies has floppy ears.
- D. The male puppy has floppy ears.

8. Sam is getting dressed to go to a party, but he is having trouble deciding what clothes to wear. He will not wear any color combination that does not go well together. He has ... 2 pairs of slacks – brown and blue. 2 dress shirts – white and gray. 2 pairs of shoes – black and brown. Blue slacks cannot be worn with brown shoes. Gray does not go well with brown. Black does not go well with brown. Blue goes best with gray.

Assuming that Sam can wear only one pair of shoes, slacks, and one shirt at a time, answer the following question ...If Sam wears Black shoes, which of the following is true?

- A. He will wear a white shirt.
- B. He will wear brown slacks.
- C. He will wear a gray shirt.
- D. He has no combination of slacks, shirts, and shoes that meets his style requirements.

9. Within a national park, there are five ranger stations – Q, R, S, T, and U. A communications system links the stations, but messages can be sent or relayed only accordingly to the following plan: From T to Q. From Q to R and from Q to U. From S to R and from S to U. From R to S and from R to T.

Which is the only station that CANNOT relay a message?

- A. R
- B. S
- C. T
- D. U

10. A university committee is to be made up of four members, with an equal number of men and women, an equal number of natural scientists and social scientists, and an equal number of instructors and professors. The four members are to be selected from seven people – A, B, C, D, E, F, and G. Facts about the seven people are as follows: B, C, and D are men; the others are women. A, B, and C are natural scientists; the others are social scientists. A, D, E, and G are instructors; the others are professors.

If B and D are chosen for the committee, the women members of the committee must be...

- A. A and F.
- B. A and G.
- C. G and E.
- D. G and F.

II. Logical reasoning

Please choose the best answer to each of the following questions.

11. It is no wonder that most big cities have an increase in homeless people. Because of middle- and high-income people's renovating and settling in low-rent areas of the cities, property values have skyrocketed beyond the means of those who once lived there. If the city could decrease rent levels to previous levels, then the problem of homelessness would be virtually eliminated. Which of the following, **if true**, would most seriously **weaken** the claim that low-income housing solves the problem of homelessness?
- A. Homelessness was a problem before middle- and high-income people began renovating and settling in low-rent areas of the cities.
 - B. Homeless people are eager to find affordable housing.
 - C. Several respected studies indicate that as the quantity of low-income housing increases the degree of homelessness decreases.
 - D. In general, homeless people are very much in favor of low-income housing.
12. Making an explosive device with dry ice is simple. Because dry ice expands as it changes from a solid to a gaseous state, the only challenge is to enclose the dry ice in an impermeable container. As the dry ice evaporates, pressure builds inside the container, which explodes with amazing force. Because people who make dry ice bombs have been known to injure themselves and others, U.S. federal law prohibits the sale of dry ice to minors.

If all of the statements in the preceding paragraph are **true**, a logical inference would be that...

- A. Dry ice is not currently sold to anyone in the United States.
 - B. Dry ice evaporates into carbon dioxide gas.
 - C. Children in the United States are unable to make dry ice bombs.
 - D. A permeable container would not make an effective dry ice bomb.
13. Ethologists, people who study animal behavior, have traditionally divided an organism's actions into two categories: 1) learned behavior (based on experience), and 2) an instinctive behavior (based on genotype). Some current scholars reject this distinction, claiming that all behavior is a predictable interaction of genetic and environmental factors.

Which of the following statements, **if true, supports** the claim of these current scholars?

- A. All organisms with identical genotypes and identical experience sometimes respond differently in different situations.
 - B. All organisms with different genotypes and identical experience always respond differently in identical situations.
 - C. All organisms with similar genotypes and similar experience always respond differently in identical situations.
 - D. All organisms with identical genotypes and identical experience always response identically in identical situations.
14. Reading is a complex physical and psychological process. Most theorists claim that people read in two ways. The first way, which usually precedes the second, is reading letter by letter. Using this process, readers process each letter individually and then mentally combine the letters to produce a word. The second way, typically used by more experienced readers, is reading on the basis of word shapes. Using this process, readers learn to recognize specific word shapes and do not need to look at each individual letter. Of course, advanced readers will use both of the processes, depending on the familiarity of the word shape. Which of the following statements can be inferred from the passage above?
- A. Advanced readers have given up reading letter by letter.
 - B. Skillful readers rely both on the word-shape and letter-by-letter reading methods.
 - C. "Whole language reading," which is reading by word shapes, should only be used by people who are over age 30.
 - D. Beginning readers often find reading letter-by-letter more difficult than reading by word shape.
15. Eden is a metaphor for a time of paradise and perfection. Xavier: "Eden was." Yolanda: "Eden is." Zed: "Eden will be."

Which of the following **cannot** be inferred from the statements above?

- A. Zed is optimistic about the future.
 - B. Xavier, Yolanda, and Zed may disagree about some things.
 - C. Yolanda and Xavier completely disagree.
 - D. Yolanda views the present positively.
16. Traveler says: "The only airline that I will ever fly is Acme Air because they have never had an accident in their entire three years of operation. The argument above logically depends on which of the following assumptions?"
- A. Acme Air flies to all the cities that the traveler wants to visit.
 - B. Acme's safety record is a matter of random fluctuation.
 - C. Acme's record of service sufficiently predicts continual safety for future flights.
 - D. Other airlines with a similar number of flights have had one or more crashes in the last three years.
17. To apply for a job at a certain semiconductor plant in Boise, Idaho, a person must either have a bachelor's degree in engineering or an associate's degree in a science-related field. To be hired for an entry level position, applicants with an associate's degree must also have at least five years of work experience. An applicant with similar work experience as well as a bachelor's degree in engineering is considered over-qualified for entry level work and can be hired only in a management position.

If all of the above are **true**, which of the following **must also be true**?

- A. A new entry-level employee with five years of work experience will not hold a bachelor's degree in engineering.
 - B. The plant in Boise receives more applications from people with associate's degrees than with bachelor's degrees.
 - C. Work experience is all that matters when the position to be filled is management.
 - D. Most applicants with associate's degrees are hired at management level.
18. Carnivore says: "Meat is high in protein. We need to eat meat protein to help our muscles grow. Vegetarian says: "Your muscles don't need meat in order to grow. Just look at gorillas. They never eat meat, and their muscles are enormous. This proves that you can get all the protein you need without eating meat."

Which of the following statements, **if true**, would most likely **weaken** the vegetarian's argument?

- A. The top body builder in 2000 was a strict vegetarian.
- B. Several respected studies show that non-meat-eating mammals get all the muscle building nutrients they need from eating vegetation.
- C. Gorillas like to eat bananas.
- D. Gorillas metabolize vegetation in a different way than do humans.

19. The benefits of psychotherapy result not only from the advice that the therapist gives but also from the supportive relationship offered the patient. Even though this relationship may cost large amounts of money over the years, most patients interpret the therapist's concern for them as genuine and identify this caring relationship as the primary factor in improving their mental health. However, recent studies have found that only eight percent of therapist/patient relationships continue after the patient terminates formal paid visits.

If the statements above are **true**, then it **must also be true** that...

- A. Therapists are in fact more concerned with moneymaking than their patients' well-being.
- B. If therapy consists solely in reading a book, an important healing element will be missing.
- C. Patients think that therapists, in general, are money-hungry and greedy.
- D. Therapists who terminate relationships are likely to benefit the mental health of their patients.

20. Unlike retail outlets where items are purchased in single units, club warehouse products are grouped in bulk packages usually consisting of a dozen units or more. This quantity buying offers savings to the customer. The option to take advantage of wholesale prices by buying in bulk makes club warehouse stores a practical choice for budget-conscious consumers.

Which of the following is an assumption necessary to the author's argument?

- A. Club warehouse stores often have smaller buying power and lower overhead costs, so they offer a greater variety of products than regular retail outlets.
- B. Club warehouse store are often less conveniently located but have better parking facilities.
- C. The emergence of club stores has caused many retail stores to flourish and thus eliminates competition for customers.
- D. The financial savings from purchasing bulk packages may outweigh the inconvenience of being unable to purchase single items.

III. Ethical Acceptability

In the context of your personal ethical standards please rate (i.e., circle one number) on the Likert scales following each of the following situations.

1. An executive earning \$75,000 a year added personal expenses to his business expense account of \$2,000 a year.

Always Acceptable	0-----1-----2-----3-----4-----5-----6-----7	Never Acceptable

2. In an effort to increase profits, a manager used a production process which exceeded legal limits for environmental pollution.

Always Acceptable	0-----1-----2-----3-----4-----5-----6-----7	Never Acceptable

3. Because of her company's strong suggestions, a stockbroker recommended an investment that she, herself, did not consider to be a good investment.

Always Acceptable	0-----1-----2-----3-----4-----5-----6-----7	Never Acceptable

4. A small business received one-third of its gross revenues in the form of cash. The owner reported only one-half of the cash receipts as income for income tax purposes.

Always Acceptable	0-----1-----2-----3-----4-----5-----6-----7	Never Acceptable

5. A contract representative paid a \$500,000 to a manager of another company. In return, the manager promised assistance in obtaining a contract which produces \$10,000,000 in profit for the contractor's company.

Always Acceptable	0-----1-----2-----3-----4-----5-----6-----7	Never Acceptable

6. A government contractor disliked the very strong competition created by the bidding process for government purchases. He, therefore, reached an understanding with other major contractors to allow bidding which would provide a reasonable profit.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

7. A sales representative continued the tradition of sending expensive gifts to purchasing agents to maintain their business.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

8. A corporate director of a major pharmaceutical company learned of a product recall. On the basis of this information, he sold his stock at a gain before the announcement was made public.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

9. A VP of Personnel promoted a loyal friend and competent manager to the position of marketing director in preference to a better-qualified manager with whom he had no close relationship.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

10. An aerospace engineer discovered what she perceived to be a product design flaw, which constituted a safety hazard. Her company declined to correct the flaw. The engineer decided to keep quiet rather than take her complaint outside the company.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

11. A financial officer used a method of financial reporting which was legal but concealed embarrassing financial facts from the public.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

12. An employer received applications for a supervisor's position from two equally qualified applicants but hired the male applicant because she thought that some employees might resent being supervised by a female.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

13. As part of the marketing strategy for a product, the producer changed its color and marketed it as "new and improved" even though its other characteristics were unchanged.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

14. An owner of a small firm received a free copy of a copy-righted computer software program from a friend rather than spending \$500 to obtain his own program from the software dealer. He then copied and used it on multiple computers in his business.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

15. The owner of a restaurant in financial distress began hiring young, attractive, scantily clad waitresses, hoping to dramatically increase sales.

Always Acceptable		Never Acceptable
0-----1-----2-----3-----4-----5-----6-----7	-----	

IV. Personal Philosophy

Below are listed four possible statements of personal philosophy. Please read them and rank them (1, 2, 3, 4) in order of personal preference, with 1 being most like you to 4 being least like you as they relate to your personal view of life. Only use the numbers once.

- ___ A. I believe that “truth is relative” – what is “true” or “right” depends upon the specific circumstances of the situation at issue; I also believe that “the good of the whole” should take precedence over the welfare of any one individual.
- ___ B. I believe in absolute truth – something is either “true” or “untrue”, or it is either “right” or “wrong”; I also believe that “the good of the whole” should take precedence over the welfare of any one individual.
- ___ C. I believe that “truth is relative” – what is “true” or “right” depends upon the specific circumstances of the situation at issue; I also believe that generally the welfare of the individual should take precedence over that of the group – i.e., the best solution to a problematical situation is that solution such that “no one individual gets hurt”.
- ___ D. I believe in absolute truth – something is either “true” or “untrue”, or it is either “right” or “wrong”; I also believe that generally the welfare of the individual should take precedence over that of the group – i.e., the best solution to a problematical situation is that solution such that “no one individual gets hurt”.

V. Demographics

Please answer the following questions about yourself as accurately as possible. **This information will be held in the strictest of confidence!!!!**

- 1. Sex
 - a. Male
 - b. Female
- 2. Major _____ (if you are double-majoring, put them both down)
- 3. Number of hours completed towards your major - _____