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GRADUATE COLLEGE

A MODEL OF INFLUENCES ON ETHICAL DECISION-MAKING:

INDIVIDUAL AND SITUATIONAL EFFECTS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

Doctor of Philosophy

By

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A MODEL OF INFLUENCES ON ETHICAL DECISION-MAKING:  
INDIVIDUAL AND SITUATIONAL EFFECTS

A DISSERTATION APPROVED FOR THE  
DEPARTMENT OF PSYCHOLOGY

BY

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## Abstract

Understanding the influences on ethical decision-making is critical to developing interventions targeted at improving ethical decisions of researchers. However, little empirical research is available that has directly tested a model of individual and situational influences on ethical decision-making. Using a sample of 246 graduate students, 22 models of individual and situational influences on ethical decision-making were tested. These models are a mixture of direct influences, partially and fully mediated models, and moderated models. Using a relevant theoretical framework and appropriate fit indices, an individual and situational influences model is supported. The implications for research and practice based upon the supported model are discussed.

Key terms: Integrity, ethical decision-making, individual characteristics, situational characteristics.



# A Model of Influences on Ethical Decision-Making:

## Individual and Situational Effects

### Introduction

The importance of conducting research on ethics in scientific research or the business enterprise can not be understated (Giles, 2007). One does not have to look far to witness dramatic cases, for example Korean cell biologist Woo Suk Hwang's claim of cloning human embryos (Nature, 2006), harming participants in clinical trials (Kimmelman, 2004), or businesses such as Enron, and their negative fallout from unethical behavior. In addition to these dramatic instances of unethical conduct, more subtle acts of unethical behavior, such as ignoring aspects of human subject research, unauthorized use of confidential information, and changing the experimental design due to pressure from funding source (Martinson, Anderson, & deVries, 2005) are becoming prevalent and perhaps even more pervasive. The culmination of these unethical behaviors, particularly those of the subtle kind, may serve to undermine the integrity of the scientific and business enterprises (Steneck, 2004). Despite the wide call for research examining subtle unethical behavior, most of the research has focused on the perceptions and attitudes toward these acts (Cardy & Selvarajan, 2006).

Emergent issues in current research investigating these types of unethical acts are prior events or influences that may have impacted behavior. Reviews by Ford and Richardson (1994) and O'Fallon and Butterfield (2005) point to an extensive literature on the potential influences on ethical decision-making. While these reviews were observational in nature, they point to the importance of individual, situational, and organizational factors on ethical behavior. This empirical research has been important

to suggest methods for mitigating the impact of such influences. Further, and even more important to the current investigation, they suggest a potential for a multifaceted model of influences on ethical behavior (Beu, Buckley, & Harvey, 2003; Connelly, Helton-Fauth, & Mumford, 2004; Trevino, 1986). Even bearing this point in mind, little research has been conducted to test models of influences on ethical decision-making. Before turning to a discussion of individual and situational influences on ethical decision-making, what is meant by ethical decision-making must be carefully defined.

### *Ethical Decision-Making*

Prior to discussing this current study's definition of ethical decision-making, it is important to purview existing models of ethical decision-making. There have been a number of proposed theoretical models of ethical decision-making (Miner & Petocz, 2003). Models along these lines include the ethical-decision-making model (Hunt & Vitell, 1986), the moral intensity model (Jones, 1991), the situation-individual interaction model (Trevino, 1986), and the contingency framework model (Ferrell & Gresham, 1985). These ethical decision-making models have generated extensive research on the ethical decision-making process. However, little empirical research has been conducted with the explicit intent of testing the theoretical underpinnings of the ethical decision-making models and they commonly lack a clear operational definition of ethical decision-making (Ford & Richardson, 1994; O'Fallon & Butterfield, 2005). Importantly, most models do not clearly distinguish ethical decision-making from events that influence these decisions.

While this research was not designed to test a model of ethical decision-making, in order to investigate potential influences on ethical decisions, a working model and definition of ethical decision-making is required. An important implicit assumption in most models and definitions is that decisions in ethically-laden situations will result in some form of ethical or unethical behavior. As a consequence, decisions that a person makes while in an ethical situation will impact subsequent behavior (c.f., Mumford, Devenport et al. 2006). For the purposes of this current research, this assumption will be followed and the definition of ethical decision-making will primarily focus on the decision-making components.

Using normative ethics as the general framework (Beu, Buckley, & Harvey, 2003), one way through which ethical decision-making can be defined is from a moral reasoning perspective. Moral reasoning can be divided into two general areas of investigation, one focusing on the outcomes of ethical decisions, or utilitarianism, and the other focusing on the processes leading to the ethical decision, or a deontological point of view. Despite this distinction, in most cases, judgments of ethical behavior from either perspective will come to similar conclusions (DeGeorge, 1999).

Rest (1986), using Kohlberg's (1981; 1984) theory of moral development, suggested 4 steps in moral-based decisions as an interpretative process, including 1) recognizing the situation as a moral one, 2) making a moral judgment about the situation, 3) deciding to act in the situation, 4) implementing the decision (Trevino, Weaver, & Reynolds, 2006). While this theory may be useful for investigations of moral awareness (Reynolds, 2006), there have been a number of criticisms centered on Kohlberg's theory of moral development (e.g., Siegler, 1997; Miner & Petocz, 2003).

In addition, the theory is cognitive-based and therefore may be limited in its ability to account for other individual or situational influences (Trevino, et al. 2006). As a consequence, the working model for this research, and subsequent definition of ethical decision-making, must operate from a broader framework than suggested by Rest's moral reasoning approach.

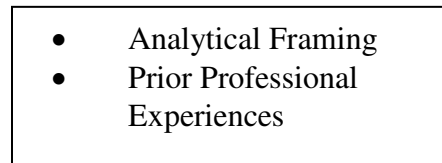
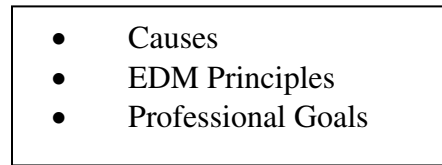
Another potential framework for examining and defining ethical decisions is provided by Trevino, et al. (2006) in their extensive review of unethical behavior in organizations. Building from Rest's framework they suggest a more expansive model of ethical decision-making to include individual-level factors, such as cognitive biases, affect, and identity, and contextual issues, such as ethical climate, ethical infrastructure, and work-relatedness (Trevino, et al. 2006). Despite their expanded model and definition, the limitations of applying a theory of moral development also applies to this model. In addition, the model of ethical decision-making lacks empirical research and does not clearly distinguish ethical decision-making from influences on ethical decision-making.

Similar to the decision-making model suggested by Trevino, et al. (2006), Mumford, Connelly, et al. (2007) suggest a model of ethical decision-making that served as the foundation for an ethics or Responsible Conduct of Research (RCR) training. It offers two advantages to the Trevino, et al. (2006) model. First, the Mumford, Connelly et al. (2007) sensemaking model is descriptive and does not inappropriately mix prescription into its framework (Miner & Petocz, 2003). Second, it does not mix influences of ethical decision-making into the model, but indicates the potential for influences on the ethical decision-making process.

Building from a sensemaking perspective, Mumford, Connelly, et al.'s (2007) model, presented in Figure 1, suggests that an individual will make an initial appraisal of the situation at hand, to include an evaluation of the ethical implications of the problem, which will, in turn, evoke professional, personal goals, and emotion. As a result of the ethical implications, individuals will search for prior cases, or real-world knowledge, to provide a potential framework for the situation at hand. Using a combination of situational cues and prior cases, individuals will then look to forecast decision outcomes and appraise the potential implications of different decisions. This will lead to the selection or construction of a mental model, which will serve as the basis for sensemaking activities and guide decisions or actions. The distinction of this model of ethical decision-making is that it does not define a model that includes a necessary discussion of individual and situational influences external to the central ethical decision-making processes. The model does suggest, however, the potential for both individual and situation influences on ethical decision-making.

For instance, when individuals are developing an initial appraisal of the situation and are enacting professional and personal goals, a strong ethical climate might lead to overestimating the importance of professional goals over personal goals. In contrast, a person with strong self-interests who consider professional goals as inconvenience may place more weight on individual goals threatened in the situation. With respect to case selection, an individual who lacks experience or incompetence (or feelings of incompetence) may not develop appropriate case models relevant to the

Professional Frame of Reference



Personal Frame of Reference

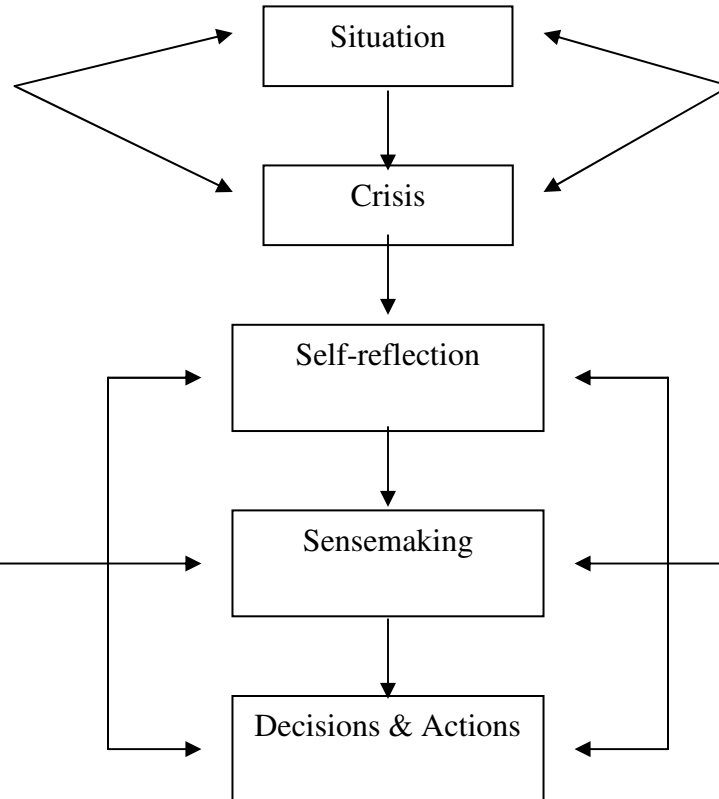
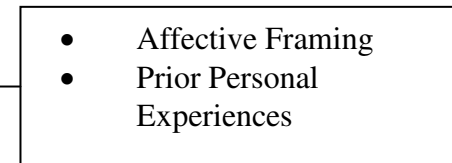
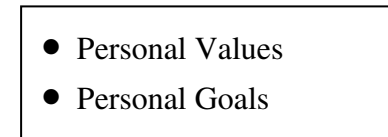


Figure 1. Sensemaking model of ethical decision-making (adapted from Mumford, Connelly et al. 2007).

situation at hand even if they have high morals values – they are unclear as to what to do next. In accordance with this sensemaking model, a working definition or model of ethical decision-making is suggested.

Ethical decision-making, for the purposes of this current research, is defined as a process where an individual, in a particular situation, develops an initial appraisal of the situation, to include ethical implications, enacting professional and personal values and goals and emotion to lead to selection and/or construction of a mental model of the situation, which guides sensemaking activities that result in a decision or action (Mumford, Connelly, et al. 2007). This process is iterative in nature and is engaged when the potential for ethical implications is recognized in the appraisal of the situation in which an individual finds him or her self. Ultimately, as suggested by this definition, decision-making in ethical situations is a complex process involving many factors. Accordingly, the optimal outcome is not readily apparent or always possible and may depend on previous aspects of the decision-making process, such as initial situation appraisal. Specifically, the decision-making process involves a number of choices that impact the final decision, action, or behavior in the ethical situation, from which an individual must select. As such the following question comes to fore – what influences these choices in ethical decision-making?

The literature examining individual and situational influences is extensive (c.f., Ford & Richardson, 1994; O’Fallon & Butterfield, 2005; Trevino, Weaver, & Reynolds, 2006). Broadly speaking, these reviews emphasized individual factors such as gender, value orientation, education, year’s experience, age, cognitive moral development, emotion, and locus of control. From the situation or contextual

perspective, the authors highlighted research on codes of ethics, perceptions of ethical climate, industry type, organizational size, rewards and sanctions, organizational pressures, leadership, and moral intensity. While the criticalness of research along these lines can not be understated, little research has been conducted to assess multiple influences on ethical decision-making in a single model (Cardy & Selvarajan, 2006). This research proposes to close this gap in the literature by testing a model of both individual and situational influences on ethical decision-making. More specifically, this research was designed to address the following question: To what extent does individual and situational characteristics influences impact ethical decision-making?

#### *Individual Influences*

Notwithstanding the measurement of cognitive moral development, much of the research to date has focused its investigation on demographic variables and their potential impact on ethical decision-making. While such research is important, there may be alternative psychological constructs that might influence ethical decision-making. More specifically, constructs assessing the impact of individual difference variables on ethical decision-making. For example, Cherry and Fraedrich (2000) found that individuals with an internal locus of control expressed less intention to behave unethically. Along related lines, individuals high in Machiavellianism self-reported greater intentions to behave unethically (Jones & Kavanagh, 1996) and made fewer ethical decisions (Verbeke, Uwerkerk, & Peelen, 1999). Similarly, research conducted by Connelly et al. (2004) found that emotion evidenced complex relationships with interpersonally directed ethical choices. These empirical studies highlight the importance of individual influences on ethical decision-making.



In the context of research in work organizations, individual difference variables and their impact on negative work behaviors, or unethical behaviors has been widely studied. For example, Mumford, Connelly, Helton, Strange, & Osburn (2001) found that power motives, object beliefs, and negative life themes had a direct, and significant, impact on negative work behaviors. In research along similar lines, Ones and Viswesvaran (2001) found that personality-based variables of conscientiousness, dependability, and achievement orientation predicted counterproductive work behaviors. In a final related example, using a sample of professional accountants, individuals with a stronger attitude toward career self-interest were more likely to behave unethically (Collins, 2006). The research on individual influences suggests that they are important and provides support for their inclusion in a model testing the multiple facets of influences on ethical decision-making.

### *Situational Influences*

Research examining situational influences on ethical decision-making is extensive. Most of the research has centered on the influence of climate on ethical decision-making, but is expanding to include other contextual factors as well (e.g., O'Fallon & Butterfield, 2004; Trevino, et al. 2005). Climate is defined as the shared perceptions of work/social characteristics (Hunter, Bedell & Mumford, 2005; Dickson, Smith, Grojean, & Ehrhart, 2001) and is one of the most frequently researched constructs in business ethics (Martin & Cullen, 2006). In research linking climate perceptions to ethical (or unethical) decision-making include dimensions of an egotistic climate (Peterson, 2001), perceived social consensus of an ethical issue (Butterfield, Trevino, & Weaver, 2000), and individual and social caring (Agarwal &

Malloy, 1999). Martin and Cullen (2006) conducted a meta-analytic path analysis of the impact of climate on unethical behavior and found that perceptions of ethical climate effected work commitment and job satisfaction, which, in turn, was negatively related to unethical behaviors. In research along related lines, Barnett and Vaicys (2000) found ethical climate to moderate the relationship between ethical judgment and behavioral intentions. The research by Martin and Cullen (2006) and Barnett and Vaicys (2000) and others (e.g., Dickson et al. 2001; Engelbrecht, Aswegen, & Theron, 2005; Mulki, Jaramillo, & Locander, 2006; Van Sandt & Neck, 2003) suggest the effects of climate, due to its relationship with other important organizational variables, on ethical behavior may be quite complex.

Another situational variable that might influence ethical decision-making is direct environmental experiences an individual encounters in their work environment. Emerging from the life history approach to assessing important psychological constructs (Mumford, Stokes, & Owens, 1991), this approach has not seen wide application in studies of ethical decision-making. From a life history perspective, background data items assume that people are shaped by a dynamic interaction between individual characteristics and exposure to certain situations (Ligon, 2004; McAdams, 2001; Mumford, Whetzel, Murphy, & Eubanks, 2007). An illustration of the potential promise of this approach is provided by Gessner, O'Connor, Mumford, Clifton, and Smith (1995) who developed background data items to measure direct experiences that might be related to ethical behaviors. In research along similar lines, Mumford, Connelly, Scott et al. (2005) found that environmental experiences can activate or inhibit certain beliefs and values relating to integrity. Due to the paucity of

research examining direct experiences on ethical conduct, the broader literature suggests the potential importance of this line of research. For example, recent research on competition (Robertson & Rymon, 2001), stress (Zyl & Lazenby, 2002), rewards and punishments (Fudge & Schlacter, 1999), and turbulence (Bartlett & Preston, 2000), point to potential environmental experience constructs likely to influence ethical decision-making. Incorporating the findings from these studies, as well as a broader assessment of the environmental experiences likely to influence ethical decision-making, it is an important component when considering situational influences.

A final situational influence variable likely to impact the ethical decisions of scientists is the extent that, in a particular work environment or laboratory, an individual is exposed to ethically-laden events in their day-to-day work. One dramatic example of exposure to ethically-laden events in day-to-day work, drawn from ethnographic research, involved a researcher's experiences while studying a cocaine addict (Vanderstaay, 2005). The ethnographic researcher breached the line of involvement and faced, on a daily basis, decisions about whether the field work was turning into social work. Subsequently, the researcher developed expertise on the management of ethical issues on an event, day-to-day basis. The ethical events do not always have to occur directly to the individual. Exposure to ethical events can emerge from others working in their laboratory or local work environment. As social learning theory or social cognitive theory (Bandura, 2006; Goldstein & Ford, 2002) proposes, modeling observed behavior can be one way individuals learn. Accordingly, as suggested by Hammond (1990), involvement in the work environment provides

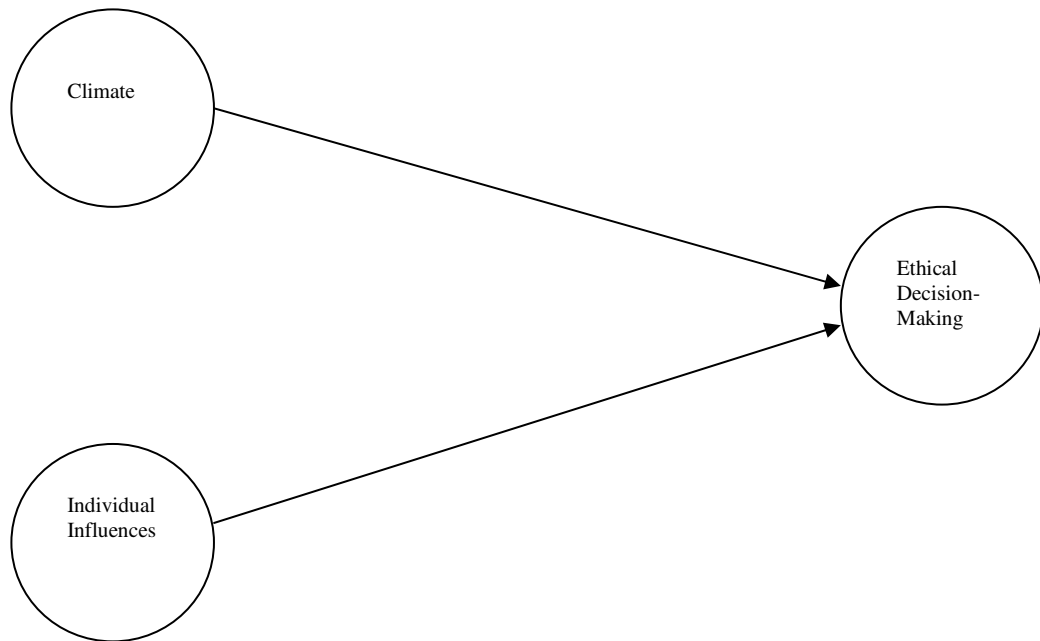
exposure to real-world events and these events or cases provide models for people's behavior (Wood & Bandura, 1989). While this may be beneficial, exposure to incidents of unethical events or conduct may lead to legitimizing the misconduct and result in unethical behavior on part of the individual (Jasanoff, 1993).

#### *Models of Individual and Situational Influences on Ethical Decision-Making*

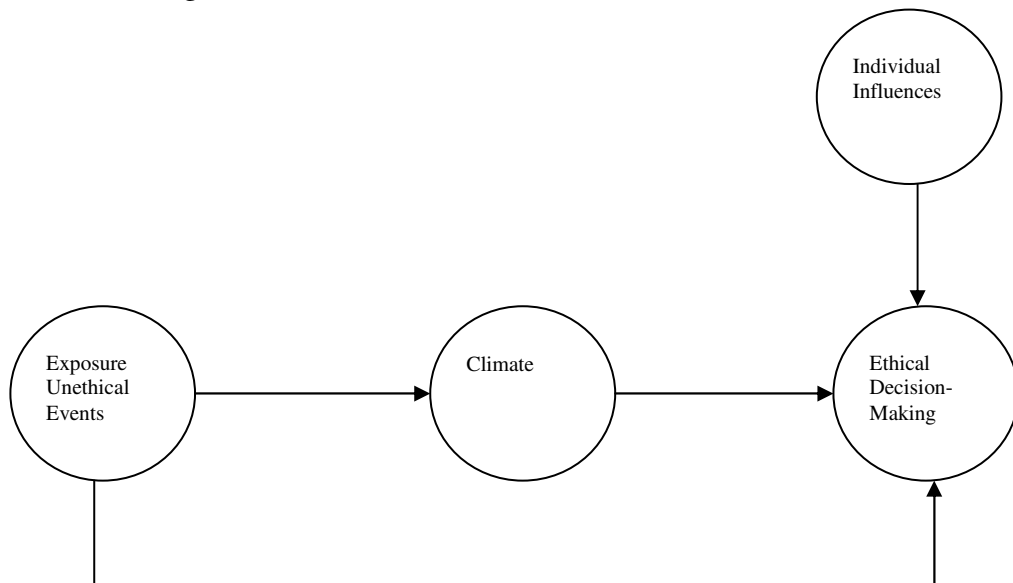
While empirical research testing ethical decision-making models is sparse, there is some empirical research available examining individual and situational influence on ethical decision-making. Trevino (1986) and Jones (1991) suggested the potential for both individual and situational influences, and the literature is filled with potential models (e.g., Bommer, Gratto, Gravender, & Tuttle, 1987; Ferrell & Gresham, 1985; Hunt & Vitell, 1986). Trevino and Youngblood (1990) examined a path model based on Trevino's (1986) model and produced evidence for individual and organizational influences on ethical decision-making behavior. Beu, Buckley, and Harvey (2003) examined individual and situational influences on ethical decision-making. While their broader model was not supported, their research found empirical evidence for individual characteristics and environmental contexts impacting ethical decisions. As a consequence of this review of studies, it is expected that there are likely individual and situational, albeit complex, influences on ethical decision-making.

Of course, as suggested in Figures 2 through 4, there are a number of plausible models to suggest how individual and situational influences may impact ethical decision-making. In Figure 2, individual characteristics and perceptions of climate might have independent effects on ethical decision-making. More specifically,

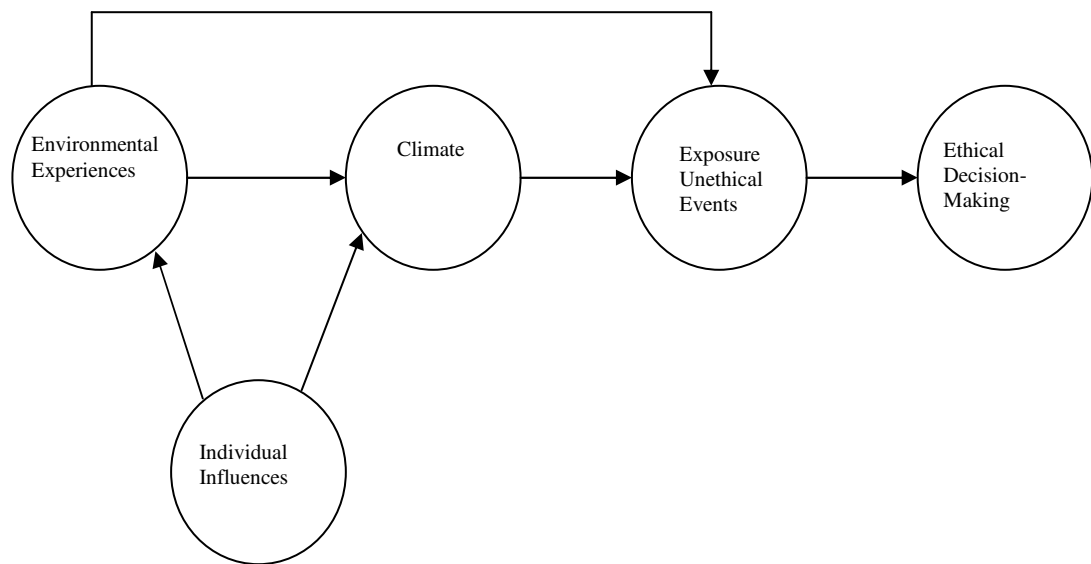
negative personal characteristics, such as a cynical view of others, and perceptions of an unethical climate, such as perceptions of a lack of equity, may lead to poorer ethical decisions. In Figure 3, a partially mediated model suggests that the ethical events to which an individual is exposed in their day-to-day work may lead to perceptions of the ethical climate. Exposure to ethical events and climate may, in turn, result in poorer ethical decisions. In this case, individual characteristics may act independently to influence ethical decision-making. In Figure 4, a more complex model of individual and situational influences on ethical decision-making, suggests that a persons individual characteristics may lead to certain direct experiences in the work environment, such as stress due to multiple competing deadlines, and perceptions about their climate, such as interpersonal conflict. The direct experiences of an individual may lead to perceptions about the climate and their exposure to certain ethical events in their day-to-day work. Perceptions of climate might also influence exposure to unethical events due to willingness (or unwillingness) to engage in the work. Finally, exposure to unethical events may lead to poorer ethical decisions. The three models presented here are only a few of a number of plausible models that were tested, including other direct, mediation, and moderation models of individual and situational influences on ethical decision-making.



*Figure 2.* Potential Model 1 of individual and situational influences of ethical decision-making.



*Figure 3.* Potential Model 2 of individual and situational influences of ethical decision-making.



*Figure 4.* Potential Model 3 of individual and situational influences of ethical decision-making.

## Method

### *Sample*

In order to test the proposed models, data was collected from 245 doctoral students attending a large southwestern university. They were paid \$100 to participate in the study, which consisted of a battery of paper-and-pencil exercises that took, on average, 4.5 hours to complete. Data was collected from 65 (26%) doctoral students in the Health Sciences, 102 (42%) doctoral students in the Biological Sciences, and 78 (32%) doctoral students in the Social sciences. There were 158 students in their first year of their doctoral program and 87 students in their third to fifth year of their doctoral programs. First-year doctoral students were not recruited prior to having a minimum of 4 months and no more than 9 months experience in their laboratory. 54% of the participants were female and 37% of the participants were male (9% did not report). Doctoral students were 56% Caucasian, 4% African American, 2% Hispanic,

20% Asian, and 4% Native American (14% reported 'other'). On average, participants were 28 years old and all were currently involved in some form of their own research.

### *General procedures*

Data was collected as part of a larger research program to investigate research integrity. Recruitment was conducted in waves spanning a three year period. The first step consisted of distributing flyers advertising the opportunity to participate in this research study. The second step included emailing doctoral students. Following this wave of emails, doctoral students were contacted directly by telephone, which was then followed up with another round of emails. In all phases of recruitment, doctoral students were informed of the opportunity to participate in a study of scientific decision-making.

After signing the informed consent form, participants were administered two timed assessments. All other measures were self-paced. Following the timed assessments, participants completed an environmental experience inventory, a battery of personality surveys, and a climate survey. Following these assessments, participants were asked to complete a measure that asked them to indicate the frequency and acceptability of certain events in their laboratory, a review panel task where they were asked to act as a judge of misconduct, and, finally, an ethical decision-making scenario assessment. Important to note, the ethical decision-making scenario assessment was posited as a work-related day-to-day problem-solving task in order to reduce demand characteristics.



### *Individual Difference Measures*

*Divergent thinking.* Divergent thinking was assessed using the Consequences test by Merrifield, Guilford, Christensen, and Frick (1962). The Consequences test asks that participants respond to a question, such as “What would be the results if people no longer needed or wanted sleep?” They are then presented with 4 sample responses. In the two minutes provided, participants are asked to develop as many responses as they can without using the sample responses. There are five such items. Responses are scored according to the number of non-overlapping, plausible, responses, and the number of different categories indicated by their responses. Evidence for reliability and validity of this measure can be found in Guilford (1968).

*Intelligence.* Intelligence was assessed using the Employee Aptitude Survey, which is a verbal reasoning test of general intelligence (Ruch & Ruch, 1980). There are 30-items on this test that present participants with a set of facts and, based upon these facts, indicate whether the conclusions presented are true, false, or uncertain. Participants are presented six sets of facts with five conclusions per set and have five minutes to complete as many items as they can. Evidence for reliability and validity of this test as a measure of intelligence has been provided by Ivancevich (1976) and Ruch and Ruch (1980).

*Personality.* General personality was assessed according to the Big Five, the most commonly used taxonomy to describe characteristics of a person that influences his or her behaviors in various situations (Ryckman, 2004). Personality was assessed using the Big Five Inventory (BFI), a self-report measure that asks participants to respond to 44-items (John, Donahue, & Kentle, 1991). Example items include “Is

generally trusting” and “Is relaxed, handles stress well” participants endorsed items on a five-point Likert scale from strongly disagree to strongly agree. Evidence for the reliability and validity evidence of this personality measure is provided by John and Srivastava (1999) and DeYoung (2006).

*Narcissism.* Narcissism was assessed using Emmon’s (1987) Narcissism Personality Inventory (NPI-37). There are 37-items on this assessment that request participants to select from two statements that most closely represent feeling about him or her self. For example, participants choose from “I have a natural talent for influencing people” or “I am not good at influencing people”. The NPI-37 has shown considerable evidence of construct validity and internal consistency (for reviews, see Emmons, 1987; Raskin & Terry, 1988).

*Social Desirability.* Social desirability was assessed using Paulhus’ (1984) two component model of social desirable responding, the Balanced Inventory of Desirable Responding (BIDR). The 40-item measure consists of two dimensions, impression management (20-items) and self-deceptive enhancement (20-items). Example items include “I never cover up my mistakes” and “My first impressions of people usually turn out to be right”, respectively. Participants are asked on a seven-point Likert scale the extent that they agree with a statement from strongly disagree to strongly agree. The BIDR is a widely used measure that has demonstrated adequate reliability and validity (Paulhus, 2002; Paulhus & Reid, 1991).

*Philosophies of Human Nature.* The beliefs or views that individuals hold about others were assessed using the Philosophies of Human Nature measure (Wrightsman, 1974). The 34-item measure consists of four dimensions, complexity,

variability, trust, and cynicism. Example items include “Most people are consistent from situation to situation in the way they react to things”, “You can’t accurately describe a person in just a few words”, “Most people have the courage of their convictions”, and “The average person is conceited”, respectively. Participants are asked on a seven-point Likert scale the extent that he/she strongly disagrees to strongly agrees with a statement. Research by Wrightsman (1991) has produced appropriate evidence of reliability and validity for the measure.

*Anxiety.* Anxiety was assessed using Taylor’s Manifest Anxiety Scale (MAS; Taylor, 1953). The 20-item measure asks participants to indicate whether or not the statement applies to them on a dichotomous scale (0 = *True, applies to me*; 1 = *False, does not apply to me*). Example items include “I believe I am no more nervous than most others” and “I am inclined to take things hard”. The MAS is a widely used measure that has demonstrated adequate test-retest reliability (Taylor, 1953) and validity (Crumpton, Grayson, & Keith-Lee, 1967). Table 1 presents each of the individual difference measures, their dimensions, some example items, and reliability estimates using the current sample.

### *Situational Influences*

*Organizational Climate Survey.* The organizational climate survey was developed based on Gaddis, Connelly, and Mumford’s (2002) review of the ethical climate literature climates in relation to the Mumford and Helton’s (2000) work events model. The measure consists of 75-items where participants respond on a five-point Likert scale (1 = Never; 5 = Always) the frequency with which each statement applies

*Table 1.* Individual influence measures, dimensions, example items, and reliability estimates

Measure	Dimensions	Example Items	Reliability Estimates ( $\alpha$ )
EAS Verbal Reasoning	Intelligence	Indicate whether conclusion is True, False, or Uncertain based upon a set of facts provided (6 sets of facts)	.80
Consequences	Divergent Thinking	What would be the results if the force of gravity were suddenly cut in half?	.93
Balanced Inventory of Desirable Responding	Self-Deceptive Enhancement	SDE: I always know why I like things.	.62
	Impression Management	IM: I always obey laws, even if I'm unlikely to get caught.	.78
	Neuroticism	N: I see myself as someone who can be moody	.80
	Openness to Experience	O: I see myself as someone who values artistic, aesthetic experiences	.81
Big Five Inventory	Extraversion	E: I see myself as someone who is talkative	.89
	Conscientiousness	C: I see myself as someone who does a thorough job	.79
	Agreeableness	A: I see myself as someone who has a forgiving nature	.69
Narcissism Personality Inventory	Leadership/Authority	LA: I have a natural talent for influencing people.	.82
	Self-Absorption/Self-Admiration	SS: I think I am a special person.	
	Superiority/Arrogance	SA: Superiority is something that you acquire with experience.	
	Exploitativeness/Entitlement	EE: I will never be satisfied until I get all that I deserve.	
Taylor Manifest Anxiety Scale	Anxiety	I work under a great deal of tension.	.73
	Cynicism	CY: People pretend to care more about one another than they really do.	.79
Philosophies of Human Nature	Trust	TR: Most people will speak out for what they believe in.	.81
	Variability	VA: Different people react to the same situation in different ways.	.78
	Complexity	CO: People are too complex to ever be understood fully.	.78

to their work environment (Mumford, Murphy et al., in press). Example items include “A wide variety of viewpoints are expressed here” and “Distribution of rewards and credits is fair here”. Because this was a newly developed measure, an exploratory factor analysis was conducted to identify underlying constructs representative of graduate students’ climates in an initial sample of 102. The factor analysis resulted in four factors, including equity, interpersonal harmony, occupational engagement, and work commitment. The climate dimensions were subsequently rationally scored to these four factors once the remainder of the data was collected. Table 2 presents these dimensions with sample items and reliability estimates of the dimensions.

*Table 2. Organizational climate survey dimensions, example items, and reliability estimates*

Dimension	Example item	Reliability Estimates ( $\alpha$ )
Equity	People here are adequately rewarded for their work or research.	.95
	Distribution of rewards and credits is fair here.	
	The processes by which decisions are made about credit allocation (e.g., authorship, paper or conference presentations, grades) are fair here.	
Interpersonal Harmony	The work environment here is characterized by infighting.	.84
	There are power and territory struggles here.	
	People here do not listen to each other in encouraging new initiatives.	
Occupational Engagement	People here exhibit a sense of humor.	.88
	People here are given the right type and amount of resources they need to do their work.	
	A wide variety of viewpoints are expressed here.	
Work Commitment	People here are given the autonomy and resources needed to define much of their own work.	.82
	People here are expected to honor all agreements and show respect for others.	
	Role models here set an example by sticking to their commitments and agreements.	

*Environmental Experience Measure.* The environmental experience measure was developed to assess the direct experience of graduate students working in research laboratories (Gaddis, Helton-Fauth et al., 2002). Centrally, the measure is a

background data measure and was developed was based on prior research by Gessner, O'Connor, Mumford, Clifton, and Smith (1995). There are 414-items assessing 41 constructs across individual, group, and organizational levels (Mumford, Murphy et al., in press). Following the approach recommended by Schoenfeldt and Mendoza (1994), responses to the environmental experience items were rationally scored prior to factoring. Similar to the organizational climate inventory, exploratory factor

*Table 3. Environmental experience dimensions, example items, and reliability estimates*

Dimension	Example item	Reliability Estimates ( $\alpha$ )
Professional Leadership	How often has your major professor asked students for updates on tasks?	.94
	To what extent has your professor assigned you to challenging exciting or projects?	
	To what extent has your major professor provided an image of clear direction of your research?	
Poor Coping	How often have you had to wait for others in your lab to give you what you need to complete your part of project?	.86
	How many times has your major professor asked you to rewrite a paper or part of a paper before approving it?	
	How often have you had to turn down a project that interested you because you were too busy working on other projects?	
High Rewards	How likely have you been to submit presentations or articles when you know they would be under review for a considerable amount of time?	.63
	When graduate students have brought problems to the attention of professors in your department, to what extent have they been told they did the right thing?	
	How often has your major professor complimented you on research progress?	
Limited Pressure	To what extent have you viewed competitors as less competent than your group?	.85
	How often has your group discussed the negative characteristics of other labs?	
	How often has your group produced sloppy work just to get something on paper for your major professor?	
Poor Career Direction	How often had it been necessary to set up schedules so people working on projects in the lab will complete assigned work?	.72
	How often have you reported to professors other than your major professor?	
	How much feedback has your major professor given you regarding your progress on your thesis or dissertation?	

analysis was performed on the environmental experience measure to identify underlying constructs representative of graduate student research experience. The factor analysis resulted in five factors, including professional leadership, good coping, high rewards, limited pressure, and good career direction. Again, similar to the climate survey, the factor analysis was conducted on an initial sample and then rationally scored for remaining participants. The five dimensions are presented in Table 3 along with example items and reliability estimates of the dimensions.

*Unethical Exposure Measure.* To examine the unethical laboratory practices graduate students' are exposed to in their day-to-day work, an unethical exposure measure was administered. The unethical exposure measure aligns with events that map onto a taxonomy of professional codes of conduct applying to fields in the biological, health, and social sciences (Helton-Fauth, et al. 2003; Mumford, Devenport, et al. 2006). There are 93 technical and ethical items that ask participants to indicate the frequency that they see a particular event in their laboratory on a five-point Likert scale, with an option for not sure or not applicable (1 = it has never occurred to 5 = most of the time). Example items include "Use grant or contract funds for non-grant-related expenses" and "Conduct research outside area of expertise". The 93-item measure maps onto an ethical taxonomy consisting of four broad domains, including data management, study conduct, professional practices, and business practices (Helton-Fauth, et al., 2003). The unethical exposure measure has evidenced appropriate reliability and validity (Mumford, Devenport et al. 2006). The four dimensions are presented in Table 4 along with example items and reliability estimates of the dimensions.

Table 4. Exposure to unethical event dimensions, example items, and reliability estimates

Dimension	Example item	Reliability Estimates ( $\alpha$ )
Data Management	Drop anomalous data points from a statistical analysis	.77
	Selectively report only confirmatory results of experiments	
	Give authorship to persons who have not contributed significantly to the research	
Study Conduct	Omit sensitive details of procedures in Institutional Review Board or Institutional Animal Care and Use Committee application	.82
	Overstate benefits of participation in a study to human subjects	
	Persuade reluctant human subjects to participate or remain in a study	
Professional Practices	Apply variable standards when evaluating or reviewing others' research	.82
	Conduct research outside area of expertise	
	Exaggerate the importance of research findings to the lay public	
Business Practices	Accept payment for serving as an expert witness in judicial proceedings	.70
	Use grant or contract funds for non-grant-related expenses	
	Underestimate true costs of research in a competitive bid	

### *Outcome Measure*

*Ethical Decision-Making Measure.* To assess the day-to-day ethical decision-making of graduate students in research sciences, a scenario-based measure was administered. The ethical decision-making measure, a low-fidelity work simulation, was developed to reflect ethical issues a researcher may face at work (Motowidlo, Dunnette, & Carter, 1990) and was based on the recommendations of Baker, O'Neill, and Linn (1993) and Mumford, Baughman, Supinski, and Anderson (1998) concerning the development of assessments bearing on complex real-world tasks. In particular, domain-specific measures were developed for the biological, health, and social sciences to resemble activities most similar to work performed on a day-to-day basis.

Development of the ethical decision-making measure began with the review of an ethical taxonomy representative of divergent professional guidelines and codes of



conduct (e.g., American Biological Association, American Psychological Association). The taxonomy consists of 17 dimensions of ethical behavior that map to four broad dimensions of ethical conduct, namely, data management, study conduct, professional practices, and business practices (Helton-Fauth, et al., 2003). On-line websites were reviewed, for example online ethics center and the Office of Research Integrity, to identify potential cases relevant to the health, biological, and social sciences. Cases were retained if they were: 1) relevant to day-to-day work, 2) involvement of both technical and ethical issues, and 3) potentially challenging across a range of expertise.

Subject matter experts, all psychologists, applying a framework combining the ethical taxonomy and relevant contemporary technical issues held to be an important in the field, adapted the cases to reflect a broader scenario, providing background and context, and three action scenarios resulting in an ethical event requiring a decision. Following development of these scenarios and action events, the subject matter experts generated 6 to 8 potential responses that might provide a course of action given the ethical event. Each of these response options that were developed reflected high, moderate, and low ethicality, with at least two per ethical event. For each scenario, the three action events with ethical consequences, and the subsequent response options, were reviewed for necessary revisions. The resulting 36-item measures, one each for the health, biological, and social sciences, asked participants to select two options per ethical event that mapped to four ethical dimensions, including: 1) data management, 2) study conduct, 3) professional practices, and 4) business practices. More information concerning the development to this measure can be found

in Helton-Fauth, et al. (2003). An example item, from the social science measure, appears in Figure 5. Evidence for the reliability and validity of this measure can be found in Mumford, Devenport et al. (2006).

*Figure 5. Example item from the ethical decision-making measure – social science*

Moss is a researcher in the laboratory of Dr. Abrams, a well-known researcher in the field of economics. Moss is trying to develop a model to predict performance of stocks in the technology sector, but she is having difficulty analyzing and selecting trends to include in the model. She enlists the help of Reynolds, another experienced researcher working on a similar topic. With Reynolds's help, Moss eventually analyzes and identifies some key trends working them into a testable model. She also discusses some of her other research ideas with Reynolds. Two weeks later, Moss comes across a grant proposal developed by Reynolds and Abrams. She sees that it includes ideas very similar to those she discussed with Reynolds. She takes the matter to Abrams, who declines to get involved, saying that the two researchers should work it out on their own.

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1. Reynolds admits to Abrams that he used slightly modified versions of Moss's ideas. Abrams is upset with this, but Reynolds is a key person on the proposal team and the grant application deadline is soon. What should Abrams do? Choose **two** of the following:
  - a. Fire Reynolds from the lab on the grounds of academic misconduct
  - b. Leave Reynolds as first author on the proposal since he wrote up the ideas
  - c. Remove Reynolds from the proposal team, and offer Moss the position if she allows her ideas to be used
  - d. Ask Moss to join the grant team, placing her as third author on the proposal if she allows her ideas to be used
  - e. Acknowledge Moss in the grant proposal because the ideas were hers originally
  - f. Apologize to Moss and indicate that the proposal must go out as is to meet the deadline
  - g. Remove Moss's ideas from the proposal and try to rework it before the deadline
2. Moss is upset about Reynolds using her ideas and she decides to do something about it. Given that Moss works very closely with Reynolds and their boss Abrams, evaluate the likely success of the following plans of actions Moss can take. Choose **two** of the following:
  - a. Moss asks Reynolds to give her credit by putting her name on the grant proposal as well
  - b. Moss asks Reynolds about the incident and tape records his reaction to later show Abrams
  - c. Moss searches for annotated notes about her ideas that are dated prior to her conversation with Reynolds
  - d. Moss appeals for a "mock trial" for Reynolds to testify under oath to his superiors that the information was his
  - e. Moss searches for Reynolds's lack of understanding of the concepts he claims were his own by questioning him in front of other students
  - f. Moss attempts to sway other researchers to support her to Abrams
  - g. Moss visits Reynolds' office in hopes of finding evidence that she contributed to the proposal
  - h. Moss asks Reynolds to write an account of their conversation on the day in question and shows her comparison account to him as evidence that he is using her ideas

### *Analyses*

In order to test the proposed model of individual and situational influences on ethical decision-making, two steps were taken. First, correlations were computed among all the measures, to include the individual difference measures, the situational influence measures, and the outcome, or ethical decision-making, measure. Second, structural equation modeling (SEM) using SAS Proc Calis procedures (SAS, 2000) tested fit of the data to the model. As recommended by Kline (1998), a two-step procedure was followed for SEM analyses.

In the first stage, correlations between personality, environmental experience, and climate variables, exposure to unethical events and ethical decision-making were examined. Variables that had an a prior rationale for assessing ethical decision-making and demonstrated expected correlation with ethical decision-making were retained for inclusion in the model testing phase. This step was performed because a latent model approach was used to test fit of the data. In other words, there would be a latent variable empirically computed to represent the construct of interest. For instance, in the case of climate, there would be one latent climate variable. In addition, reducing the complexity by decreasing the number of parameters to be estimated is commonly recommended for fitting complex models (Bagozzi & Edwards, 1998; Landis, Beal, & Tesluk, 2000; Mathieu & Farr, 1991; Mathieu, Tannenbaum, & Salas, 1992). The only exception to this procedure was personality. Rather than computing a latent variable, personality was used in the model as an intervening variable and the personality characteristics retained for model testing were thought of as indicators or indexes of the latent construct. Similar procedures have been followed in testing models using

socio-economic-status (c.f., Mulatu & Schooler, 2002). In order to assess the moderation models, Ping (2006) was referenced and the Joreskog (2000) with incorporation of Ping (1996) procedures were followed. Factor scores were computed to represent the latent trait and then the products were computed. These latent products were then used in the linear equations to test the moderation models, with variances set at the square root of one minus the reliability of the latent factor product (Ping, 2003; Terry, 2007).

In the second stage, maximum likelihood estimation (MLE; Anderson & Gerbing, 1988) was used to test the fit of the data to the models. There were a number of apriori theoretical models that might represent the best fit to the data. As a result, in order to evaluate fit of the model, appropriate fit indices required selection. There are a number of issues that have been raised relating to selecting appropriate fit indices including sample size, sensitivity to misspecification, and estimation method (Du & Tanaka, 1989; 1995). In this current study, with a sample of 245, using MLE, and testing a number of apriori models, and referencing recent Monte Carlo research by Gerbing and Anderson (1992) and Du and Tanaka (1995), and a review by Medsker, Williams, & Holahan, (1994), Chi-squared, Goodness of Fit (GFI), Root Mean Square Error of Approximation (RMSEA), Akaike Information Criterion Index (AIC), Consistent Akaike Information Criterion (CAIC), Bayesian information criterion (BIC), and MacDonald's Centrality Index (MCI) were chosen. Decisions regarding the best fitting model would be made by assessing the fit of the model across these fit indices.

## Results

### *Correlations*

*Individual influences.* The results of the correlations appear in Tables 5 through 8. As may be seen in Table 5, individual influence variables such as Philosophies of Human Nature's dimensions of cynicism was related to poorer decisions regarding data management ( $r = -.18$ ), study conduct ( $r = -.16$ ), and professional practices ( $r = -.16$ ). Trust was associated with poorer decision concerning professional practices ( $r = -.13$ ) and business practices ( $r = -.16$ ). The Big Five personality characteristics of openness to experience was related to better ethical decisions regarding data management ( $r = .12$ ) and study conduct ( $r = .12$ ). Finally, as assessed through the Narcissism Personality Inventory, dimensions of self-absorption/self-admiration was associated with poorer decisions concerning professional practices ( $r = -.17$ ). Superiority/arrogance was related to poorer decisions across all four dimensions, including data management ( $r = -.12$ ), study conduct ( $r = -.15$ ), professional practices ( $r = -.12$ ) and business practices ( $r = -.21$ ). Similarly, exploitiveness/entitlement was also associated with poorer decision across all four dimensions ( $r = -.20, -.14, -.26$ , and  $-.20$ , respectively).

The correlations between key individual characteristics and ethical decision-making were utilized to determine the important individual difference variables to be tested in the proposed models. Specifically, cynicism, trust, openness to experience (reverse scored), and narcissism's dimensions of self-admiration, superiority, and entitlement dimensions were selected to be indicator variables of the individual influence 'construct'. Previous research has suggested the potential of these variables

to be related to negative decisions or behavior (e.g., Andersson & Bateman, 1997; Antes et al., 2007; Dollinger & LaMartina, 1998; Judge, LePine, & Rich, 2006; Munro, Bore, & Powis, 2005; Penney & Spector, 2002) and this current research supports these previous findings. For example, Andersson and Bateman (1997) found that cynicism was negatively related to intentions to perform organizational citizenship behaviors. Along related lines, Dollinger and LaMartina (1998) found openness to experience to be associated with moral reasoning.

*Table 5. Correlations of individual influences and ethical decision-making*

	Data Management	Study Conduct	Professional Practices	Business Practices
Consequences	.05	.14	.13	.13
EAS	.12	.24	.26	.19
Self-Deceptive Enhancement	.09	-.11	.04	-.11
Impression Management	.16	-.15	.00	-.10
Variability	-.01	.00	-.02	.09
Complexity	.00	.00	.00	.08
Cynicism	-.18	-.16	-.16	-.07
Trust	-.05	.01	-.13	-.16
Extraversion	-.07	.07	-.10	-.10
Conscientiousness	.06	.09	.06	-.05
Neuroticism	-.01	.10	-.11	.05
Openness To Experience	.12	.12	.05	.01
Agreeableness	.15	-.04	.08	-.01
Narcissism				
Leadership/Authority	-.02	.11	-.01	-.06
Narcissism Self- Absorption/Self- Admiration	-.07	-.03	-.17	-.09
Narcissism				
Superiority/Arrogance	-.12	-.15	-.12	-.21
Narcissism				
Exploiteness/Entitlement	-.20	-.14	-.26	-.20
Taylor Manifest Anxiety Scale	-.09	.04	-.09	.07

*Situational influences.* As presented in Tables 6, 7, and 8, particular situational influences impacted ethical decision-making. With regard to the climate inventory, as shown in Table 6, perceptions of equity in the laboratory was associated with better

decisions concerning data management ( $r = .08$ ), but poorer decisions in study conduct ( $r = -.10$ ). Similarly, perceptions of interpersonal harmony in their work environment was related to better decisions regarding data management ( $r = .13$ ) and professional practices ( $r = .09$ ). In assessing the direct experiences an individual faces in their environment, as seen in Table 7, it was found that experiences of high rewards when conducting research was related to better decisions of data management ( $r = .14$ ), professional practices ( $r = .25$ ), and business practices ( $r = .12$ ). Experiences of limited pressure in conducting research was associated with better decisions with respect to data management ( $r = .07$ ) and study conduct ( $r = .16$ ).

*Table 6. Correlations of climate inventory and ethical decision-making*

	Data Management	Study Conduct	Professional Practices	Business Practices
Equity	.08	-.10	.02	.02
Interpersonal Harmony	.13	.01	.09	.04
Occupational Engagement	-.09	.04	-.03	-.01
Work Commitment	-.04	-.06	.02	.03

*Table 7. Correlations of environmental experiences and ethical decision-making*

	Data Management	Study Conduct	Professional Practices	Business Practices
Professional Leadership	.04	-.11	.10	-.05
Good Coping	.09	.09	.00	.00
High Rewards	.14	.00	.25	.12
Limited Pressure	.07	.16	.03	.02
Good Career Direction	-.02	-.08	-.04	-.03

Perhaps the most influential situational variable related to ethical decision-making is the extent individuals were exposed to unethical events in their day-to-day work. As shown in Table 8, exposure to unethical events is related to all domains of ethical decision-making with increases in exposure to unethical events associated with poorer ethical decisions. Of note in this table are the correlations between the dimensions along the diagonal of exposure to unethical events to ethical decision-

making. Moreover, exposure to unethical events in data management is related to poorer decisions in data management ( $r = -.19$ ), exposure to unethical events in study conduct is related to poorer decisions in study conduct ( $r = -.32$ ), and exposure to unethical events in professional practices is related to poorer decisions in professional practices ( $r = -.24$ ). The only exception to this trend is business practices where perhaps exposure to general bad practices in the laboratories research led to more generalization of these practices across other areas.

*Table 8. Correlations of exposure to unethical events and ethical decision-making*

	Data Management	Study Conduct	Professional Practices	Business Practices
Unethical Events – Data Management	-.19	-.17	-.19	-.13
Unethical Events – Study Conduct	-.18	-.32	-.16	-.25
Unethical Events – Professional Practices	-.14	-.24	-.24	-.19
Unethical Events – Business Practices	-.17	-.25	-.12	-.16

Similar to individual influences, the correlations between key situational characteristics and ethical decision-making were utilized to determine the important situational variables to be tested. Specifically, climate dimensions of equity and interpersonal harmony, environmental experience dimensions of high rewards and limited pressure, and all four dimensions of exposure to unethical events were selected to be included in the model. However, unlike individual influences, three separate latent factors were estimated to represent the situational variables. Specifically, a latent ethical climate variable, comprised of equity and interpersonal harmony, was estimated. As indicated earlier, ethical climate has extensive research supporting its important influence on ethical decision-making (Martin & Cullen, 2006). Secondly, a positively structured environmental experience dimension consisting of high rewards



and limited pressure was estimated. Recent research by Fudge and Schlater (1999) on rewards and punishments and Robertson and Rymon (2001) on competition suggests the importance of these variables. Finally, an exposure to unethical events factor comprised of all four dimensions was estimated. Consistent with the discussion of social learning theory (Wood & Bandura, 1989), events witnessed in day-to-day work will likely influence behavior (Jasanoff, 1993).

### *Model Testing*

While examining these correlations is interesting and important, the focal purpose of this research was to test a number of plausible models of individual and situational variables on ethical decision-making. There were 22 a priori models examining the ways through which these influences might work to impact ethical decision-making. These models included direct, mediation, and moderation effects of individual and situational influences on ethical decision-making. All models were tested using SAS software version 8.01 (SAS, 2000) and the intercorrelations used for the model testing appear in Table 9. These correlations are consistent with those discussed in the preceding paragraphs. To test the fit of the 22 models, latent factors were estimated for ethical climate, positive structure environmental experience, and exposure to unethical events, while individual difference variables served as indicators of the personality 'factor'. Path coefficients were then estimated using SAS Proc CALIS.

Models 1 through 5 are direct influences models where individual and situational influences are specified to directly impact ethical decision-making. Model

Table 9. Correlations among variables tested in the influence on ethical decision-making models

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	-.27	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	-.06	.11	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	.02	-.04	-.25	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5	.21	-.01	-.14	.28	—	.	.	.	.	.	.	.	.	.	.	.	.	.
6	.27	-.04	.03	.25	.48	—	.	.	.	.	.	.	.	.	.	.	.	.
7	-.24	.09	.09	-.09	-.12	-.17	—	.	.	.	.	.	.	.	.	.	.	.
8	-.02	-.14	-.14	-.02	.06	-.05	-.06	—	.	.	.	.	.	.	.	.	.	.
9	.02	.12	.14	-.10	-.10	-.10	.15	.28	—	.	.	.	.	.	.	.	.	.
10	-.27	.06	.10	-.06	-.10	-.10	.39	.09	.41	—	.	.	.	.	.	.	.	.
11	.24	-.06	.10	-.10	.12	.01	-.18	-.13	-.16	-.24	—	.	.	.	.	.	.	.
12	.16	.05	.14	-.11	.06	.05	-.10	-.11	-.01	-.10	.43	—	.	.	.	.	.	.
13	.23	-.07	.04	-.07	.16	.23	-.21	.05	-.02	-.22	.46	.27	—	.	.	.	.	.
14	.15	-.11	.05	-.16	.08	.07	-.06	-.06	-.11	-.13	.46	.40	.30	—	.	.	.	.
15	-.18	-.05	-.12	-.07	-.12	-.20	.09	.14	.08	.13	-.19	-.18	-.14	-.17	—	.	.	.
16	-.16	.01	-.12	-.03	-.15	-.14	.09	.00	-.10	.01	-.17	-.32	-.24	-.25	.26	—	.	.
17	-.16	-.13	-.05	-.17	-.12	-.26	.00	.25	.02	.09	-.19	-.16	-.24	-.12	.37	.24	—	.
18	-.07	-.16	-.01	-.09	-.21	-.20	.00	.12	.02	.04	-.13	-.25	-.19	-.16	.28	.38	.40	—

Note: 1=Cynicism; 2=Trust; 3=Closed to Experience; 4=Self-Absorption/Self-Admiration; 5=Superiority/Arrogance; 6=Exploiteness/Entitlement; 7=Good Coping; 8=High Rewards; 9=Equity; 10=No Interpersonal Conflict; 11=Unethical Events - Data Management; 12=Unethical Events - Study Conduct; 13=Unethical Events - Professional Practices; 14=Unethical Events - Business Practices; 15=EDM - Data Management; 16=EDM - Study Conduct; 17=EDM - Professional Practices; 18=EDM - Business Practices.

1 tests the direct effects of personality and ethical climate on ethical decision. Model 2 tests the direct effects of positive structure environmental experiences and ethical climate on ethical decision-making. Model 3 tests the direct effects of personality and positive structure environmental experience on ethical decision-making. Model 4 tests the direct effects of the situational influences of ethical climate, positive structure environmental experience, and exposure to unethical events on ethical decision-making. Lastly, Model 5 tests the direct effects of all individual (personality) and situational (ethical climate, positive structure environment, and exposure to unethical events) on ethical decision-making.

Model 6 through 19 test the fit of the data to full and partial mediation models of individual and situational influences on ethical decision-making. To describe all of these models would extend beyond the current scope of the paper. Despite this, in general ethical climate and exposure to unethical events (one or in combination) served as the latent factors mediating the influences of personality and positive structure environment on ethical decision-making. For example, for Model 17, a partially mediated model, exposure to unethical events led to perceptions of the ethical climate and to certain environmental experiences, and had a direct effect on ethical decision-making. The positive structure environmental experience led to perceptions of the ethical climate. Perceptions of the ethical climate led to ethical (or unethical) decisions and personality had a direct and independent impact on ethical decisions.

Models 20 through 22 test the fit of the data to moderation models of individual and situational influences on ethical decision-making. In each of the models, personality was tested as to whether it moderates the relationship between the

situational variables and ethical decision-making. The models tested are latent variable models where latent product terms were estimated as described in the methods section. The moderation models tested the extent personality variables interacted with situation variables to impact ethical decision-making. For instance, Model 21 assessed the moderation of personality and climate on ethical decision-making, indicating that a person's personality might interact with attitudes or perceptions of ethical climate on ethical decision-making.

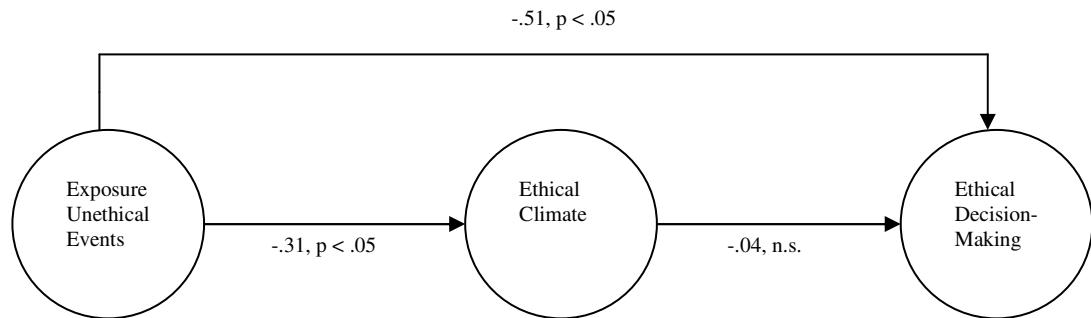
The results of testing the fit of the data to the 22 apriori specified models appear in Table 10. In order to determine the best fitting model, the models were evaluated with the respect to the fit indices appearing in the table and described in the methods section. As seen in Table 10, Model 11 provides the best fit of the data. Model 11, which appears in Figure 6 with estimated path coefficients, has an estimated RMSEA of .0565 and an MCI of .9535. In addition, as compared to other models, the parsimony adjusted fit indices of AIC, CAIC, BIC were close to 0 and low, particularly to models with similar RMSEA and MCI values (Tabachnick & Fidell, 2001). As a consequence, across this set of fit indices, they suggest that Model 11 provides an excellent fit of the data. Model 11 is a situational influence partially mediated model where ethical climate partially mediates the relationship between exposure to unethical events and ethical decision-making. As suggested by the model, unethical events researchers are exposed to in their day-to-day work lead to perceptions of an unethical climate ( $\beta = -.31, p < .05$ ), which lead to less ethical decisions ( $\beta = -.04, n.s.$ ). Further, the exposure of researchers to unethical events also directly leads to less ethical decisions ( $\beta = -.51, p < .05$ ). It seems that exposure to

unethical events has a large impact not only on the perceptions of a scientists' research ethical climate, but also on the ethical decisions made by these scientists.

*Table 10.* Fit indices for models tested

<b>Model</b>	<b><math>\chi^2</math></b>	<b>GFI</b>	<b>RMSEA</b>	<b>Fit Indices</b>			
				<b>MCI</b>	<b>AIC</b>	<b>CAIC</b>	<b>BIC</b>
<b>1</b>	73.97	.9521	.0664	.9239	1.97	-159.34	-123.34
<b>2</b>	87.21	.9201	.1306	.8655	53.20	-23.17	-6.17
<b>3</b>	61.05	.9521	.0802	.9260	13.04	-94.59	-70.59
<b>4</b>	158.49	.8995	.0943	.8014	58.49	-166.56	-116.56
<b>5</b>	294.08	.8769	.0807	.6886	64.07	-451.19	-336.19
<b>6</b>	141.32	.9262	.0810	.8354	31.32	-215.10	-160.10
<b>7</b>	274.18	.8902	.0784	.7118	52.18	-445.16	-334.16
<b>8</b>	326.41	.8594	.0901	.6384	104.41	-392.94	-281.94
<b>9</b>	98.67	.9327	.0701	.8936	6.67	-198.27	-152.27
<b>10</b>	270.08	.8911	.0774	.7179	48.08	-449.26	-338.26
<b>11</b>	51.92	.9556	.0565	.9535	-8.07	-141.21	-111.21
<b>12</b>	154.95	.8915	.0976	.7965	58.95	-155.10	-107.10
<b>13</b>	302.73	.8745	.0809	.6805	66.73	-461.98	-343.98
<b>14</b>	244.96	.9022	.0699	.7596	18.96	-487.34	-374.34
<b>15</b>	111.97	.9381	.0635	.8918	-2.02	-257.42	-200.42
<b>16</b>	167.28	.9214	.0652	.8390	1.28	-370.61	-287.61
<b>17</b>	251.42	.8987	.0716	.7495	25.42	-480.88	-367.88
<b>18</b>	283.53	.8847	.0795	.7010	57.53	-448.77	-335.77
<b>19</b>	251.22	.8987	.0721	.7482	27.22	-474.60	-362.60
<b>20</b>	151.09	.9262	.0645	.8562	1.09	-336.51	-261.51
<b>21</b>	90.35	.9480	.0629	.9135	-1.64	-208.70	-162.70
<b>22</b>	104.50	.9381	.0722	.8875	12.50	-194.56	-148.56

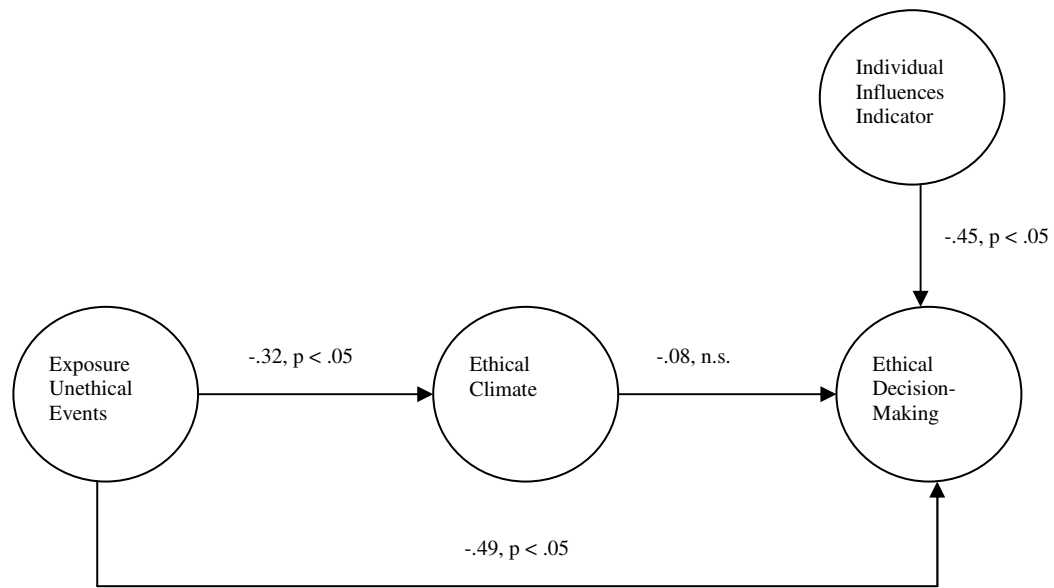
While this model provides the best fit to the data, a more important theoretical model might be available by assessment of models that include both individual and situational models and do not differ extensively from Model 11. Accordingly, partially mediated models were evaluated with a similar framework to that suggested by Model 11. Model 16, as presented in Figure 7, is a similar model that adds personality having a direct, and independent, effect on ethical decision-making. Model 16 has an estimated RMSEA of .0652 and MCI of .8390, with the lowest AIC index (1.28) of any model tested and relatively low CAIC and BIC compared to other models. Other potential competing (comparable fit indices) partially mediated models presented in



*Figure 6.* Model 11. Partially mediated model of situational influences on ethical decision-making.

Table 10 are Models 9 and 15. Model 9, however, while similar to Model 11, adds another situational variable (environmental experience) and therefore does not add theoretical value. Model 15, on the other hand, drops the ethical climate latent factor and adds personality. While this model is of potential theoretical value, current research suggests the importance of including ethical climate in models assessing influences on ethical decision-making (Martin & Cullen, 2006). As a result, model 16 was selected as the supported model because of its fit to the data and theoretical value to the current literature examining individual and situational influences on ethical decision-making.

Model 16 is an individual and situational influences partially mediated model where ethical climate partially mediates the relationship between exposure to unethical events and ethical decision-making and personality independently impacts ethical decisions. As suggested by the model, exposure to unethical events in day-to-day work leads to perceptions of an unethical climate ( $\beta = -.32, p < .05$ ), which in turn leads to less ethical decisions ( $\beta = -.08, n.s.$ ). More directly, exposure of researchers to



*Figure 7. Model 16. Partially mediated model of situational influences with direct personality effects on ethical decision-making.*

unethical events leads to less ethical decisions ( $\beta = -.49, p < .05$ ) and negative individual characteristics results in less ethical decisions ( $\beta = -.45, p < .05$ ). Similar to Model 11, exposure to unethical events has a large impact not only on the perceptions of a scientists' research ethical climate, but also on the ethical decisions made by these scientists. In addition, individual's who are characterized as demonstrating narcissistic tendencies or have a sense of entitlement are make less ethical decisions. One surprising finding was that the structured environment influence variable was not included in either of the best fitting models. One potential explanation for this finding might be that the direct experiences of individuals in their laboratory could be more predictive of other important laboratory outcomes, such as academic performance or success in research.

## Discussion

Before turning to the broader implications emerging from this study, there are a number of limitations that should be noted. First, the data collected to assess these models was obtained from a unique sample. Two important considerations surface from this point. The situational and individual influences that were considered central for inclusion in model fitting may be specific for graduate students. In other words, this study does not provide any evidence to suggest whether the individual and situational characteristics would be similar in a professional sample. In addition, the strength of the relationship between the various influences and ethical decision-making may vary. For instance, in a professional sample it may be that day-to-day practices are not as important as attitudes about climate or direct experiences that professional individuals have with colleagues in their department. Further research using a professional sample is needed to address these important issues.

Second, the data that was collected to assess the fit of the models to the data occurred at a single institution. For basic research such as this, data collection from a single institution may be appropriate, but the extent that the relationship suggested here will hold at a different institution is open to debate. While this cross institution question may be partially addressed by the development of measures that could be readily applied in any institution, tests of these models at different institution is an appropriate research pursuit that needs to be addressed in future studies along these lines. If the model suggested here does hold, there are important theoretical and practical implications for such a finding.



Third, while the exposure to unethical events measure was developed to be expansive in nature and applicable across fields and institutions (c.f., Helton-Fauth, et al. 2003), not all possible unethical events could be assessed in a single measure. The unethical events presented to participants primarily addressed four broad research areas including data management, study conduct, professional practices, and business practices. Targeting the four broader domains was appropriate for testing these overarching models. Despite this, elucidating more specific unethical events in a work environment might provide richer information regarding certain laboratory practices that negatively impact ethical decision-making. As a consequence, it is hoped that the broader, more general, research findings presented here provide the impetus for higher fidelity studies that specifically address the exact nature of the unethical events graduate students (and, potentially, professors) are exposed to in their immediate work environment on a day-to-day basis.

Fourth, the findings presented in this current research combine health, biological, and social sciences. Given the nature (specificity) of the ethical decision-making measure, questions regarding differential impact of individual and situational influences in these fields come to fore. While not a specific goal of this study, examining if and how these individual and situational influences may impact ethical decision across fields is an important research question. The sample applied to test these models of individual and situational influences on ethical decisions was not large enough to conduct tests of these models across different fields. Despite this, further data collection may provide an avenue for such comparisons.

Fifth, and finally, the ethical decisions assessed using the ethical decision-making measure, while simulating real-life ethical research decisions, does not directly assess how individuals behave in a given situation. Even though this assumption about ethical decision-making to behavior was raised in the introduction, it is worthwhile reiterating here. Importantly, acknowledging this restriction suggests that further research may be needed assessing the extent or nature of how decision-making impacts subsequent behavior.

Perhaps the most noteworthy finding to emerge from this study is that this research is the first to find evidence for both individual and situational influences on ethical decision-making. Further, the influences examined in this study utilized relevant psychological constructs assessed using appropriately validated and standardized measures of these constructs. In fact, the model suggested by this research indicates that ethical climate, like previous research (e.g., Barnett & Vaicys, 2000; Martin & Cullen, 2006), is related to ethical decision-making. Keeping this point in mind, the model suggests some potentially more powerful influences on ethical decision-making.

As suggested by the path coefficients of Model 16, exposure to unethical events and negative individual characteristics lead to less ethical decisions in research contexts. Regarding exposure to unethical events, the extent that graduate students are exposed to unethical practices in their work environments may result in these students integrating these occurrences as normative behaviors in their research. Accordingly, when these students are asked to respond to ethically-laden situations, they are less likely to make ethical decisions. The rationale supporting this conclusion is relatively

straightforward as suggested by Bandura (2006) – we model behaviors that are proximal to us, particularly those we witness on a daily basis. Thus, if we frequently see behaviors in research that could be labeled as unethical, we are likely to assume they are normative in the field and behave (make decisions) consistent with these models.

Similarly, certain individual characteristics, such as cynicism and narcissism, result in less ethical decisions with respect to the measures at hand. In this case, individuals may believe others are more cynical and therefore select decisions that are likely to be less ethical because they believe most others would select them as well. Along related lines, individuals who feel that they are entitled to certain outcomes, no matter the impact or consequences for others, are less likely to make ethical decisions. These findings are not surprising and clear-cut – negative individual characteristics provide a propensity for making less ethical decisions. Another noteworthy finding regarding individual characteristics is that a moderation model was not supported. An argument might be made that certain individual characteristics may interact with exposure to unethical events such that cynical individuals may become more cynical in unethical research. However, no support was found for such a model indicating that individual characteristics have an important independent impact on ethical decisions.

The second significant finding of this research is the impact of exposure to unethical events on perceptions of an ethical climate. While this finding may appear obvious, it is theoretical and practically invaluable because it suggests potential mechanisms through which individuals may cultivate perceptions or attitudes toward their research environment. Moreover, the work that a researcher conducts and is

exposed to on a day-to-day basis is important information for shaping perceptions and attitudes about the research climate. The more frequently a researcher is exposed to unethical practices on a daily basis, the less likely they are to perceive their research climate as ethical. Given the finding of the direct impact of exposure to unethical events on ethical decisions, these results combined suggest that, although individuals perceives their climate to be unethical, they still may engage in unethical decisions in their research. This may be because the graduate students believe that behaving unethical is 'normal' for their field and discounts their own perception of an unethical climate when it comes to actual decision-making.

The findings from this research point to clear theoretical and practical implications. Regarding theoretical implications, more research is needed to integrate individual and situational influences on ethical decision-making when conducting studies on how to improve or understand ethical decision-making. The findings point to the need for well-developed and theoretical relevant psychological constructs for conducting research on what influences ethical decision-making. Research in this area needs to advance beyond demographic variables (e.g., O'Fallon & Butterfield, 2005). Finally, this study suggests the need to distinguish research on ethical decision-making as opposed to research of influences on ethical decision-making. Current research, at times, inadvertently blends these two independent avenues together. In contrast, the ethical decision-making model presented did not confound influences, but the model suggested ways in which influences could impact ethical decision-making.

With respect to practical implications, the results suggest a number of key considerations for individuals responsible for advising (mentoring) graduate students,

managing laboratories, and for the development of Responsible Conduct of Research (RCR) or ethics training. Conducting research is a long-term endeavor where maintaining integrity is critical for appropriate scientific advancement (Steneck, 2004). Consistent with this argument, individuals in an advising or mentoring role should model ethical practices as well as discuss contributions that good, meticulous research has provided to the field. Discussions of this nature should include dialogue that null hypotheses are commonly found and the extended length of time most researchers are involved in their research before ‘discovering’ a key finding for their field. In other words, good research can take time.

Similarly, researchers managing laboratories should minimize unethical events by providing openness and discussion centered on why certain directions were chosen for conducting the research. These discussions could also weigh on any ethical considerations and courses of action selected and the results of these actions/decisions in the context of ethics. Opening dialogue along these lines will provide graduate students and professionals with richer experiences as well as greater exposure to sound, ethical research practices. Exposure to such ethical practices in their day-to-day work will provide good models for these researchers to follow in their own research and decision-making.

Finally, ethics training should focus on ameliorating negative individual and situational influences. Such training should be developed so that it points out biases and limitations of human thinking processes, to include the problems with holding views such as those suggested in this current research (i.e., cynical or narcissistic). The training should also elaborate on the complexity and situational problems enacted

when involved in an ethically-laden situation. Lastly, ethics training programs should provide graduate students and professionals with tools, such as meta-cognitive strategies, to assist in managing oneself through an ethically-laden situation, to include appropriate assessment and recognition of circumstances, weighing positive and negative outcomes, and thinking short and long term (Mumford, Connelly, et al. 2007). Mumford, Connelly, et al. (2007) provides an example of such a training approach.

The conclusions emerging from this current research point to the potential for a number of future research endeavors. One primary future research focus would be to conduct a longitudinal study of graduate and professional samples using a unified approach to assessing influences and ethical decision-making. Such research would provide more insight as to how individual and situational influences impact ethical decision-making over time. Another important line of research, suggested elsewhere as well (e.g., O'Fallon & Butterfield, 2005), is to more clearly identify what is meant by ethical decision-making and then conduct research targeted at addressing this issue with the intent of finding support for a model of ethical decision-making. Research along these lines would be basic in nature but provide invaluable understanding of a well-defined and empirically-supported model of ethical decision-making.

In summary, this research is the first in the research ethics literature to find support for a model that includes both individual and situational variables, using valid psychological constructs, influencing ethical decision-making. In fact, the supported model is a partially mediated model with independent effects of individual and situational characteristics on ethical decision-making. The partial mediation is the

result of ethical climate partially mediating the effects of exposure to unethical events on ethical decision-making. The negative individual characteristics have a direct and independent impact on ethical decision-making. The independent effects of individual and situational influences on ethical decision-making suggest that ethical interventions need to be designed so that they target each of these variables separately. Further, the complexity of the influences on ethical decision-making suggests that there is no one simple panacea to reducing unethical decision-making, but rather it's multifaceted and long-term.

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**Education**

**A.B.D., Estimated May 2007: Ph.D. in Industrial Organizational Psychology.**  
*University of Oklahoma, Norman, OK. Current 4.00 GPA.*

**August 2003: M.A. in Industrial/Organizational Psychology.**  
*Middle Tennessee State University, Murfreesboro, TN. 3.923 GPA.*

**May 1999: BS: Major in Psychology**

**May 1999: BA: Major in Humanities and Social Sciences (Anthropology).**  
*Cumberland University, Lebanon, TN; Minor in Philosophy/Religion. Graduated Magna cum Laude, GPA 3.838.*

**Professional Experience**

**August 2004 – current – GRA – Grant Lead – Research in Scientific Decision Making (NIH Grant)**

- Developed databases and conducted analyses (SPSS and SAS) for research on ethical decision-making
- Psychometrically validated measure of ethical decision-making and measures of situational influences
- Lead 4 graduate and up to 5 undergraduate students on National Institutes of Health (NIH) sponsored grant
- Developed and implemented ethics training for Graduate Students at the University of Oklahoma
- Meta-analyses to assess effectiveness of ethical training programs in research and business fields

**August 2004 – current – Graduate Research Assistant – Dr. Mumford Research Laboratory**

- Research in leadership, innovation, creativity and complex decision-making
- Investigated leadership development for innovation (book chapter) and leader cognition in complex environments
- Researched impact of intuition and mental model, associational models, and fit appraisals on creativity
- Researched effect of spousal support on leader performance

**July 2003-August 2004 – Research Associate/Research Consultant, Hogan Assessment Systems**

- Psychometric reviews (item analysis, reliability, and validity) of tests implemented for selection purposes
- Developed and analyzed multiple large databases assessing personality inventories and job performance
- Researched job analytic and personality assessment tools (using CTT and meta-analytic procedures)

- Set guidelines, including cut scores, for implementing assessment procedures using job analysis, meta-analysis, transport validity, synthetic validity, and criterion-related validity (development of performance appraisal forms)
- Research plan for implementing use of personality in international locations (norms/equivalence concerns)

**Dec 2002-July 2003 – Test and Measurement Technician, Personnel Board of Jefferson County**

- Developed testing procedures for selection through content validation approach using job analysis
- Implemented selection systems (MQs, interviews, etc.) based on outcomes from analysis of job data
- Developed tests in litigated environment where followed court agreed test development methodology
- Meticulously followed AERA, EEOC and SIOP guidelines for selection development and implementation

**Feb – Dec 2002 – Personnel Examinations Analyst, State of Tennessee**

- Psychometrically evaluated selection measures for reliability, validity, and adverse impact
- Developed testing procedure by following content-based job analytic techniques
- Implemented selection systems (MQs, T&E guidelines, etc.) based on outcomes from analysis of job data
- Authored validity reports detailing decisions made and the development of the selection procedure based on EEOC and SIOP guidelines

**Consulting, Research, and Other Applied Experiences**

**Aug 2002 – Dec 2002 –Dell Computers; Training Consultant**

- Converted performance management training from PowerPoint to Web-Based platform
- Updated content to align with new Business Strategy and Initiatives at Dell (based on needs assessment)
- Served as lead project manager to ensure quality product and deadlines attainment

**Aug 2000 – Dec 2000 – Franke Commercial Systems, Inc.; Training Consultant**

- Designed, developed & facilitated training program for a factory work process (based on needs assessment)
- Evaluated training program at all five levels; presented program & results to upper-level management
- Training was a mix of computer-based instruction & on the job training for new employees and for cross-training

**April 2000 – July 2000 – John Hancock Financial Services, Inc.; Recruiting Coordinator (Intern)**

- Worked as the sole recruiter developing the agency recruitment strategy
- Developed candidate pool, conducted interviews, administered tests, & made hiring recommendations
- Strategically improved effectiveness & efficiency of agency's recruiting & selection processes

**Jan 2000 – May 2000 – Providence Christian Academy; Job Analyst Consultant**

- Performed job analysis through content validation interviewing technique
- Developed job descriptions & produced an organizational chart
- Job descriptions used for selection, performance evaluation, training, & compensation

**Journal Articles and Book Chapters:**

- Mumford, M. D., Connelly, S., Murphy, S. T., Devenport, L. D., Antes, A. L., Brown, R. P., Hill, J. H., & Waples, E. P. (2007). Field and Experience Influences on Ethical Decision-Making in the Sciences and the Role of Decision Strategies. Manuscript in preparation.
- Antes, A. L., Brown, R. P., Murphy, S. T., Hill, J. H., Waples, E. P., Mumford, M. D., Connelly, S., & Devenport, L. D. (2007). Ethical decision-making in research: The role of personality and perceptions of self and others. (Manuscript in preparation).
- Mumford, M. D., Connelly, S., Brown, R. P., Murphy, S. T., Hill, J. H., Antes, A. L., Waples, E. P., Devenport, L. D. (2007). Ethics training for scientists: Effects on ethical decision-making. Manuscript submitted for publication.
- Mumford, M.D., Whetzel, D.L., Murphy, S.T., & Eubanks, D.L. (2007). Background data. In Whetzel, D.L. & Wheaton, G.R. (Eds.), *Applied Measurement: Industrial Psychology in Human Resources Management* (pp. 301-324). Palo Alto, CA: Davies-Black.
- Mumford, M.D., Eubanks, D.L., & Murphy, S.T. (2006). Creating the conditions for success: Best practices in leading for innovation. In J. A. Conger and R. Riggio (Eds.). *The Practice of Leadership* (pp. 129-149). San Francisco: Jossey-Bass Publishers
- Mumford, M.D., Devenport, L.D., Brown, R.P., Connelly, M.S., Murphy, S.T., Hill, J.H., & Antes, A.L. (2006). Validation of Ethical Decision Making Measures: Evidence for a New Set of Measures. *Ethics and Behavior*, 16, 319-345.
- Mumford, M.D., Murphy, S.T., Connelly, S., Hill, J.H., Antes, A.L., Brown, R.P., & Devenport, L.D. (in press). Environmental influences on ethical decision-making: Climate and environmental predictors of research integrity. *Ethics and Behavior*.
- Eubanks, D.L., Murphy, S.T. & Mumford, M.D. (in press). Intuition as an Influence on Creative Problem-Solving: The Effects of Intuition, Positive Affect, and Training. *Creativity Research Journal*.
- Mumford, M.D., Hunter, S.T., Eubanks, D.L., Bedell, K.E. & Murphy, S.T. (under review). Developing leaders for creative efforts: A domain-based approach to leadership development. *Human Resource Management Review*.
- Mumford, M.D., Marcy, R.T., Eubanks, D.L., & Murphy, S.T. (under review). Leader cognition in complex systems: The identification and manipulation of causes. *The Leadership Quarterly*.
- Murphy, S.T. (2003). The relationship between conscientiousness of the 'big five' personality and the multidimensional work ethic profile and the effects of the gender on this relationship. Unpublished Thesis, MTSU.

**Technical Reports:**

- Murphy, S.T. (2005). Validation of the Hogan Personality Inventory for selecting the Operations job family at company x. Documentation of evidence for job analysis, validity generalization, and synthetic validity.
- Murphy, S.T. (2005). Validation of the Hogan Personality Inventory for selecting the Logistic job family at company x. Documentation of evidence for job analysis, validity generalization, and synthetic validity.

- Murphy, S.T. (2004). Validation of the Hogan Personality Inventory for selecting the Reservation Sales Agents at company x. Documentation of evidence for job analysis, validity generalization, synthetic validity, and criterion-related validity.
- Murphy, S.T. (2004). Evaluation of the Rate Quotation Clerk Qualification and RailRes assessment Test at Company X. Documentation of Reliability and Item Analysis.
- Fleming, B. & Murphy, S.T. (2003). Validity of the Hogan Personality Inventory for selecting dock workers, drivers, customer service representatives, and sales representatives at company x: Documentation of evidence for job analysis, meta-analytic validity generalization, transportability of validity, synthetic/job component validity, and criterion-related validity.
- Murphy, S. T. & Jerden, E. (2003). Validity of the Hogan Personality Inventory, Hogan Development Survey, and Motives, Values, and Preferences Inventory for account executives and system engineers at company x: Documentation of evidence for job analysis, validity generalization, transport and synthetic validity.
- Murphy, S.T. & Fleming, B. (2003). Validity of the Hogan Personality Inventory for selecting au pairs at company x: Documentation of evidence for job analysis, meta-analysis, and synthetic validity.
- Alvarez, K., Murphy, S.T., Lange, S. & Crenshaw, J. (2004). Content validity report: Deputy director of revenue. Personnel Board of Jefferson County, Birmingham, AL.
- Alvarez, K., Murphy, S.T., Lange, S. & Crenshaw, J. (2003). Content validity report: Landscape crewleader. Personnel Board of Jefferson County, Birmingham, AL.

#### **Conference Presentations:**

- Antes, A. L., Murphy, S. T., Hill, J. H., Waples, E. P., Connelly, S., Brown, R. P., Mumford, M. D., & Devenport, L. D. (2007, April). Assessing Personality Characteristics Influencing Professional Integrity via a Biodata Measure. Poster session presented at the annual meeting of the Society for Industrial and Organizational Psychology, New York, NY.
- Eubanks, D. E., Murphy, S. T. & Mumford, M. D. (2007, April). Intuition as an influence on creative problem-solving: Intuition and creative problem-solving: An investigation of influences. Poster session presented at the annual Society for Industrial Organizational Psychology Conference, New York, NY.
- Murphy, S.T., & Davies, S.A. (2006). Meta-analysis of a Personality Profile for Predicting Sales Success. Paper presented at a Panel Discussion at the 21<sup>st</sup> annual conference of the Society for Industrial and Organizational Psychology, Dallas, TX.
- Murphy, S.T., Eubanks, D.L., Gaddis, B.H., Connelly, S., Helton-Fauth, W., & Mumford, M.D. (2006) Predictors of integrity in professional work. Paper presented at the 27<sup>th</sup> annual Industrial-Organizational and Organizational Behavior student conference, Fairfax, VA.
- Mumford, M.D, Connelly, S., Murphy, S.T., Devenport, L.D., Brown, R.P., & Hill, J.H. (2006). Misconduct in scientific research: The influence of career events and perceptions of ethical climate. Paper presented at the Academy of Management Annual Meeting, Atlanta, GA.
- Murphy, S.T., Antes, A.L., Mumford, M.D., Devenport, L.D., Connelly, S., Brown, R.P. (2006). The development of ethical decision-making: Early environmental predictors of research integrity. Paper presented at the annual Office of Research Integrity Research conference, Tampa, FL.



- Waples, E., Murphy, S.T., Mumford, M.D., Devenport, L.D., Connelly, S., Brown, R.P. (2006). Validation of ethical decision-making measures: Internal and external validity. Paper presented at the annual Office of Research Integrity Research conference, Tampa, FL.
- Hill, J.H., Waples, E., Murphy, S.T., Mumford, M.D., Devenport, L.D., Connelly, S., Brown, R.P. (2006). Responsible conduct of research training: A solution for teaching research ethics in the 21st century. Paper presented at the annual Office of Research Integrity Research conference, Tampa, FL.
- Borich, J., Bourdeau, N. & Murphy, S.T. (2005). *Do borders really matter? Issues in multi-national selection*. Symposia presented at the 20<sup>th</sup> annual conference of the Society for Industrial and Organizational Psychology, Los Angeles, CA.
- Borich, J. & Murphy, S.T. (2004). *Do borders really matter? Issues in multi-national selection*. Symposia presented at the 19<sup>th</sup> annual conference of the Society for Industrial and Organizational Psychology, Chicago, IL.
- Borich, J. & Murphy, S.T. (2004). *International development: You mean it isn't the same everywhere?* Symposia presented at the 19<sup>th</sup> annual conference of the Society for Industrial and Organizational Psychology, Chicago, IL.

#### **Professional Society Membership**

Student Affiliate of the Society for Industrial and Organizational Psychologists (SIOP)

Experience in all Microsoft Office software, SPSS, SAS, AMOS, and Iteman (Item analysis software)