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Attitude toward and Propensity to Engage in Unethical Behavior: Measurement Invariance across Major among University Students

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ABSTRACT. This research examines business and psychology students' attitude toward unethical behavior (measured at Time 1) and their propensity to engage in unethical behavior (measured at Time 1 and at Time 2, 4 weeks later) using a 15-item Unethical Behavior measure with five Factors: Abuse Resources, Not Whistle Blowing, Theft, Corruption, and Deception. Results suggested that male students had stronger unethical attitudes and had higher propensity to engage in unethical behavior than female students. Attitude at Time 1 predicted Propensity at Time 1 accurately for all five factors (concurrent validity): If students consider it to be unethical, then, they are less likely to engage in that unethical behavior. Attitude at Time 1 predicted only Factor Abuse Resources for Propensity at Time 2. Propensity at Time 1 was significantly related to Propensity at Time 2. Attitude at Time 1, Propensity at Time 1, and Propensity at Time 2 had achieved configural and metric measurement invariance across major (business vs. psychology). Thus, researchers may have confidence in using these measures in future research.

KEY WORDS: attitude toward unethical behavior, propensity to engage in unethical behavior, measurement invariance, university students, business, psychology

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We have witnessed an ever-expanding list of scandals and corruptions in large corporations in the media for the past several years. Media pundits speak of the lack of business ethics and the lack of standards. In fact, former Enron Corporation Chief Financial Officer (CFO) Andrew Fastow and former CEO Jeffrey Skilling have received their training at the Best Business Schools in the U.S. (Merritt, 2002). Researchers argue that it is not the lack of brains (intelligence), but lack of smarts (wisdom) (Feiner, 2004) or virtue (Giacalone, 2004) that caused these scandals. In the post-Enron era, researchers and corporate executives have serious concerns over the reasons behind these scandals and corruptions (Etzioni, 2002).

Some argue that the real root cause of the corporate scandals is ''the overemphasis American corporations have been forced to give in recent years to maximizing shareholder value without regard for the effect of their actions on other stakeholders'' (Kochan, 2002, p. 139). Many corporations have profit-sharing programs for top-level executives and managers that are intended to align *management interests* with the owners' *value maximization goals*. Profit-based mechanisms create a huge amount of pressure and opportunity for individual managers and may have some serious flaws. For example, Enron's executives were provided with substantial bonuses in the form of stock options. Due to potential gains and perverse incentives, some corporate insiders deceptively *manipulate* accounting procedures and intentionally engage in unethical behaviors. It appears that it is the love of money that may lead to these unethical behaviors and scandals.

Many scholars have turned to religions for guidance on leadership and ethical decision-making (e.g., Blanchard and Hodges, 2003; Greenleaf et al., 1996) because religions often have much to say about ethical behavior in business organizations (Weaver and Agle, 2002). Although the Academy of Management has an Interest Group called Management Spirituality and Religion, very little *empirical* research has appeared in the literature with a few exceptions. Among thousands of references, we trace the notion back to one of *the oldest* sources in the literature: ''People who want to get rich fall into temptation and a trap and into many foolish and harmful desires that plunge men into ruin and destruction. For the love of money is a root of all kinds of evil'' (the Bible: 1 Timothy, 6: 9–10).

There is a dearth of empirical research concerning *the love of money* and *evil* because many lay people and researchers may consider this issue as a *taboo*, a religious/controversial issue, not a scientific/academic issue, and to be excessively value-laden, thereby, may have shown great *reluctance* to study this taboo (e.g., Vardi and Weitz, 2004; Vardi and Wiener, 1996). While sociologist, psychologists, criminologists, and anthropologists have studied it for many years, many management scholars, however, have largely ''ignored misbehavior in organizations'' (Ivancevich et al., 2005, p. 247). Thereby, the construct of unethical behavior is an under-represented area of research in the management field and deserves further attention.

The present study

This study focuses specifically on one's attitude toward unethical behavior and one's propensity to engage in unethical behavior, i.e., *behavioral intentions* (cf. Jones and Kavanagh, 1996). We adopt an existing and new unethical behavior measure suggested in the literature (i.e., Luna-Arocas and Tang, 2004; Tang and Chiu, 2003) and investigate the measurement properties of (1) one's Attitude toward Unethical Behavior (measured at Time 1), (2) one's Propensity to Engage in Unethical Behavior (measured at Time 1), and (3) one's Propensity to Engage in Unethical Behavior (measured at Time 2, 4 weeks later) among university students (business vs. psychology). In order to communicate easily and efficiently in this paper, we will use the following simplified terms: Attitude at Time 1, Propensity at Time 1, and Propensity at Time 2, respectively. Our main purpose in this paper is to investigate the psychometric properties of and the relationships among these measures so that future researchers can apply these tools in testing theoretical models of unethical behavior.

Theory and hypotheses

The theory of reasoned action (Ajzen and Fishbein, 1980) states that behavior is determined by intentions, which is a function of attitude towards the behavior and subjective norms. Properly conceptualized and well-assessed attitudes predict human behavioral intentions and behavior. Further, attitudes will predict behavior effectively only when there is a high correspondence between the attitude object and the behavioral option. We will define unethical behavior in the following paragraphs.

It is very difficult to observe people's unethical behaviors that are done mostly in privacy. People are more willing to provide accurate information answering an anonymous paper-and-pencil survey or computer-administered questionnaires than in a face-to-face interview (Richman et al., 1999). Thus, behavioral intentions are arguably an adequate *surrogate* measure of actual unethical behavior (Jones and Kavanagh, 1996). Obviously, there are significant differences between the two. Reports of unethical behavior are prevalent in the literature. In a survey,

for example, 56% of American business people have experienced pressure to behave unethically in order to achieve company goals, 48% admitted having engaged in unethical behavior, 31% witnessed ethical misconduct, and 29% have been forced to use unethical means to get promoted (Lonkevich, 1997). These behaviors cost employers billions of dollars annually worldwide and may cause business failures.

What is unethical behavior?

The first question a scientific investigator must ask is not ''How can I measure it?'' but rather, ''What *is* it?'' (Locke, 1969, p. 334). So, what is unethical behavior? We trace the notion back to a well-known Western and Judea-Christian proposition and one of the oldest sources in the literature: The love of money is the root of evil (Bible: 1 Timothy, 6: 10). Further, ''what comes out of a man is what makes him 'unclean'. For from within, out of men's hearts, come evil thoughts, sexual immorality, theft, murder, adultery, greed, malice, deceit, lewdness, envy, slander, arrogance and folly. All these evils come from inside and make a man 'unclean'' (Mark, 7, pp. 21–23). This can be considered as one of the definitions of ''evil'' in the bible.

In the management and psychology literature, researchers have examined many constructs, such as: unethical behavior (e.g., Jones and Kavanagh, 1996; Trevino and Youngblood, 1990), theft (Greenberg, 1993, 2002), cyberloafing (Lim, 2002), workplace deviance (Robinson and Bennett, 1995), counter-productive behavior (Cohen-Charash and Spector, 2001), corruption (Luo, 2005), and organizational misbehavior (e.g., Ivancevich et al., 2003; Vardi and Weitz, 2004). Misbehavior at work, for example, may include, but not limited to the following 23 behavioral constructs: ''arson, blackmail, bribery, bullying, cheating, discrimination, dishonesty, espionage, fraud, incivility, intimidation, kickbacks, lying, misinformation, privacy violations, revenge, sabotage, sexual harassment, substance abuse, theft, threats, whistle blowing, and withholding information (concealment)'' (Ivancevich et al., 2005, p. 247).

It is beyond the scope of this paper to examine one's *accidental or unintentional actions* or all different aspects of organizational misbehavior. We will focus, specifically, on only a few selected, *deliberate, and intentional* unethical behaviors in the financial domain that are related to some of the scandals and corruptions reported in the media, or white-collar crime. White-collar crime is defined as crime committed by a person of respectability and high social status in the course of his/her occupation (Ivancevich et al., 2003). According to the U.S. Attorney's Annual Statistical Report provided by the Department of Justice, federal prosecutors charged 8766 defendants with white-collar crime in 2000. It resulted in 6876 convictions (78% of the cases). Further, 46% of those convicted were sentenced to prison with an average jail time of 16 months (Ivancevich et al., 2003). These scandals hurt many stakeholders including these convicted managers, other employees, customers, organizations, and the society.

Operational definition

The unethical behavior is a *higher-order (latent) construct*. Tang and Chiu (2003) selected items from deviant workplace behaviors measure (e.g., Robinson and Bennett, 1995), incorporated the aforementioned suggestions in the literature (e.g., Greenberg, 1993; Hunt and Vitell, 1986; Lim, 2002; Trevino and Youngblood, 1990), modified the items, and developed a 15-item-4-factor measure of Unethical Behavior in Organizations with the following factors: Abuse Resources, Theft, Corruption, and Not Whistle Blowing. In a study of Hong Kong employees, the love of money is directly related to unethical behavior and is also indirectly related to unethical behavior through pay dissatisfaction (a mediator) (Tang and Chiu, 2003). Later, Luna-Arocas and Tang (2004) proposed an expanded 32-item Unethical Behavior Scale and presented the items (without empirical data) in the *Journal of Business Ethics* (p. 350). To the best of our knowledge, this is *the first* study that adopts the Luna-Arocas and Tang's (2004) Unethical Behavior Scale with five latent sub-constructs (Factors Abuse Resources, Not Whistle Blowing, Theft, Corruption, and Deception) in an empirical investigation. We will briefly define these sub-constructs below.

Abuse resources

Confucius (551–499 B.C.), a Chinese philosopher, offered the following advice to citizens: Do not engage in an evil act, no matter how small; do not forgo a good deed, no matter how trivial. Most people consider themselves as ethical individuals and do not engage in major scandals. Unethical behavior usually starts out small. It always grows until it is stopped by management (Perotin, 2002). Inch by inch, they dig deeper and deeper into a hole of which they cannot get out (Burton, Personal Communication, 2004). Here, we focus on something really trivial or small, i.e., abuse resources and waste company time, or cyberloafing (Lim, 2002). Although many employees have done so in organizations, it is still considered as organizational misbehavior and is wrong (Ivancevich et al., 2005). About 75% of employees abuse office supplies (e.g., pencil, paper) at least once (Ivancevich et al., 2005). Cyberloafing should not pose a problem in the bigger scheme of things. Since the cumulative effects on the bottom line can be very huge in organizations, many U.S. organizations, in fact, do electronically monitor employees (Contry-Murray, 2001).

Not whistle blowing

Martin Luther King, Jr. (1929–1968) stated that our lives begin to end the day we become silent about things that matter. Whistle-blowers have provided pivotal evidence documenting corporate malfeasance at a number of companies. *Time* magazine named three whistle-blowers as its 2002 ''Persons of the Year'': Sherron Watkins of Enron, Cynthia Cooper of WorldCom, and Coleen Rowley of the FBI. Historically, many whistle-blowers (60%) lost their jobs or were forced to retire after exposing their companies' misdeeds. In response to these widespread corporate accounting scandals, Congress passed the Sarbanes-Oxley Act in 2002 that mandates ''whistle-blower protection''. It also sets strict rules for corporate behavior and sets heavy fines and prison terms for non-compliance. Some managers implicitly *condone* employee theft by ''*looking the other way*''. Not taking actions may lead to financial losses. The costs of theft point to the need for managers to *intervene* and to *control* it whenever possible.

Theft

Theft is defined as the unauthorized taking, consuming, or transferring of money, goods, data, information, and intellectual property owned by the organization (Ivancevich et al., 2005). This is a $200 billion-dollar a year problem in the US, e.g., shoplifting ($196 per incident, $10.23 billion annual loss) and employee theft ($1,446 per incident; $15.2 billion annual loss) (Perotin, 2002). Survey shows that 25% observed others stealing products or cash. About 33% of the employees stole money or merchandise on the job (Wells, 2001). In a laboratory study, underpaid undergraduate subjects took more than they were permitted (Greenberg, 1993). Theft causes many business failures.

Corruption

Corruption is defined as an illegitimate exchange of resources involving the use or abuse of public or collective responsibility for personal gains, benefits, profits or privileges (Luo, 2005). According to the Corruption Perceptions Index (CPI) 2001, the new Index illustrates once more the vicious circle of poverty and corruption. ''There is no end in sight to the misuse of power by those in public office – and corruption levels are perceived to be as high as ever in both the developed and developing worlds'' (http://www.transparency.org/documents/cpi/2001/cpi2001.html). The richest countries in the world (e.g., Finland, Denmark, New Zealand, Iceland, Singapore, and Sweden) scored 9 or higher and had very low levels of perceived corruption, whereas the world's poorest scored less than 5 and had high levels of corruption. Among 133 countries in the world, the U.S. ranked the 16th (score = 7.7) in 2001 and the 18th (7.5) in 2003. Corruption does exist in the U.S.

CEOs of the 20 companies with the largest announced layoffs in 1995 saw their salaries and bonuses jump by 25%, well above the average (James and Tang, 1996). Employees lost their jobs, benefits, and pensions. The savings of labor costs go to CEOs'

own pockets (big bonuses) because they have made many tough decisions for organizations that make the company look good on paper.

Deception

Fraud is defined as the intentional act of deceiving or misrepresenting in order to induce another individual or group to give up something of value. Fraud or deceptive practices (Schein, 2004) are related to the moral issue of withholding, distorting, and providing truthful information (e.g., unneeded automotive repair at Sears and fake pure juice at Beech-Nut). In summary, we operationally define one's attitude toward unethical behavior and one's propensity to engage in unethical behavior using the same five sub-constructs: Abuse Resources, Not Whistle Blowing, Theft, Corruption, and Deception.

Reliability and validity

In the psychological testing and measurement literature, there are many different types of reliability and validity. In this study, we will limit ourselves to the following issues. The test–retest reliability examines the same measure administered to subjects at two points in time. The internal consistency can be examined using Cronbach's α. When a predictor and a criterion are both measured simultaneously, then, the relationship between the two can be labeled as the concurrent validity. When a predictor and a criterion are measured at two points in time, it is the predictive validity. The concurrent validity is usually stronger than the predictive validity. Content validity refers to whether researchers sample items adequately from an important domain in a representative way. Face validity represents test takers' perceptions regarding the relevance of the items in a given situation. Reliability is also the upper limit for validity.

We are interested in the measurement for the whole sample and the relationships between Attitude at Time 1 and Propensity at Time 1 (concurrent validity), Attitude at Time 1 and Propensity at Time 2 (predictive validity), and Propensity at Time 1 and Propensity at Time 2 (test–retest reliability). We use exactly the same items for all these measures. For the attitudinal measure, we ask: Is this ethical? For the propensity measures, we ask: If you were in that situation, what is the probability that you will take actions as suggested in this vignette? Our business students have a short ethics training intervention (the experimental group, with intervention) while our psychology students do not (the control group, without intervention). We cannot strictly examine the predictive validity and test–retest reliability in this study. Thus, we will not propose specific hypotheses regarding predictive validity and test–retest reliability.

Hypothesis 1

> Attitude at Time 1 will predict Propensity at Time 1 (concurrent validity).

Measurement invariance

For the past two decades, management researchers have become increasingly interested in measurement invariance for the following reasons. First, recent advances in analytic tools and measurement theories allow researchers to address the issue of measurement equivalence, or measurement invariance across populations (e.g., Cheung and Rensvold, 2002; Epitropaki and Martin, 2004; Vandenberg and Lance, 2000). Second, researchers test management theories using psychological measurements in cross-cultural studies. Management scholars have been concerned about whether survey instruments that have been developed in one culture can be used to measure subjects in other cultures. The most critical point regarding measurement invariance in research can be summarized as follows: ''It does little good to test a theoretical and conceptual relationship across cultures unless there is confidence that the measures operationalizing the constructs of that relationship exhibit both conceptual and measurement equivalence across the comparison groups'' (Riordan and Vandenberg, 1994, p. 645).

Further, the issue of measurement invariance is not limited to only cross-cultural studies. In fact, researchers and scholars have examined measurement invariance across gender (Eagle et al., 2001; Tang et al., 2005), college major (Du and Tang, 2005), income level, employment status, profession

(Idaszak et al., 1988), experimental treatments, sources of performance ratings (Maurer et al., 1998), and different time periods in longitudinal research (Riordan et al., 2001). Even within the same culture, people may not perceive the measurement in exactly the same manner due to different demographic variables (e.g., sex, age, income, and profession), values, experiences, socialization processes, and training in the society.

Vandenberg and Lance (2000) have provided a summary of recommended practices of measurement invariance using the following nine steps: (1) an omnibus test of equality of covariance matrices across groups, (2) a test of "configural invariance", (3) a test of "metric invariance", (4) a test of "scalar invariance", (5) a test of the null hypothesis that like items unique variances are invariant across groups, (6) a test of the null hypothesis that factor variances were invariant across groups, (7) a test of the null hypothesis that factor covariances were invariant across groups, (8) a test of the null hypothesis of invariant factor means across groups, and (9) other more specific test (pp. 12–13). Most researchers, in practice, focus on the two most fundamental steps: the test of configural invariance and metric invariance.

Configural invariance exists when the same factor structures are identified across all groups. Metric invariance is achieved when all factor-loading parameters are equal across groups. Multi-group confirmatory factor analysis (MGCFA) examines the change in the goodness-of-fit index (GFI) when cross-group constraints are imposed on a measurement model (Cheung and Rensvold, 2002). Since metric invariance is very difficult to achieve, based on the chi-square change between the unconstrained and constrained MGCFA, many researchers have identified the application of change in fit indices (Cheung and Rensvold, 2002; Vandenberg and Lance, 2000). We now review the possible differences due to gender and college major.

Gender

Research suggests that male students have higher concerns over career advancement than developing and building relationships or helping others and male students are at least twice as likely to engage in unfair practices as their female counterparts (Betz et al., 1989; Malinowski and Berger, 1996). Female managers are more ethical than their male counterparts regarding unsafe products (Hoffman, 1998) or accepting favors for special treatment (Deshpande, 1997). All three whistle-blowers named in *Time* magazine are female. Females have lower concerns for money than males (Tang et al., 2005), we argue that females may maintain higher moral standards and are more ethical than their male counterparts. On the basis of our literature review, we will test the following hypotheses:

Hypothesis 2A

> There is a positive correlation between gender (males) and the attitude of unethical behavior.

Hypothesis 2B

> There is a positive correlation between gender (males) and the propensity to engage in unethical behavior.

College major

American business schools award about 85% of the world's business degrees. No form of education is more *commercialized* than "*management education*" (*Economist*, 2004, p. 81). Business education is big business. According to a McKinsey-Harvard report in 1995, non-degree executive education "generated around $3.3 billion and was growing at rate of 10–12% annually" (Crainer and Dearlove, 1999, p. 6). In evaluating the Best Business Schools, *Business Week* blended in an "intellectual capital" component and added five new journals including *Journal of Business Ethics* to the journal list in 2002 (Merritt, 2002). This shows the importance of (1) business ethics as a topic for research and teaching and (2) professors' ability to influence thinking in business ethics and in the business world.

Although making more money is important to many college students, the *individual economic return* of the college education is different, however, for people in different disciplines and majors (Bok, 1993). Between mid-1970s and mid-1980s, the major distribution moved away from education and

social science (e.g., psychology) and toward business and engineering (U.S. Department of Education, 1989). The proportion of males (females) graduating in education and social science fell from 27% (42%) to 18% (27%), and the proportion of males (females) graduating in business and engineering increased from 34% (9%) to 49% (27%). Business students expect to yield a great economic payoff in the labor market.

Business students have much higher concerns regarding materialism, consumption, and possession than psychology students in the U.S. Business students may have a much stronger concern for making money, the bottom line, and a much higher probability to face issues regarding unethical behavior than psychology students. Psychology students, on the other hand, have strong helping orientations and service-oriented professions, *not* in it for the money, and may have high moral standards. Due to the Attraction–Selection–Attrition (ASA) and the socialization process, individuals who experience a poor fit between the person and the environment may quit voluntarily and/or involuntarily either in the specific program at the university or in business organizations.

In a large cross-cultural study involving 26 geopolitical entities ($N = 5341$ employees) with different cultures, languages, and religious beliefs in six continents around the world, Tang and Tang (2003) have achieved configural (factor structures) and metric (factor loadings) invariance for the 9-item-3-factor love of money scale and for the 11-item-4-factor Unethical Behavior Scale. The Love of Money scale shows stronger measurement invariance across cultures than the Unethical Behavior Scale. This is due to the vast differences regarding the perceptions of corruption and the construct of unethical behavior across cultures (e.g., Corruption Perceptions Index, 2001). In summary, different versions of the unethical behavior scale have achieved configural and metric invariance in several samples (e.g., Tang and Chiu, 2003). One of the main purposes of this paper is to examine the following issue: Does measurement invariance exist across college major (business vs. psychology) among university students in this U.S. sample for Attitude at Time 1, Propensity at Time 1, and Propensity at Time 2? Following suggestions in the literature, we test the following hypotheses.

Hypothesis 3

Attitude at Time 1 will achieve configural and metric invariance across major (business vs. psychology) in this student sample.

Hypothesis 4

Propensity at Time 1 will achieve configural and metric invariance across major (business vs. psychology) in this student sample.

Hypothesis 5

Propensity at Time 2 will achieve configural and metric invariance across major (business vs. psychology) in this student sample.

Method

Participants

We asked students at a regional state university located in the southeastern U.S. to participate voluntarily in two different research projects in one semester. We collected data from (1) business students in the Principles of Management course that is the ''first'' course offered to juniors (majors and minors in Management) by the Department of Management at the College of Business and (2) psychology students in the Basic Statistics in the Behavioral Science course offered to juniors by Department of Psychology. We obtained data from business students ($n = 198$, male = 116 (63%), female = 68) and psychology students ($n = 101$, male = 33 (37%), female = 56). We do *not* claim that these convenience samples represent the national population of university students or the specific disciplines. There is no reason to believe that our data were atypical. There were 149 male (49.8%) and 124 Female (41.5%) students ($N = 299$, missing data: $n = 26$, 8.7%). Age varied between 18 and 57 ($M = 22.82$ years old) and years of education varied between 13 and 18 years ($M = 15.08$). They had an

average annual income of $16,741.62 and 5.96 years of work experience.

Procedure

Students completed a 6-page survey at Time 1 and, then, a 4-page survey at Time 2, 4 weeks later. All participants were asked to complete their personal identification code (using only the *initials* of their full name and *the last four digits* of their social security number, e.g., ABC1234) on both questionnaires in order to match the two surveys. Volunteers completed the questionnaire confidentially. The 4-week time lag and the procedures served several specific purposes. First, we treated these two measures as two separate research projects, i.e., a psychological separation (e.g., Podsakoff et al., 2003). Second, we collected Time 2 data *after* business students had finished a chapter on social responsibility and managerial ethics in the "Principles of Management" course. Psychology students did not have this formal intervention during this 4-week time lag. Third, we tried to avoid the possible impacts of fatigue, mood, memory, and the same response format on the measurement of the predictors and the criteria (Podsakoff et al., 2003). The major purpose of this study is to examine the measurement properties of the Unethical Behavior measure. The effect of teaching business ethics on the propensity to engage in unethical behavior at Time 2 will be treated in a separate paper.

Measures

We collected data using the 32-item Unethical Behavior Scale (Luna-Arocas and Tang, 2004). It has good reliability, face validity, content validity, and measurement invariance data in the literature (Tang and Chiu, 2003; Tang and Tang, 2003). We also collected data regarding demographic variables, e.g., sex, age, years of education, current job and total work experience in years, major (business vs. psychology), annual income, and many other filler items. We measured participants' Propensity to engage in Unethical Behavior at both Time 1 and Time 2 with the following instructions:

> There are several hypothetical vignettes (items) at work. Some vignettes may not be applicable to your situation. If you were in that situation, what is the probability that you will take action as it is suggested in this vignette? Please use the five-point scale with *very low probability* (1), *low* (2), *average* (3), *high* (4), and *very high probability* (5) as anchors.

After the students completed their survey items for Propensity at Time 1, we measured participants' Attitude at Time 1 using the exact same items. We argue that Attitude at Time 1 may provide the priming effect for Propensity at Time 1. It is less likely, but still possible, for students to change their answers regarding items for Propensity at Time 1. We offered the following instructions:

> In your opinion, is this vignette ethical or unethical? Please use the following five-point scale with *very ethical* (1), *ethical* (2), *neutral* (3), *unethical* (4), and *very unethical* (5) as anchors.

We did *not* collect data regarding Attitude at Time 2 with the following reasons: It may create the priming effect for Propensity at Time 2. We want to create an impression that the 4-page survey at Time 2 is different from the first 6-page survey at Time 1.

Results

Descriptive statistics

Table I shows the mean, standard deviation, and correlations of all variables for the whole sample. Table II presents the specific items, factors, factor loadings, and Cronbach's alphas for all these three measures. We performed a multi-variate analysis of variance (MANOVA) involving Attitude at Time 1, Propensity at Time 1, and Propensity at Time 2 (i.e., 15 variables) and found no overall difference between business and psychology students (F (15, 226) = 1.572, p = 0.083, Wilks' Lambda = 0.906, partial Eta squared = 0.094). The Cronbach's αs for the five factors varied between 0.82 and 0.97 for Attitude at Time 1, between 0.74 and 0.97 for Propensity at Time 1, and between 0.73 and 0.94 for Propensity at Time 2, respectively (Table II).

TABLE I

Mean, standard deviation, and correlations of major variables

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.	Age	22.82	5.61																					
2.	Gender	0.55	0.50	−0.02																				
3.	Education	15.08	0.99	0.45**	0.10																			
4.	Job	2.66	3.44	0.53**	0.04	0.20**																		
5.	Total work	5.96	4.63	0.78**	0.04	0.30**	0.53**																	
6.	Income	16,741.62	16,515.96	0.50*	0.13	0.22*	0.51**	0.46**																
7.	Major	1.34	0.47	0.15*	−0.24**	−0.26**	−0.01	0.07	0.05															
8.	Abuse (A1)	3.41	0.97	−0.00	−0.08	0.02	−0.02	−0.04	0.01	−0.00														
9.	Not WB	4.11	1.23	0.01	−0.12	0.02	−0.06	−0.03	0.03	0.08	0.49**													
10.	Theft	4.20	1.19	0.05	−0.13*	0.05	−0.05	−0.04	0.10	0.04	0.53**	0.78**												
11.	Corruption	4.17	1.17	0.08	−0.17**	0.05	−0.04	−0.01	0.08	0.09	0.54**	0.76**	0.91**											
12.	Deception	4.24	1.18	0.10	−0.12*	0.06	−0.02	−0.01	0.10	0.07	0.52**	0.80**	0.93**	0.93**										
13.	Abuse (P1)	2.36	0.95	−0.01	0.10	0.04	−0.01	−0.00	0.05	0.06	**−0.39****	−0.15*	−0.10	−0.13*	−0.09									
14.	Not WB	1.57	0.98	0.01	0.22**	−0.04	0.01	0.03	0.10	0.03	−0.10	**−0.18****	−0.20*	−0.20*	−0.19**	0.26**								
15.	Theft	1.40	0.79	−0.09	0.28**	−0.01	−0.00	−0.01	0.09	−0.05	−0.14*	−0.14*	**−0.15⋆**	−0.17*	−0.13*	0.38**	−0.53**							
16.	Corruption	1.50	0.81	−0.10	0.28**	−0.01	−0.07	−0.05	−0.01	−0.06	−0.18**	−0.12*	−0.12*	**−0.20⋆**	−0.13*	0.45**	−0.53**	0.81**						
17.	Deception	1.39	0.81	−0.07	0.28**	−0.00	−0.02	−0.00	0.11	−0.07	−0.12*	−0.14*	−0.14*	−0.17**	**−0.15⋆**	0.36**	0.63**	0.85**	0.83**					
18.	Abuse (P2)	2.36	0.97	−0.03	−0.00	−0.03	0.04	−0.03	0.01	0.09	**−0.33****	−0.15*	−0.14*	−0.14*	−0.14*	**0.62****	0.22**	0.24**	0.29**	0.26**				
19.	Not WB	1.49	0.95	0.07	0.08	0.03	0.07	0.03	0.03	0.13*	0.00	**−0.02**	−0.06	−0.07	−0.05	0.13**	**0.33****	0.23**	0.23**	0.28**	0.19**			
20.	Theft	1.28	0.64	−0.04	0.07	−0.06	−0.02	−0.04	0.02	0.05	−0.03	−0.09	**−0.08**	−0.07	−0.05	0.15*	0.21**	**0.49****	0.44**	0.47**	0.33**	0.40**		
21.	Corruption	1.48	0.74	−0.08	0.14*	−0.06	−0.07	−0.08	−0.00	0.01	−0.07	−0.02	−0.02	**−0.11**	−0.04	0.30**	0.33**	0.46**	**0.56****	0.52**	0.37**	0.45**	0.64**	
22.	Deception	1.33	0.69	−0.05	0.10	−0.03	−0.03	−0.05	−0.01	0.03	−0.03	−0.08	−0.11	−0.11	**−0.08**	0.20**	0.31**	0.45**	0.45**	**0.55****	0.33**	0.43**	0.72**	0.80**

Gender: Male = 1, Female = 0; *Major*: Business = 1, Psychology = 2; A1 = Attitude at Time 1, P1 = Propensity at Time 1, P2 = Propensity at Time 2, Not WB = Not whistle Blowing $N = 299$.
*$p < 0.05$, **$p < 0.01$.

TABLE II

Confirmatory factor analysis results

Unethical behavior		Factor loading		
		Attitude Time 1	Propensity Time 1	Propensity Time 2
Factor abuse resources	Cronbach's α	0.82	0.74	0.73
1. Use office supplies (paper, pen), Xerox machine, and stamps for personal purposes		0.62	0.62	0.64
2. Make personal long-distance (mobile phone) calls at work		0.92	0.76	0.70
3. Waste company time surfing on the Internet, playing computer games, and socializing		0.79	0.70	0.73
Factor not whistle blowing	α	0.97	0.97	0.94
4. Take no action for shoplifting by customers		0.94	0.96	0.89
5. Take no action for employees who steal cash/merchandise		0.98	0.97	0.99
6. Take no action for the fraudulent charges made by one's company		0.95	0.93	0.85
Factor theft	α	0.95	0.89	0.89
7. Borrow $20 from a cash register overnight without asking.		0.91	0.90	0.89
8. Take merchandise and/or cash home.		0.94	0.91	0.89
9. Give merchandise away to personal friends (no charge to the customers).		0.93	0.77	0.79
Factor corruption	α	0.92	0.85	0.74
10. Abuse the company expense accounts and falsify accounting records.		0.90	0.88	0.85
11. Receive gifts, money, and loans (bribery) from others due to one's position and power		0..88	0.67	0.60
12. Lay off 500 employees to save the company money and increase one's personal bonus		0.91	0.75	0.68
Factor deception	α	0.96	0.93	0.90
13. Overcharge customers to increase sales and to earn higher bonus		0.93	0.90	0.84
14. Give customers "discounts" first and then secretively charge them more money later (bait & switch)		0.92	0.84	0.83
15. Make more money by deliberately not letting clients know about their benefits.		0.94	0.88	0.87

Attitude at Time 1 (Is it ethical?): $\chi^2 = 171.684$, df = 74, $\chi^2/df = 2.320$, $p = 0.00$, TLI = 0.990, CFI = 0.994, RMSEA = 0.067.
Propensity at Time 1 (What is the probability?): $\chi^2 = 144.772$, df = 74, $\chi^2/df = 1.956$, $p = 0.00$, TLI = 0.988, CFI = 0.992, RMSEA = 0.057.
Propensity at Time 2 (What is the probability?): $\chi^2 = 157.189$, df = 74, $\chi^2/df = 2.124$, $p = 0.00$, TLI = 0.984, CFI = 0.990, RMSEA = 0.061.

Correlation results (Table I) also showed that male students (gender) tended to consider Theft, Corruption, and Deception more ethical than females. Males tended to report higher propensity to engage in four types of unethical behavior (i.e., Not Whistle Blowing, Theft, Corruption, and Deception) at Time 1 and Corruption at Time 2 than females. Our results partially supported Hypotheses 2A and 2B in that males were more unethical than females.

Attitude at Time 1 and Propensity at Time 1
In general, Attitude at Time 1 was negatively related to Propensity at Time 1. Therefore, if students considered an issue to be unethical, they were less likely to engage in that unethical behavior. For example, the correlation between Attitude at Time 1 and Propensity at Time 1 for Factor Abuse Resources was significant and negative (i.e., −0.39, $p < 0.01$). All these correlations are listed on the diagonal line of Table I and printed in bold face (e.g., −0.39, −0.18, −0.15, −0.20, and −0.15, respectively). It can be labeled as the concurrent validity. Different factors of Attitude at Time 1 were also significantly and negatively associated with different factors of Propensity at Time 1 with only a few exceptions. Hypothesis 1 was supported.

Attitude at Time 1 and Propensity at Time 2
When we used Attitude at Time 1 to predict Propensity at Time 2, we found a significant correlation for Factor Abuse Resources only (−0.33, $p < 0.01$, see Table I). Other factors of unethical behavior failed to reach significance. Thus, the intervention and the time lag seemed to make a difference. This may be considered as the predictive validity. It can be concluded that the predictive validity was lower than the concurrent validity.

Propensity at Time 1 and Propensity at Time 2
Further, all factors of Propensity at Time 1 significantly predicted all factors of Propensity at Time 2. This shows the stability and consistency of the measure over time. This may be considered as the test–retest reliability. Please note that business students had the ethics intervention, while psychology students did not. Moreover, the five different factors were all significantly correlated with each other for Attitude at Time 1, Propensity at Time 1, and also Propensity at Time 2. We now examine these measures using confirmatory factor analysis (CFA).

Confirmatory factor analysis (CFA)

We performed a CFA for each of these three measures (Attitude at Time 1, Propensity at Time 1, and Propensity at Time 2) using the whole sample (Table III). We found a good overall fit between our model and our data: (1) Attitude at Time 1 ($\chi^2 = 171.684$, df = 74, $\chi^2/df = 2.320$, $p = 0.00$, TLI = 0.990, CFI = 0.994, RMSEA = 0.067), (2) Propensity at Time 1 ($\chi^2 = 144.772$, df = 74, $\chi^2/df = 1.956$, $p = 0.00$, TLI = 0.988, CFI = 0.992, RMSEA = 0.057), and (3) Propensity at Time 2 ($\chi^2 = 157.189$, df = 74, $\chi^2/df = 2.124$, $p = 0.00$, TLI = 0.984, CFI = 0.990, RMSEA = 0.061). RMSEA data were pretty strong (i.e., RMSEA < 0.08).

Measurement invariance (business vs. psychology)

For configural invariance, we use the following criteria: chi-square statistics ($\chi^2/df < 3.0$) and practical fit indices (i.e., CFI > 0.90, TLI > 0.90, RMSEA < 0.10). For metric invariance, we examined the same model simultaneously across major (business vs. psychology) using a multi-group confirmatory factor analysis (MGCFA) and compared the unconstrained MGCFA and the constrained MGCFA regarding (1) chi-square change ($\Delta\chi^2$) and (2) fit indices change (i.e., ΔCFI = 0.01 or less, differences between models do not exist; between 0.01 and 0.02, differences between models may suspiciously exist; and greater than 0.02, differences between models definitely exist) (Vandenberg and Lance, 2000) (see Table III).

Attitude at Time 1
Configural invariance was achieved for both business students ($\chi^2 = 189.090$, df = 74, $\chi^2/df = 1.204$, $p = 0.00$, TLI = 0.982, CFI = 0.989, RMSEA = 0.089) and psychology students ($\chi^2 = 120.998$, df = 74, $\chi^2/df = 0.284$, $p = 0.00$, TLI = 0.985, CFI = 0.991, RMSEA = 0.080). For metric invariance, we compared the unconstrained MGCFA ($\chi^2 = 310.169$, df = 148, $\chi^2/df = 2.096$, $p = 0.00$, TLI = 0.983, CFI = 0.990, RMSEA = 0.061) with the constrained MGCFA (χ^2=322.890, df = 158, $\chi^2/df = 2.044$, $p = 0.00$, TLI = 0.984, CFI = 0.990, RMSEA = 0.059) and the differences between the two were not significant based on chi-square change ($\Delta\chi^2 = 12.72$, Δdf = 10, $p > 0.05$) or the fit index change (ΔCFI = 0.00). We achieved both configural and metric invariance for Attitude at

TABLE III

Configural and metric invariance of the measures

	χ^2	df	χ^2/df	*p*	TLI	CFI	RMSEA
Attitude at Time 1							
Configural invariance							
Business	189.090	74	2.555	0.000	0.982	0.989	0.089
Psychology	120.998	74	1.635	0.000	0.985	0.991	0.080
Whole sample	171.684	74	2.320	0.000	0.990	0.994	0.067
Metric invariance							
Unconstrained	310.169	148	2.096	0.000	0.983	0.990	0.061
Constrained	322.890	158	2.044	0.000	0.984	0.990	0.059
$\Delta\chi^2/\Delta df = 12.721/10$							
Propensity at Time 1							
Configural invariance							
Business	168.159	74	2.272	0.000	0.977	0.986	0.080
Psychology	108.559	74	1.467	0.000	0.982	0.989	0.068
Whole sample	144.772	74	1.956	0.000	0.988	0.992	0.057
Metric invariance							
Unconstrained	276.794	148	1.870	0.000	0.978	0.987	0.054
Constrained	323.934	158	2.050	0.000	0.974	0.983	0.054
$\Delta\chi^2/\Delta df = 47.140/10$*							
Propensity at Time 2							
Configural invariance							
Business	130.676	74	1.766	0.000	0.984	0.990	0.062
Psychology	140.581	74	1.900	0.000	0.954	0.971	0.095
Whole sample	157.189	74	2.124	0.000	0.984	0.990	0.061
Metric invariance							
Unconstrained	271.498	148	1.834	0.000	0.977	0.986	0.053
Constrained	286.291	158	1.812	0.000	0.978	0.985	0.052
$\Delta\chi^2/\Delta df = 14.793/10$							

*$p < 0.05$. Criteria for a good fit: $\chi^2/df < 3$, TLI, CFI > 0.90, RMSEA < 0.10. ΔTLI, ΔCFI, ΔRMSEA = 0.01, difference does not exist.

Time 1 across college major (business vs. psychology). Hypothesis 3 was supported.

Propensity at Time 1

Table III shows that we have achieved configural invariance across major. For metric invariance, the difference between the unconstrained and the constrained MGCFA was significant for chi-square change ($\Delta\chi^2 = 47.140$, $\Delta df = 10$, $p < 0.05$) but not significant for the fit index change (ΔCFI = 0.004). Thus, we achieved both configural and metric invariance for Propensity at Time 1 across college major based on the non-significant fit index change. Hypothesis 4 was supported.

Propensity at Time 2

We achieved configural invariance and metric invariance across major (business vs. psychology) based on both the chi-square change and the fit index change. Business students did have the treatment, while psychology students did not. Propensity at Time 2 seems to provide stronger measurement invariance data than Propensity at Time 1. Results supported Hypothesis 5. Thus, we find a good fit for

the whole sample and achieve measurement invariance across major for these measures.

Discussion

We summarize our theoretical, empirical, and practical contributions below. First, we find good reliability for all measures. Male students tend to consider Theft, Corruption, and Deception as more ethical and report higher propensity to engage in Not Whistle Blowing, Theft, Corruption, and Deception at Time 1 and Corruption at Time 2 than their female counterparts. Thus, females are more ethical than males in this student sample.

Second, we can use Attitude at Time 1 to predict Propensity at Time 1 accurately for all five factors of our measure. That is, if a situation is considered to be unethical, then, students are less likely to engage in that unethical behavior. Thus, the concurrent validity is quite strong in this study.

Third, we use Attitude at Time 1 to predict Propensity at Time 2. There is only one significant result for Factor Abuse Resources. The predictive validity is not as good as concurrent validity, as expected in the measurement literature. One plausible interpretation of this result is that students might have only engaged in this type of unethical behavior, i.e., wasting office supply, abusing Xerox machines, making personal phone calls, and surfing on the Internet. Due to students' part-time work experiences, they may not have the position, power, and opportunity to engage in other types of unethical behavior examined in this study. This may create a false sense of comfort in us.

On the other hand, this result creates some grave concerns: That is, there is a very *limited consistency* over time regarding students' attitude toward unethical behavior and their propensity to engage in unethical behavior, some time later. It means that if it is unethical, some may still have a high propensity to engage in unethical behavior, whereas others may not. On the other side of the same coin, some of these students may have the propensity to engage in unethical behavior regardless of their attitudes toward unethical behavior. These students may have the intelligence to recognize whether the issues are ethical or unethical. However, regarding their propensity to engage in unethical behavior, they may not have the smarts and wisdom to make a good and ethical decision. As mentioned, it is not the lack of brains (intelligence), but lack of smarts (wisdom) (Feiner, 2004) or virtue (Giacalone, 2004) that caused these scandals in our society. ''*Intelligence is necessary to be a High-Performance Leader, but it is not sufficient*'' (Feiner, 2004, p. 85). Future research needs to identify variables that may be directly or indirectly related to people's propensity to engage in unethical behavior.

Business students have received training regarding social responsibility and managerial ethics in the ''Principles of Management'' course, whereas psychology students have not. It is plausible that some business students may have reduced, or very likely changed, the propensity to engage in unethical behavior after the intervention. Future research should provide more in-depth examination of this issue carefully. All business and psychology students may have been exposed to the corruptions and scandals in the news media during the time of our data collection. Therefore, consciously or unconsciously, they all may have experienced some form of the learning in the socialization process either formally in classes or informally outside the classroom on campus or at work. These exposures may also change students' propensity to engage in unethical behavior at Time 2. This study reveals the importance of collecting data at two points in time. When both predictors and criteria are measured at one time, the correlations between the two are quite high and may be inflated (Podsakoff et al., 2003).

Fourth, our findings also reveal the stability and consistency of the Propensity measure over time in that all factors of Propensity at Time 1 significantly predict all factors of Propensity at Time 2. This may reflect the test–retest reliability of this Propensity measure, in some way. Again, we will remind readers that business students have received treatment, but psychology students have not.

Fifth, we identify a good fit between our model and our data for all three measures for the whole sample. Sixth, we achieve configural and metric invariance across business and psychology for Attitude at Time 1, Propensity at Time 1, and Propensity at Time 2 (with/without treatment). Thus, the factor structures and factor loadings are all equal for business and psychology students in this university sample. Future research needs to examine the possible α, β,

and γ change of the measurement from Time 1 to Time 2 (e.g., Epitropaki and Martin, 2004; Riordan et al., 2001). In summary, this study provides solid reliability, validity, and measurement invariance data for these measures. Researchers will have confidence in using these measures in future research.

Limitations

Our convenience samples are small and do not represent all university students and specific majors in the U.S. The sample size for business and psychology is not the same and the demographic variables are not perfectly matched. The time lag between Time 1 and Time 2 is relatively short, i.e., 4 weeks. Our behavioral intentions are a *surrogate* measure of actual unethical behavior. There are significant differences between behavioral intentions and actual unethical behavior.

Implications and directions for future research

These current university students may become future managers and leaders in our society. Mintzberg asserts: Managers cannot be created in a classroom. Professors cannot teach management to people who are not managers. People should learn from their *own experiences* (Mintzberg and Gosling, 2002). Now some full-time MBA students are required to visit the federal prisons and interview white-collar criminals who are paying their dues to society – often for cooking the books (Kercheval, 2004; Merritt, 2004). Thus, real first-hand experience of business ethics may enhance students' smarts and wisdom and may be better than knowledge and intelligence acquired from books and case studies in the classroom. On the other hand, others argue that colleges and universities cannot make vicious students virtuous or stupid students wise (Colson, 1999). Intuitively, there is a window of opportunity for social institutions (family, school, church, and society) to teach and instill these basic values *early* in one's life. Students should have learned values and ethics before they reach college. More research is needed to identify the possible ways to unlearn the unethical orientation and instill the proper ethics and values among college students in the future.

In the real world of work, managers and employees may have a lot of pressure and opportunity to achieve specific organizational goals, deadlines, and quotas. This pressure and opportunity may lead some managers to engage in unethical behavior. It is important for business schools to satisfy all *stakeholders* in our society (e.g., businesses, students, media, accrediting organizations (AACSB), and business schools) (e.g., see Giacalone, 2004; Pfeffer and Fong, 2002; Trank and Rynes, 2003). Beside business schools, CEO's as well as all managers' attitudes and actions (Lewin and Stephens, 1994), corporate ethical culture (Hunt et al., 1989), and compensation systems (Honeycutt et al., 2001) all have significant impacts on managers' ethical behaviors. Future research may examine managers' behavior when they face potential gains and perverse incentives in the real world of work.

According to Confucius, ''The mechanic, who wishes to do his work well, must first sharpen his tools''. This study provides a new tool to measure the attitude toward unethical behavior and propensity to engage in unethical behavior based on a sample of university students. These 15-item-5-factor measures are short, simple, and easy to use, relatively speaking. Future researchers will be able to use these measures with confidence and will continue to examine the issues related to measurement invariance in different samples, college majors, businesses and industries, and across cultures and test theoretical models of unethical behavior. More research is needed in this area.

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