Published in final edited form as:

Ethics Behav. 2009 September 1; 19(5): 351–378. doi:10.1080/10508420903035356.

Exposure to Unethical Career Events: Effects on Decision-Making, Climate, and Socialization

Michael D. Mumford, Ethan P. Waples, Alison L. Antes, Stephen T. Murphy, Shane Connelly, Ryan P. Brown, and Lynn D. Devenport
The University of Oklahoma

Abstract

An implicit goal of many interventions intended to enhance integrity is to minimize peoples' exposure to unethical events. The intent of the present effort was to examine if exposure to unethical practices in the course of one's work is related to ethical decision-making. Accordingly, 248 doctoral students in the biological, health, and social sciences were asked to complete a field appropriate measure of ethical decision-making. In addition, they were asked to complete measures examining the perceived acceptability of unethical events and a measure examining perceptions of ethical climate. When these criterion measures were correlated with a measure examining the frequency with which they had been exposed to unethical events in their day-to-day work, it was found that event exposure was strongly related to ethical decision-making, but less strongly related to climate perceptions and perceptions of event acceptability. However, these relationships were moderated by level of experience. The implications of these findings for practices intended to improve ethics are discussed.

Keywords

ethical decision-making; career experiences; integrity; scientists

Ethics is integral to the success of the scientific enterprise (National Research Council/National Institute of Medicine, 2002; Steneck, 2006). In fact, ethical breeches in the sciences not only distort the research record, they also have tangible consequences — in some cases, dramatic consequences such as data fabrication and the death of study participants (Resnick, 2003). Although dramatic breeches such as data fabrication and the death of participants have received much attention, it appears that less dramatic aspects of scientific misconduct, for example, data trimming, authorship misallocation, and protocol violations, are more frequent (Martinson, Anderson, & De Vries, 2005). Although less dramatic, these instances of misconduct may represent a noteworthy trend undermining the success, and credibility, of the sciences (Steneck, 2004).

Recognition of this point has led to the development of a number of interventions intended to minimize scientific misconduct. For example, many professional societies have established codes of conduct (Tereskerz, 2003). Training in the responsible conduct of research has become widespread (Bashe, Anderson, Handelsman, & Klevansky, 2007; Chen, 2003). Journals have begun requiring articles to take ethical practices in account (Sigmon, Boulard, & Whitcomb-Smith, 2002). Additionally, institutions have implemented new practices for monitoring study conduct (Gunsalus, 1993).

Of course, the primary goal of all these interventions is to minimize incidents of misconduct. Implicit in these efforts, however, is an underlying secondary goal. By minimizing incidents of misconduct, students will be less likely to be exposed to incidents of misconduct. And, most scholars believe that exposure to incidents of misconduct undermines the ethical development of the next generation of scientists (Muijen, 2004; Whitbeck, 2004).

Our primary goal in the present effort was to provide some initial evidence intended to test this belief. More specifically, we examined two key issues implied by our foregoing observations. First, we hoped to isolate how exposure to unethical events influenced three key phenomena held to be related to ethical development — specifically socialization, climate perceptions, and ethical decision-making. Second, we wished to examine how these effects are moderated as a function of work experience or expertise.

Event Exposure

Over the years a number of models of ethical behavior have been proposed. One model, a cognitive development model, holds that ethical behavior depends on how people understand ethical events. Cognitive developmental models, such as those proposed by Kohlberg (1981) and Rest, Narvaez, Bebeau, and Thoma (1999), have proven of value in accounting for ethical behavior, including ethical behavior of scientists. However, other models have been proposed including models stressing the importance of personality characteristics, such as cynicism and object beliefs (Antes et al., 2007), situational demand models (Reall, Bailey, & Stoll, 1998), contingency, or reinforcement models (Tenbrunsel, Smith-Crowe, & Umphress, 2003), affect models (Lurie, 2004), identity models (Bergman, 2004), and motivational models (Narvaez & Lapsley, 2005). The many varied models that might be used to explain moral behavior, including the moral behavior of scientists, has led to the emergence of a broader model, specifically contingency models (Treviño, Weaver, & Reynolds, 2006; Brown & Treviño, 2006), that seek to integrate these various perspectives on moral behavior.

Contingency models are noteworthy because they imply that event exposure will influence ethical conduct. Some initial evidence bearing on the influence of experiences on ethical development has been provided by Gessner, O'Connor, Mumford, Clifton, and Smith (1995). They asked undergraduates to work on a sales manager in-basket task where ethical decisions were required. Prior to starting work on this task, participants were asked to complete a background data, or life history measure, describing prior situational exposure (e.g., How often were your friends in high school in trouble with authorities? How often did people get good grades by cheating? How often did your parents criticize other groups?). When responses to those environmental exposure questions were factored and correlated with the ethical decision-making measure, it was found not only that event exposure was strongly related to ethical decision-making ($r = .40$) but that event exposure accounted for variance in ethical decisions that could not be accounted for by individual differences variables.

Apparently, event exposure influences peoples' development with prior exposure to certain types of events (e.g., negative peer groups) influencing subsequent ethical decisions. In fact, it appears that exposure to unethical work events may have similar effects on the ethical behavior of scientists. Feudtner, Christakis, and Christakis (1994) asked 1853 medical students to respond to a survey about work events which they might plausibly have been exposed to in medical school. Students exposed to unethical events in their day-to-day work were more likely to report having behaved unethically, to have lost ethical principles, and to feel guilty.

Of course, a single survey study does not provide overwhelming support for the argument that exposure to unethical events influences the ethical behavior of scientists. Moreover, the Feudtner et al. (1994) study says little about the mechanisms that might account for those effects. Nonetheless, these findings, taken in conjunction with the findings of Gessner et al.

(1995), suggest that exposure to unethical events in the course of a student's day-to-day work might influence subsequent ethical conduct among scientists.

Socialization

Although there is reason to suspect that exposure to unethical events in the course of students day-to-day work will be related to subsequent ethical conduct by young scientists, a critical question that comes to fore pertains to the mechanisms by which exposure to unethical events exert these effects. One potential explanation may be found in the socialization process. Socialization is commonly viewed as a complex process (Morrison, 1993). As new individuals enter a profession they acquire knowledge about performance standards, important people, and organizational jargon (Chao, O'Leary-Kelly, Wolf, Klein, & Gardner, 1994). More centrally, in the socialization process information is acquired about both about what others expect of the person and what the person should expect of others (Hall, 1996; Morrison, 1993). In other words, in socialization, models for appropriate behavior with regard to personal and professional expectations are acquired. In fact, the acquisition of these models has been found to be critical to the development of young scientists (Zuckerman, 1977).

There is, moreover, reason to suspect that exposure to unethical work events would influence the socialization process occurring among young scientists. Career events, especially career events occurring under the auspices of role models (Lankau & Scandura, 2002), provide case models for appropriate behavior while tangibly illustrating desirable and undesirable behavior. Accordingly, when unethical events occur, and are reinforced by role models or peers, inappropriate models for appraising personal and professional behavior may be established with these models acting to influence subsequent ethical behavior. Accordingly, the following hypothesis was indicated:

Hypothesis One: Exposure to unethical events will be negatively related to effective socialization of scientists with respect to ethical conduct.

Climate Perceptions

Socialization, however, is not the only way exposure to unethical events might influence subsequent ethical behavior. Climate refers to peoples' perceptions of the environment in which they work (Schneider & Bowen, 1995). Typically, climate is viewed as a domain-specific phenomenon with studies of climate examining perceptions of environmental events linked to select aspects of performance such as innovation (Amabile, Conti, Coon, Lazenby, & Herron, 1996) and customer service (Schneider, Parkington, & Buxton, 1980). In fact, the available evidence indicates that climate perceptions predict domain relevant outcomes such as creative performance and innovation rates (Hunter, Bedell, & Mumford, 2007).

It also appears that ethical climate perceptions, perceptions of the work environment with respect to ethical interactions, can contribute to subsequent ethical conduct (Dickson, Smith, Grojean, & Ehrhart, 2001; Hartman, Yrle, & Galle, 1999; Victor & Cullen, 1998). In one recent study examining the influence of ethical climate on subsequent ethical behavior among scientists, Mumford et al. (2007) developed a 75-item climate inventory (e.g., people here do not steal others' ideas; meeting social responsibilities is seen as a critical goal) to assess aspects of climate relevant to ethical conduct among doctoral students working in the health, biological, and social sciences. The climate dimensions identified by factor analyzing this instrument included equity, interpersonal conflict, occupational engagement, and work commitment. It was found that these climate dimensions produced correlations in the .30's with a measure of ethical decision-making.

Not only do these findings indicate that climate influences ethical behavior among scientists, it seems likely that exposure to unethical work events might influence peoples' perceptions of

climate. Peoples' perceptions of their workplace can be expected to be influenced by the day-to-day work events to which they have been exposed. Thus, exposure to unethical events can be expected to be negatively related to perceptions of ethical climate. Moreover, exposure to these events vis-à-vis direct social interactions, for example, the ability of unethical events to induce interpersonal conflict, may also lead these events to induce negative climate perceptions. These observations, in turn, suggested the following hypothesis:

Hypothesis Two: Exposure to unethical events will be negatively related to perceptions of ethical climate.

Decision-Making

As important as socialization and climate perceptions are to ethical behavior, ultimately, in student's work what is being developed is technical skill. Thus, event exposure in the course of a student's day-to-day work can be seen as one factor contributing to the growth of professional expertise (Ericsson & Charness, 1994; Weisberg, 2006). The acquisition of professional expertise has been shown to have a pervasive influence on the performance and behavior of people working in a variety of professions — including the sciences (Mumford et al., 2005). People appear to abstract from these work events both procedural (how to) and declarative (concepts) knowledge. This procedural and declarative knowledge, in turn, influences how people go about solving professional problems (Dunbar, 1995; Reeves & Weisberg, 1994).

What should be recognized here, however, is that many of the problems presented to scientists have ethical implications. In one recent study along these lines, Mumford and colleagues (2006) developed a measure of work-related ethical decision-making in the sciences. This measure presented a series of realistic work-oriented scenarios. Subsequently, scientists were presented with events flowing from this scenario, where they were asked to make decisions about how this event should be addressed where some events were purely technical and others had ethical implications with regard to data management, study conduct, professional practices, and business practices (Helton-Fauth et al., 2003). When responses to the data management, study conduct, professional practices, and business practices problems were scored for ethical conduct it was found that the resulting measure was a valid descriptor of ethical behavior with more ethical decisions being positively related to the severity of the punishments people awarded for incidents of unethical conduct on a review panel task.

Given that ethical behavior is reflected in the professional decisions people make, it seems likely that exposure to unethical events in the course of peoples' day-to-day work would also influence ethical decision-making. More specifically, exposure to unethical events will provide people with procedural knowledge (Ericsson & Charness, 1994), albeit negative procedural knowledge, and application of these negative procedures would undermine ethical decision-making. Moreover, exposure to unethical events in the course of peoples' day-to-day work would provide negative case models (Kolodner, 1997), and application of these negative models might, in turn, lead to unethical decisions. Thus hypothesis three:

Hypothesis Three: Exposure to unethical events in the course of peoples' day-to-day work will be negatively related to subsequent ethical decision-making.

Expertise models, however, imply ongoing acquisition of relevant procedural and declarative knowledge (Ericsson & Charness, 1994). Of course, not all experiences people have will involve exposure to unethical events. Accordingly, the procedural and declarative knowledge acquired as a result of this experience should offset the effects of exposure to unethical events in the course of peoples' day-to-day work on subsequent ethical decisions. Moreover, the basis for appraising these events and drawing implications from them may change (Ellis, Mendel, & Nir, 2006) with unethical events being more readily identified and demarked as negative

models. Thus, one would expect that the effects of exposure of unethical events in the course of peoples' day-to-day work would have a more pronounced effect on the ethical decision-making of less experienced as opposed to more experienced scientists. Hence, our final hypothesis:

Hypothesis Four: The effects of exposure to unethical events in the course of peoples' day-to-day work will be more strongly, albeit negatively related, to ethical decision-making among less experienced as opposed to more experienced professionals.

Method

Sample

The sample used to test these hypotheses consisted of 248 doctoral students attending a large research university in the southwest. Of the 92 men and 146 women (10 did not designate) who agreed to participate in this study 151 were first-year doctoral students. First-year doctoral students were recruited no earlier than 4 months after beginning work at the university and no longer than 9 months after starting work at the university. The remaining 97 doctoral students were third-year or fourth-year students. Third- and fourth-year students were recruited no earlier than 24 months after starting work at the university and no later than 48 months after starting work at the university.

Sample members were recruited from doctoral programs in the health (26%), biological (41%) and social sciences (33%) where independent research work was required for award of a terminal degree. Among sample members, 60% were majority group members, 35% were minority group members, and 5% did not report ethnic group status. Overall, 56% were employed in research positions while 44% were employed in non-research positions (e.g. teaching assistants). All, however, were actively engaged in research in one of the universities laboratories. A typical sample member was 29 years old and had completed 17 years of schooling prior to their admission to the doctoral program.

General Procedures

The present effort was completed as a part of a federally funded study of research integrity. The university provided names, departmental assignments and e-mail addresses for all first-year doctoral students entering the university in 2005. The university also provided names, departmental assignments, and e-mail addresses for students entering the university in 2003 and 2002. First-year students were recruited to participate in 2005 while third- and fourth-year students were recruited to participate in 2006.

A multi-stage recruitment procedure was used to recruit students to participate in the study. In the first stage, flyers announcing the study, noting that \$100.00 would be paid to study participants, were placed in the mail boxes of doctoral students admitted to relevant health, biological, and social sciences doctoral programs. Next, phone calls were made, and up to three emails were sent, asking students to participate in the study in return for \$100.00 compensation. Overall, roughly 25% of those contacted agreed to participate.

In both the telephone calls and emails it was noted that the present study was being conducted to attain an understanding of research integrity. More specifically, the study description provided to potential participants noted that the concern of this investigation was to examine the effects of educational experiences on research integrity and problem-solving. Students' who agreed to participate were asked to select a time where a battery of "paper-and-pencil" measures could be completed, and they were informed of the location they should report to in order to complete these measures. At this time, the nature of the study was again described and participants were asked to complete an informed consent document.

Once participants had provided informed consent, they were asked to begin working through the measures. The first measure they were asked to complete was a background information form. The second measure, the key predictor measure being examined in the present effort, asked students to describe events they had been exposed to during their time at the university. In addition, this measure also included a scale to indicate socialization, where students were asked to describe the acceptability of these ethical breaches within their respective field. The third measure students were asked to complete asked them to describe the climate of their work group. The fourth set of measures consisted of a battery of standard psychological tests examining cognitive ability and dispositional characteristics that might be related to research integrity. In the fifth and final component of this battery, participants were asked to complete a measure of ethical decision-making appropriate to the kind of problems encountered in their field of study. These field specific (e.g., health, biological, and social sciences) decision-making measures were administered as work-oriented, problem-solving measures to minimize potential demand characteristics. Participants were given 4 hours to complete these measures based on the findings obtained in pilot studies.

Predictors

The primary predictor of concern in the present study was the frequency of exposure to unethical events in the course of doctoral students' day-to-day work. Accordingly, a measure examining exposure to unethical events in the course of students' day-to-day work was developed. This measure was presented to participants simply as a description of the work tasks being conducted within their laboratory.

Development of this measure began with a review of relevant codes of conduct applying in the health, biological, and social sciences. This review was used to identify specific work events associated with ethical practices in each field (e.g., selectively replacing participants when gathering data or maintaining anonymity in manuscript reviews). This review led to the identification of some 240 events having implications for unethical conduct in the day-to-day work of doctoral students or professionals.

Three psychologists, and a field subject matter expert, were asked to review these events. This review panel eliminated two kinds of events: 1) events doctoral students would not be exposed to (e.g. grant reviews), and 2) events that involved clinical practice (e.g. inappropriate professional relationships). Subsequently, redundant work events were collapsed. Finally, events were screened for their relevance across fields and only events displaying cross-field generality were retained.

This review led to the identification of 60 unethical work events applying to all fields under consideration. Once these events had been identified, a panel of three psychologists was asked to review the events and assign them to the four major categories of ethical conduct identified by Helton-Fauth et al. (2003): 1) data management, 2) study conduct, 3) professional practices, and 4) business practices. Judges displayed above 90% agreement in their assignment of work events to these dimensions with cases of disagreement being resolved based on the majority opinion of the judges. Application of these procedures resulted in 8 events being assigned to data management, 25 being assigned to study conduct, 19 events being assigned to professional practices, and 8 events being assigned to business practices. A review of these events by a panel of three doctoral students indicated that doctoral students, including first-year doctoral students, might plausibly be exposed to these events in the course of conducting their day-to-day work.

The panel of psychologists was also asked to review available job analyses of the work conducted by doctoral students and research assistants. This review considered professional publications and national job descriptive data such as the United States Department of Labor's

job descriptions (Peterson, Mumford, Borman, Jeanneret, & Fleishman, 1999). Panel members were asked to identify tasks occurring across all three fields, the health, biological, and social sciences that involved only technical aspects of data management, study conduct, business practices, and professional practices. Subsequently these tasks were reviewed by a second panel of three psychologists, and a subject matter expert, who eliminated field-specific tasks and tasks that might not be performed by doctoral students. This review led to the identification of 33 tasks involving only technical work (e.g., establish procedures for entry of scanned data or check citations of manuscripts against a reference list). These events were used as filler task statements to mask the questions focused on exposure to unethical events.

Figure 1 illustrates the nature of the unethical and technical work events on day-to-day tasks. These task statements were presented to participants in random order, following the presentation of three purely technical tasks, to minimize demand characteristics. Participants were asked to read each task statements and rate on a 5-point scale (1 — Low, 5 — High) the frequency with which they had been exposed to these events in the course of their day-to-day work. It is of note that prior research illustrates that ordinal judgments with regard to event frequency are typically reasonably accurate (Peterson et al., 1999).

Across unethical events subsumed under a given category, data management, study conduct, professional practices, and business practices, the average frequency score was obtained based on a unit weighted composite. The reliability of these scores was estimated using an internal consistency coefficient. The resulting internal consistency coefficients were .84, .88, .87, and .66 for data management, study conduct, professional practices, and business practices. Evidence bearing on the construct validity of these event frequency scores was obtained by examining scale intercorrelations in a sample of doctoral students. Broadly speaking, those relationships provided evidence pointing to the scales construct validity. Thus, data management was found strongly related to study conduct ($r = .42$) but less strongly related to business practices ($r = .28$).

Dependent Variables

Ethical Decision-Making—The first dependent variable of interest in the present study was ethical decision-making. The ethical decision-making measure participants were asked to complete was drawn from Mumford et al. (2006). These decision-making measures present ethical problems scientists might encounter working in their field using the low-fidelity simulation approach recommended by Motowidlo, Dunnette, and Carter (1990). These measures, tailored to the content of the problems arising in health, biological, and social sciences, were designed to provide scores on four general dimensions of ethical behavior identified by Helton-Fauth et al. (2003) — specifically, 1) data management, 2) study conduct, 3) professional practices, and 4) business practices.

Development of this measure began with identification of 17 specific sub-dimensions subsumed under each of these broad categories. For example, study conduct subsumed ethically relevant sub-dimensions such as informed consent, confidentiality protection, and protection of human and animal subjects, while professional practices subsumed sub-dimensions such as objectivity in evaluating work, adherence to professional commitments, and protection of public welfare and the environment. Evidence for the validity of the dimensions and sub-dimensions in accounting for ethical principles across the sciences has been provided by Helton-Fauth et al. (2003).

After identifying these dimensions, and associated sub-dimensions, online websites in the health, biological, and social sciences (e.g. On-Line Ethics Center for Engineering and Science, Office of Research Integrity, American Biological Association) were examined to identify cases that might be used to assess ethical decision-making with respect to each sub-dimension

as manifested in a given field. This review led to the identification of 45 cases for each field that might be used to construct scenarios. The cases selected for developing the scenarios to be used in assessing decision-making within each field were those that 1) were relevant to typical work experiences, 2) called for both technical and ethical decisions, and 3) would be understandable to first-year doctoral students. A panel of 3 psychologists, and a subject matter expert, then selected 10 to 15 cases in each professional field that might cover multiple ethical decisions. Once those cases had been selected, they were rewritten into one or two paragraph general scenarios.

These scenarios were then presented to a panel of three psychologists, and a subject matter expert, who were asked to develop decision-making questions. Initially, panel members were asked to develop 8 to 12 events that might occur in each scenario. Half of the events were to have only technical implications and the remaining half were to have implications for one of the 17 dimensions of ethical conduct (Helton-Fauth et al., 2003). Panel members were asked to review the list of events generated for each scenario and select 2 technical and 2 ethical events that were likely to occur and could be organized into a general sequence of events occurring within the scenario.

Once these events had been generated, panel members were asked to generate response options. Response options for the ethical decision-making measure were based on the particular sub-dimension of ethical conduct under consideration where each response option was to reflect an action that might resolve the event under consideration. The 6 to 12 response options generated for each event were structured such that one-third of the options reflected ethical behavior, one-third of the options reflected questionable behavior, and one-third of the options reflected unethical behavior.

Typically, 2 to 3 events were formulated for each of the 17 sub-dimensions of ethical conduct within each of the three fields under consideration. Once participants had read through the scenario, they were to assume the role of the primary actor in each event and select the two response options they believed most likely to resolve the problem broached by an event. In scoring ethical decision-making events, as opposed to the other half of the questions which reflected purely technical events, options selected of high, moderate, and low ethicality were scored 3, 2, and 1, respectively. The average response obtained for a given event was then used to obtain an average sub-dimension score. The average sub-dimension scores, across all sub-dimensions subsumed under a broader dimension, were then used to obtain scores on the four higher-order dimensions: 1) data management, 2) study conduct, 3) professional practices, and 4) business practices.

An illustration of these ethical decision-making questions may be found in Figure 2. The average split-half reliability coefficient obtained for scores on the data management, study conduct, professional practices, and business practices dimensions was .74. Evidence for the construct validity of these scales as measures of ethical decision-making has been provided by Mumford et al. (2006). For example, it was found that data management was positively related to professional practices ($r = .57$) but less strongly related to study conduct ($r = .22$) and business practices ($r = .18$). More centrally, it was found that scores on these scales were related to intelligence ($\bar{r} = .19$) and divergent thinking ($\bar{r} = .17$) but not social desirability ($\bar{r} = -.01$). Stronger relationships, however, were obtained with a measure of cynicism ($r = .24$). Moreover, scores on these measures were found to be related to the severity of punishments awarded for ethical violations ($\bar{r} = .31$) and the strategies (e.g. anticipating consequences, seeking help, and recognizing circumstances) applied in working through ethical problems ($\bar{r} = .38$).

Climate—The ethical climate measure applied in the present study was based on a measure developed by Mumford et al. (2007). Development of this measure began with a review of

prior studies examining either ethical climate (e.g., Argandoña, 1999; Barnett, & Schubert, 2002; Victor & Cullen, 1988) or climate as it influences performance in research and development settings (e.g., Amabile, Conti, Coon, Lazerby, & Herron, 1996; Ekvall & Ryhammer, 1999; West 2002). This literature review led to the identification of 14 climate dimensions that might be related to ethical behavior among scientists such as law and code, procedural justice, distributive justice, individual caring, and lack of conflict.

Operational definitions were formulated for each of these dimensions. These operational definitions were presented to a panel of four doctoral students who were asked to generate 5 to 10 climate questions that might be used to measure each dimension. In generating these questions, psychologists were instructed to write questions that would capture typical patterns of work place events or interactions that might be observed by doctoral students. Thus, typical question might ask, “Is work environment here characterized by infighting?” or “Is the distribution of rewards and credit fair here?” Prior to generating these questions, panel members were provided with 20 hours of training in developing climate questions. All questions generated were reviewed by three senior psychologists, and questions subject to poor construct relevance, response bias problems, or lack of clarity were dropped. The 75 remaining questions, 5 to 8 questions per dimension, were presented to study participants who were asked to rate the frequency with which these events occurred in their workplace on a five-point scale (1 — Never, 5 — Always).

These questions were factored by Mumford et al. (2007) in a sample of doctoral students in the health, biological, and social sciences. This factor analysis yielded four dimensions: 1) *equity* reflected in questions involving allocation of rewards and resources, 2) *interpersonal conflict* reflected in questions about infighting and power struggles, 3) *occupational engagement* reflected in questions about intellectual engagement in the work, and 4) *work commitment* reflected in questions about commitment to laboratory goals. These four dimensions produced an average internal consistency coefficient of .87.

Evidence for the construct validity of these climate scales has also been provided by Mumford et al. (2007). To begin, these climate dimensions were found to display a substantively meaningful pattern of relationships. Thus, equity was found to be positively related to occupational engagement ($r = .40$) and work commitment ($r = .28$) but negatively related to interpersonal conflict ($r = -.20$). More centrally, these climate dimensions were found to be capable of predicting ethical decision-making — producing an average multiple correlation of .28.

Socialization—The measure of socialization applied in the present study was based upon the measure of event exposure described above. Based on the observations of Hall (1996), Lankau and Scandura (2002), and Morrison (1993), it was held that effective socialization would be reflected in the standards people adopted for appraising appropriate, or inappropriate, behavior by people working in a professional field. Accordingly, it seemed plausible to assume that ethical socialization would be reflected in participant’s reactions to breeches of ethical conduct within a professional setting. Accordingly, study participants were asked to indicate the acceptability of the day-to-day work events, both unethical and ethical work events, presented. Participants were asked to rate acceptability on a 4-point scale (1 — Not at all acceptable, 4 — Very acceptable). Across fields, the internal consistency coefficients obtained for ratings of acceptability were in the mid .60’s for events linked to data management, study conduct, professional practices, and business practices.

Control Variables

In the initial Mumford et al. (2006) study, a variety of individual differences variables that might be related to ethical decision-making, and presumably climate and socialization, were

identified. Four variables were identified that appeared to exhibit non-trivial relationships with ethical decision-making, 1) intelligence, 2) divergent thinking, 3) cynicism, and 4) narcissism. All measures of these variables were based on standardized instruments.

Intelligence was measured using a verbal reasoning measure drawn from Ruch and Ruch (1980). This 30-item analogical reasoning measure yields split-half reliability coefficient above .80 and produces correlations with ethical decision-making in the high teens. The divergent thinking measure administered was Guilford's consequences test (Merrifield, Guilford, Christensen, & Frick, 1962). This five-item measure asks people to list the consequences of unexpected events (e.g. what would happen if sea levels rose?). When scored for fluency, or the number of consequences generated, these items produce internal consistency coefficients above .70 and correlations with ethical decision-making in the high teens.

In addition to these two cognitive characteristics, two personality characteristics were found to be related to ethical decision-making. The first of these measures, a measure of cynicism, was drawn from Wrightsman (1974). This 10-item scale presents behaviors related to cynicism (e.g., the typical person is sincerely concerned with the problems of others) where people are asked to indicate their agreement with these statements on a 5-point scale (1 — Low, 5 — High). This measure yielded an internal consistency coefficient of .79 and correlations in the mid .20's with ethical decision-making. The second measure was Emmon's (1987) 37-item scale measuring narcissism. On this scale, participants were presented with two opposing statements (e.g., I am no better or no worse than most people and I think I am a special person), and were asked to select the statement which most closely represented their feelings. The resulting scale yielded an internal consistency coefficient of .82 and produced correlations with measures of ethical decision-making in the high teens. The correlations of these controls with measures of ethical decision-making have been described in prior studies (Antes et al., 2007; Mumford et al., 2006).

Analyses

Initially, mean frequency ratings for data management, study conduct, professional practices, and business practices were obtained for the total sample and both less experienced (first-year) and more experienced (third- and fourth-year) students. Subsequently, scores reflecting the frequency of exposure to unethical events were correlated with 1) scores on the four dimensions of ethical decision-making, 2) scores on the four climate dimensions, and 3) scores reflecting participants' ratings of the acceptability of events with respect to incidents involving data management, study conduct, professional practices, and business practices. Finally, all three sets of dependant variables were regressed on the frequency of exposure to ethical events both with and without taking the four control variables, intelligence, divergent thinking, cynicism, and narcissism, into account.

Results

Table 1 presents the means and standard deviations of the frequency ratings provided by doctoral students with respect to exposure to data management, study conduct, professional practices, and business practices unethical events in the conduct of their day-to-day work. As may be seen, doctoral students reported being more frequently exposed to unethical events involving data management ($M = 2.20$, $SD = .74$) than unethical events involving study conduct ($M = 2.05$, $SD = .72$), professional practices ($M = 2.04$, $SD = .81$), and business practices ($M = 2.04$, $SD = .71$). Apparently, doctoral students are most likely to be exposed to unethical conduct in those areas where much of their activity is concentrated.

Table 1 also presents the comparison of less experienced and more experienced students with respect to their exposure to these events. Comparison of the less experienced and more

experienced students with regard to the frequency of their exposure to these events yielded significant ($p \leq .01$) differences for both data management ($M_m = 2.45$, $SD_m = .67$ versus $M_l = 2.03$, $SD_l = .75$) and study conduct ($M_m = 2.33$, $SD_m = .53$ versus $M_l = 1.87$, $SD_l = .76$), with more experienced students reporting higher frequency of exposure to these events. Similarly, more experienced students reported being exposed to significantly ($p \leq .05$) more professional practices events ($M_m = 2.16$, $SD_m = .77$ versus $M_l = 1.95$, $SD_l = .82$). However, no differences existed in reported frequency of exposure to business practices events ($M_m = 2.11$, $SD_m = .71$ versus $M_l = 1.99$, $SD_l = .70$), although more experienced students still reported higher exposure. Broadly speaking, these findings indicate that exposure to unethical events increases as students progress through their doctoral programs.

Decision-Making

Our foregoing observations, of course, imply that doctoral students are, in fact, exposed to unethical events with some frequency in the course of their day-to-day work. This observation, in turn, leads to the question of how exposure to these events influences the decision-making, climate perceptions, and socialization of doctoral students. Table 2 presents the results obtained when the ethical decision-making measures were correlated with, and regressed on, the frequency with which students were exposed to unethical events in the course of their day-to-day work.

Data management—With regard to ethical decisions involving data management, the correlational analysis in the full sample indicated that exposure to data management ($r = -.19$), study conduct ($r = -.19$), professional practices ($r = -.15$), and business practices events ($r = -.18$) were all negatively related to ethical decision-making. These correlations, however, were stronger in the less experienced, as opposed to the more experienced, sample with significant correlations ($p \leq .05$) being obtained for exposure to data management ($r = -.25$), study conduct ($r = -.23$), professional practices ($r = -.19$), and business practices ($r = -.30$) events in the less experienced but *not* the more experienced sample.

In keeping with this observation, multiple correlations significant at the .05 level were obtained both when controls were ($R = .39$, $p \leq .05$) and were not ($R = .42$, $p \leq .05$) included in the regression analysis among less experienced doctoral students. Among more experienced students, however, significant multiple correlations were not obtained. In the case of less experienced students, where exposure to unethical events was related to ethical decision-making with regard to data management, it appears that exposure to poor professional practices ($\beta = -.17$, $p \leq .05$) was the significant predictor of poor data management decisions when no controls were applied while exposure to poor business practices ($\beta = -.17$, $p \leq .10$) was a marginally significant predictor when the controls were applied.

Study conduct—With regard to ethical decisions made with respect to study conduct, exposure to data management ($r = -.18$), study conduct ($r = -.33$), professional practices ($r = -.24$), and business practices ($r = -.24$) events were all significantly ($p \leq .05$), and negatively, related to ethical decision-making. Among less experienced students, exposure to data management ($r = -.26$), study conduct ($r = -.35$), professional practices ($r = -.38$), and business practices ($r = -.31$) events were significantly ($p \leq .05$) negatively related to ethical decisions. Among more experienced doctoral students, only exposure to study conduct events ($r = -.30$) was significantly, and negatively, related to ethical decision-making.

When ethical decisions with regard to study conduct were regressed on event exposure, significant multiple correlations were obtained in the full sample analyses both when controls were ($R = .41$, $p \leq .01$) and were not ($R = .35$, $p \leq .01$) applied. These regressions indicated that study conduct ($\beta = -.25$) and professional practices events ($\beta = -.14$) produced the strongest

effects when no controls were examined. However, business practices events ($\beta = -.12$) had a marginally significant ($p \leq .10$) effect on study conduct decisions. When controls were included, study conduct ($\beta = -.19$) and business practices ($\beta = -.18$) produced the strongest, significant ($p \leq .05$), relationships.

In comparing less experienced and more experienced students with regard to ethical decisions on study conduct, significant multiple correlations were obtained for less experienced students both when controls were ($R = .45, p \leq .01$) and were not ($R = .44, p \leq .01$) applied. Exposure to study conduct ($\beta = -.23$) and professional practices ($\beta = -.28$) events produced the strongest effects when no controls were applied. Exposure to events relating to study conduct ($\beta = -.15$), professional practices ($\beta = -.21$), and business practices ($\beta = -.19$) produced the strongest effects when the controls were applied, although only professional practices events significantly ($p \leq .05$) predicted study conduct decisions. Among more experienced students, again, significant multiple correlations ($p \leq .05$) were obtained both with ($R = .50, p \leq .01$) and without ($R = .32, p \leq .05$) controls. In these analyses, however, significant regressions weights were produced only by exposure to study conduct events in both control ($\beta = -.31$) and no control ($\beta = -.26$) regressions.

Professional practices—In examining the correlations of ethical decision-making with regard to professional practices and exposure to unethical events in the course of doctoral students day-to-day work, in the full sample it was found that significant ($p \leq .05$) negative relationships were produced by exposure to data management ($r = -.19$), study conduct ($r = -.18$), and professional practices ($r = -.25$) events. Business practices events were also correlated with ethical decision-making ($r = -.12$) — albeit marginally ($p \leq .10$). Among less experienced students, exposure to data management ($r = -.27$), study conduct ($r = -.22$), professional practices ($r = -.26$), and business practices ($r = -.24$) produced significant ($p \leq .05$) relationships. Among more experienced doctoral students, exposure to unethical study conduct ($r = -.21$) and professional practices ($r = -.27$) events was significantly ($p \leq .05$), and negatively, related to ethical decision-making.

The full sample regression analysis produced significant ($p \leq .05$) multiple correlations in accounting for ethical decisions bearing on professional practices both when control variables were ($R = .38$) and were not ($R = .30$) examined. Notably, the regression analysis indicated that these effects were significantly ($p \leq .05$) related to exposure to poor professional practices events both when controls were ($\beta = -.16$) and were not ($\beta = -.23$) applied. In examining less experienced students, both when controls were not applied ($R = .36$) and when controls were applied ($R = .48$), significant ($p \leq .05$) multiple correlations were again obtained. When no controls were applied, exposure to professional practice events ($\beta = -.22$) produced a significant ($p \leq .05$) regression weight while application of controls resulted in data management ($\beta = -.21$) producing a significant ($p \leq .05$) regression weight. Among more experienced doctoral students both the uncontrolled ($R = .32$) and controlled ($R = .42$) multiple correlations were significant ($p \leq .05$). In both the controlled ($\beta = -.25$) and uncontrolled analyses ($\beta = -.22$) these effects were significantly ($p \leq .05$) related to exposure to poor professional practice events.

Business practices—When ethical decision-making with regard to business practices was correlated with exposure to unethical events, significant ($p \leq .05$) negative relationships were obtained in the full sample for exposure to data management ($r = -.12$), study conduct ($r = -.24$), professional practices ($r = -.18$), and business practices events ($r = -.14$). Among less experienced doctoral students, significant ($p \leq .01$) negative relationships were produced by exposure to events relating to data management ($r = -.25$), study conduct ($r = -.37$), professional practices ($r = -.33$), and business practices ($r = -.28$). For more experienced doctoral students, exposure to unethical events was not related to ethical decisions with regard to business practices.

In the full sample regression, significant ($p \leq .05$) multiple correlations of .35 and .25 were obtained both when controls were and were not applied. In both analyses, these effects on ethical decision-making with regard to business practices were attributable to the significant ($p \leq .05$) regression weights obtained for study conduct ($\beta_c = -.22$, $\beta_{uc} = -.20$) events. For less experienced doctoral students, both the control and no control regressions were significant ($p \leq .05$), producing multiple correlations of .51 and .44. The significant ($p \leq .05$) regression weights in the analysis with controls included were linked to exposure to study conduct events ($\beta = -.26$). In the no controls analysis, these effects were linked to exposure to both study conduct ($\beta = -.28$) and professional practices ($\beta = -.24$) events. No significant effects emerged for business practices decisions in examining more experienced doctoral students.

Climate

Taken as a whole, our foregoing observations indicate that exposure to unethical events in doctoral students' day-to-day work is negatively related to ethical decision-making. Accordingly, the question arises as to how exposure to these events influenced other phenomena relevant to ethical conduct. Table 3 presents the results obtained in examining the relationship between exposure to unethical events and climate perceptions.

Equity—Equity perceptions produced no significant correlations with exposure to unethical events in the course of students' day-to-day work. More centrally, the multiple regressions with no controls failed to reach marginal significance levels. When the controls were added in these analyses, the full sample ($R = .28$) and more experienced sample ($R = .51$) analyses produced significant ($p \leq .05$) multiple correlations. These effects appear due to the inclusion of the control variables. Notably, however, exposure to data management events in both the full sample ($\beta = -.20$) and more experienced sample ($\beta = -.37$) produced significant regression weights, pointing to the potential operation of suppressor effects.

Interpersonal conflict—A stronger pattern of findings emerged in examining interpersonal conflict. In the correlational analysis, it was found that perceptions of conflict at work were positively related to exposure to unethical data management ($r = .20$), professional practices ($r = .20$), and business practices events ($r = .13$). In the less experienced sample, exposure to data management ($r = .22$) and professional practices ($r = .22$) appeared especially important. However, no significant correlations were obtained among more experienced doctoral students.

When interpersonal conflict was regressed on event exposure, significant ($p \leq .05$) multiple correlations were obtained in the full sample analyses, both when controls were and were not included, producing multiple correlations of .44 and .31. In the no control analysis, only exposure to unethical professional practices ($\beta = .23$) produced a significant regression weight. In the control analyses, exposure to data management ($\beta = .22$) and professional practices ($\beta = .16$) produced significant relationships. Examination of the less experienced sample produced significant ($p \leq .05$) multiple correlations of .46 and .39 when controls were and were not considered in accounting for the effects of exposure to unethical events on interpersonal conflict. When no controls were considered, exposure to professional practices ($\beta = .33$) were related to interpersonal conflict. When controls were applied, again reflecting the operation of suppression effects, both exposure to data management ($\beta = .24$) and professional practices ($\beta = .21$) events produced significant ($p \leq .05$) relationships. For the more experienced sample, only the regression conducted with controls was significant ($p \leq .01$), yielding a multiple correlation of .50. Notably, however, significant ($p \leq .05$) regression weights were obtained only for exposure to data management ($\beta = .25$) events.

Occupational engagement—For occupational engagement, no significant correlations were obtained in the full sample analysis or the analysis examining less experienced doctoral

students. Moreover, all regression analyses conducted in these samples failed to reach significance. However, in examining more experienced doctoral students exposure to unethical data management ($r = .22$) and business practices ($r = .25$) events were related to occupational engagement. The multiple correlations obtained when controls were examined produced a significant ($p \leq .05$) multiple correlation of .44. This effect appeared attributable to the effects of exposure to unethical data management ($\beta = .31$) events on occupational engagement, although professional practices events ($\beta = -.22$) exerted a marginally significant ($p \leq .10$) effect on perceptions of occupational engagement.

Work commitment—A similar pattern of effects emerged in examining work commitment. In the full sample, only exposure to business practices ($r = .17$) was related to work commitment. Moreover, the regression analyses failed to reach significance. Among more experienced students, however, a significant correlation was obtained between work commitment and exposure to unethical business practice ($r = .28$) events. When no controls were included a significant ($p \leq .05$) multiple correlation of .39 was also obtained. It was found that exposure to unethical study conduct ($\beta = .23$) and business practices ($\beta = .30$) events led to *increased* perceptions of work commitment. When controls were applied, however, the multiple correlation did not reach significance, although a significant regression weight was obtained for exposure to events involving unethical business practices ($\beta = .23$).

Socialization

Data management—Socialization in the present study was measured through participants' ratings of the acceptability of day-to-day unethical work practices events. Table 4 presents the results obtained in examining the relationship between exposure to unethical events and acceptability of unethical data management events. With regard to acceptability of data management events, no significant relationships were obtained in either the full sample or the more experienced sample in both the correlational and regression analyses. However, in the less experienced sample, a significant ($p \leq .05$) multiple correlation of .44 was obtained when no controls were entered. This relationship was apparently attributable to exposure to unethical professional practices ($\beta = .31$) events. However, this effect did not hold when controls were applied.

Study conduct—In contrast, when the acceptability of study conduct breaches was correlated in the full sample with exposure to unethical study conduct events, a significant ($p \leq .05$) correlation of .23 was obtained. In the controlled and uncontrolled regressions significant ($p \leq .05$) multiple correlations of .39 and .26 were obtained with exposure to unethical study conduct events producing regression weights of .28 and .25. Moreover, when controls were included a significant ($p \leq .05$) regression weight was obtained for exposure to unethical professional practices ($\beta = .20$) events. Although no significant relationships were observed within the less experienced sample, a significant ($p \leq .05$) correlation of .26 was obtained between the acceptability of study conduct incidents and exposure to unethical study conduct events. Similarly, significant ($p \leq .05$) effects were obtained in both the controlled and uncontrolled regressions, which produced multiple correlations of .47 and .39. In the non-controlled regression, exposure to study conduct events ($\beta = .33$) and professional practices events ($\beta = -.34$) produced significant ($p \leq .05$) regression weights. In the controlled regression, exposure to unethical study conduct events ($\beta = .35$) and exposure to unethical professional practices events ($\beta = -.35$) both produced significant ($p \leq .05$) regression weights.

Professional and business practices—Exposure to unethical events produced no significant relationships in accounting for the acceptability of breaches in professional practices. Moreover, with regard to the acceptability of breaches in business practices, significant relationships were not obtained, in either the full sample or the less experienced

sample, in both the correlational and regression analyses. However, in the more experienced sample, the multiple correlation was significant ($p \leq .05$), both when controls were and were not added, with multiple correlations of .44 and .40 being obtained. In both analyses, the effects were found to be attributable to exposure to unethical data management ($\beta_c = .43, \beta_{uc} = .38$) and professional practices ($\beta_c = -.39, \beta_{uc} = -.38$) events. Thus, exposure to unethical data management increases the acceptability of business practices breeches, while exposure to professional practices events led to less acceptance of misconduct with regard to business practices.

Discussion

Before turning to the broader implications of the present study, certain limitations should be noted. To begin, while a relatively large sample of doctoral students was examined, including doctoral students drawn from multiple fields, specifically the health, biological, and social sciences, it should be realized that the results obtained in the present study speak most directly to doctoral students. Although doctoral students' reactions to unethical events in the course of their day-to-day work are, of course, of some interest, caution is called for in extending these findings to more experience professionals.

Along related lines, it should be recognized that the doctoral students who participated in this study were drawn from programs in the health, biological, and social sciences at a single university. One implication of this observation is that caution is called for in extending our findings to ethical behavior in other fields, for example engineering — especially fields which have markedly different patterns of socialization. The other implication of this observation is that unique characteristics of the university in which this investigation was conducted must be borne in mind. Although the university under consideration is, in fact, typical of large research institutions, some caution in generalizing our findings still seems warranted.

It should also be recognized that exposure to unethical events was measured using a distinct approach. More specifically, doctoral students were asked to describe the frequency with which they had been exposed to unethical conduct through a “task” inventory. Although application of this approach is attractive, in part, because it minimizes demand characteristics, it should also be recognized that this measure relies on perceptions of the occurrence of events. Although prior studies indicate that this type of measure yields reasonably accurate assessments of relative frequency of event exposure (Peterson et al., 1999), these perceptual reports cannot be viewed as reflecting absolute frequency. Moreover, it should be recognized that not all ethical events a student might be exposed to, for example falsification, could be examined through this measure. Instead, the present effort necessarily focused on more routine events.

Finally, it should be recognized that while multiple dependent variables were examined, decision-making (Mumford et al., 2006), climate perceptions (Mumford et al., 2007), and socialization, it should be recognized that these measures reflect influences on ethical conduct as it is exhibited in the sciences. Although this domain-specific approach (Baer, 2003) is attractive to studies of complex performance, it is also true that it places limits on generality. Moreover, it should be recognized that ethical socialization was measured based on the perceived acceptability of incidents of misconduct. Although this is a viable approach for assessing socialization, it should be recognized that socialization is a complex process and other measures might be applied.

Even bearing these limitations in mind, we believe that the present study has some noteworthy implications for understanding how exposure to unethical events in the course of students' day-to-day work influences various variables related to ethical conduct. A secondary goal of many ethical interventions such as codes and responsible conduct of research training (National

Research Council/National Institute of Medicine, 2002), is to minimize students', or research assistants', exposure to incidents of misconduct. The results obtained in the present study, in fact, indicate that this secondary goal is of some importance. Consistent with the propositions of interactional models (e.g. Brown & Trevino, 2006) and prior studies (e.g. Feudtner, Christakis, & Christakis, 1994), it was found that exposure to unethical events in the course of doctoral students' day-to-day work was related to certain variables found to be related to ethical conduct.

The findings obtained in the present study, however, are of interest with regard to the effects of event exposure on different variables held to influence ethical conduct. Hypothesis three held that the frequency of exposure to unethical events would be negatively related to ethical decision-making. The results obtained in the present study provided strong support for this hypothesis with multiple correlations in the mid .40s being obtained when unethical event exposure was used to predict ethical decision-making. Moreover, exposure to unethical events was negatively related not merely to substantively linked ethical decisions (e.g. exposure to data management events and ethical decisions with regard to data management), but instead it appeared that exposure to unethical events exerted wide-ranging effects on subsequent ethical decision-making. These findings suggest that the "negative" case models (Hammond, 1990; Kolodner, 1997) provided by unethical events are used to guide a variety of ethical decisions.

In this regard, however, it is important to bear in mind a finding emerging from the regression analyses. The regression analyses indicated not only that these findings held when scale relationships and control variables (e.g. intelligence, cynicism) were taken into account, but that exposure to two kinds of events, unethical study conduct and unethical professional practice events, were especially likely to produce sizable regression weights when used to predict ethical decisions. Of course, study conduct and professional practice events, in contrast to data management and business practice events, are central to the conduct of the scientific enterprise (Zuckerman, 1977). As a result, these more "central" events apparently provide more powerful case models guiding ethical decision-making.

Our fourth hypothesis was related to the effects of events exposure on the professional development of scientists. More specifically, this hypothesis held that exposure to unethical events would exert stronger effects on the ethical decision-making of less experienced as opposed to more experienced students. Although the findings obtained in the correlational and regression analyses were, broadly speaking, consistent with this hypothesis, in contrasting the relationships obtained for less experienced and more experienced doctoral students another trend emerged. More specifically, it was found that, for less experienced students, a larger range of events produced significant regression weights while, among more experienced students, events linked to the particular type of ethical decision (e.g. study conduct events and study conduct decisions or professional practice events and professional practice decisions) produced the strongest regression weights. This pattern of effects suggests that with increasing expertise people are more likely to apply relevant case models (Kolodner, 1997). These effects, however, suggest that more experienced students are not "immune" to unethical events. Rather, use of these events as guidance for ethical decisions is more delimited.

Although our findings indicate that exposure to unethical events is strongly related to ethical decision-making, ethical decision-making, however important (O'Fallon & Butterfield, 2005), is not the only influence on ethical conduct that might be of interest. For example, in hypothesis two, we suggested that exposure to unethical events would influence students' perceptions of ethical climate. In this regard, it is clear that exposure to unethical events in the course of doctoral students' day-to-day work was related to climate perceptions. The strongest relationships obtained were associated with interpersonal conflict for both more and less experienced students. Thus, it appears that unethical events create conflict in research

laboratories, and conflict has been linked to other forms of unethical behavior (Reall, Bailey, & Stoll, 1998).

Although exposure to unethical events induced interpersonal conflict, it should be recognized that climate perceptions were less strongly related to event exposure than ethical decision-making. Thus, it appears that events have more effect on professional expertise than appraisal of the environment. Moreover, it should be recognized that exposure to these events appeared to have somewhat different effects on the climate perceptions of more experienced doctoral students. More specifically, it was found that exposure to data management and business practices events were positively related to occupational engagement while exposure to study conduct and business practice events were positively related to work commitment among more experienced students. These findings suggest that exposure to unethical events is associated with perceptions that the workplace is ripe with individuals motivated and engaged in their work activity. Thus, exposure to unethical events exerts a complex, rather weak, set of effects on climate perceptions.

Still another way exposure to unethical events might undermine ethical behavior is through disruption of the professional socialization process. In the present study, socialization was operationalized in terms of student's perceptions of the acceptability of unethical events. And, consistent with hypothesis one, it was found, among more experienced students, that exposure to unethical events in the course of doctoral students' day-to-day work was related, albeit weakly related, to perceptions of the acceptability of these unethical events with respect to study conduct and business practices. However, these effects were not observed among less experienced students. This pattern of effects suggests that initial professional socialization is not necessarily undermined by exposure to unethical events. Doctoral students know what is right and what is wrong, rather exposure to these events leads to the adoption of a perspective about how the *technical* side of work is conducted. And, assumptions made about how technical work is conducted may undermine socialization into professional norms and values. Interestingly, among more experienced students, our results suggest that exposure to professional practices events, such as exploitation of staff or lack of adherence to professional commitments, more *personal* unethical conduct, may lead to decreased acceptability perceptions.

More centrally, however, the findings obtained in the present study provide some important clues about how exposure to unethical events influences people. Although exposure to unethical events exerts some weak effects on socialization and climate perceptions, the strongest effects of event exposure were on ethical decision-making. These findings suggest that exposure to unethical events led people to incorporate these events into their body of knowledge about how work is conducted. This knowledge is, in turn, used as people make decisions about how to conduct their work, with exposure to unethical events giving rise to unethical decisions.

More broadly, our findings suggest that interventions intended to minimize the exposure of doctoral students to unethical events will prove beneficial by providing more appropriate case models for approaching decisions that have ethical implications. These findings suggest that we need to begin developing interventions, for example, conduct management training or shared peer control, which might also help serve to minimize doctoral students' exposure to unethical events. Hopefully, the present study will provide an impetus for future research along these lines.

Acknowledgments

We would like to thank Whitney Helton-Fauth, Ginamarie Scott-Ligon, and Blaine Gaddis for their contributions to the present effort. The data collection was supported, in part, by a National Institutes of Health, National Center for

Research Resources, General Clinical Center Research Grant (M01RR-14467). The present study was supported by a grant from the National Institutes of Health and the Office of Research Integrity (5R01-NS049535-02), Michael D. Mumford, Principal Investigator.

References

- Amabile TM, Conti R, Coon H, Lazenby J, Herron M. Assessing the work environment for creativity. *Academy of Management Journal* 1996;39:1154–1184.
- Antes AL, Brown RP, Murphy ST, Waples EP, Mumford MD, Connelly S, Devenport LD. Personality and ethical decision-making in research: The role of perceptions of self and others. *Journal of Empirical Research on Human Research Ethics* 2007;2:15–34. [PubMed: 19385805]
- Argandoña A. Sharing out in alliances: Trust and ethics. *Journal of Business Ethics* 1999;21:217–228.
- Baer, J. Evaluative thinking, creativity, and task specificity: Separating wheat from chaff is not the same as finding needles in haystacks. In: Runco, M., editor. *Critical creative processes*. Hampton Press; Cresskill, N.J.: 2003. p. 129–151.
- Barnett T, Schubert E. Perceptions of the ethical work climate and covenantal relationships. *Journal of Business Ethics* 2002;36:279–290.
- Bashe A, Anderson SK, Handelsman MM, Klevansky R. An acculturation model for ethics training: The ethics autobiography and beyond. *Professional Psychology: Research and Practice* 2007;38:60–67.
- Bergman, R. Identity as motivation: Toward a theory of the moral self. In: Lapsley, DK.; Narvaez, D., editors. *Moral development, self, and identity*. Lawrence Erlbaum; Mahwah, NJ: 2004. p. 21–46.
- Brown ME, Treviño LK. Socialized charismatic leadership, values congruence, and deviance in work groups. *Journal of Applied Psychology* 2006;91:954–962. [PubMed: 16834518]
- Chao GT, O'Leary-Kelly AM, Wolf S, Klein HJ, Gardner PD. Organizational socialization: Its content and consequences. *Journal of Applied Psychology* 1994;79:730–743.
- Chen DT. Curricular approaches to research ethics training for psychiatric investigators. *Psychopharmacology* 2003a;171:112–119. [PubMed: 12768270]
- Dickson MW, Smith DB, Grojean MW, Ehrhart M. An organizational climate regarding ethics: The outcome of leader values and the practices that reflect them. *Leadership Quarterly* 2001;12:197–217.
- Dunbar, K. How scientists really reason: Scientific reasoning in real-world laboratories. In: Sternberg, RJ.; Davidson, J., editors. *Mechanisms of insight*. MIT Press; Cambridge, MA: 1995. p. 365–395.
- Ekvall G, Ryhammer L. The creative climate: Its determinants and effects at a Swedish University. *Creativity Research Journal* 1999;12:303–310.
- Ellis S, Mendel R, Nir M. Learning from successful and failed experience: The moderating role of kind of after-event review. *Journal of Applied Psychology* 2006;91:669–680. [PubMed: 16737362]
- Emmons RA. Narcissism: Theory and measurement. *Journal of Personality and Social Psychology* 1987;52:11–17. [PubMed: 3820065]
- Ericsson KA, Charness N. Expert performance: Its structure and acquisition. *American Psychologist* 1994;49:725–747.
- Feudtner C, Christakis DA, Christakis NA. Do clinical clerks suffer ethical erosion? Students' perceptions of their ethical environmental and personal development. *Academic Medicine* 1994;69:670–679. [PubMed: 8054117]
- Gessner TE, O'Connor A, Mumford MD, Clifton TC, Smith A. Situational variables influencing the propensity for destructive acts: Taxonomy development and validation. *Current Psychology* 1995;13:303–325.
- Gunsalus CK. Institutional structure to ensure research integrity. *Academic Medicine* 1993;68:33–38.
- Hall DT. Protean careers of the 21st century. *Academy of Management Executive* 1996;10:8–16.
- Hammond KJ. Case-based planning: A framework for planning from experience. *Cognitive Science* 1990;14:385–443.
- Hartman SJ, Yrle AC, Galle WP. Procedural and distributive justice: Examining equity in a university setting. *Journal of Business Ethics* 1999;20:337–351.
- Helton-Fauth W, Gaddis B, Scott G, Mumford M, Devenport L, Connelly S, Brown R. A new approach to assessing ethical conduct in scientific work. *Accountability in Research: Policies and Quality Assurance* 2003;10:205–228.

- Hunter ST, Bedell KE, Mumford MD. Climate for creativity: A quantitative review. *Creativity Research Journal* 2007;19:69–90.
- Kohlberg, L. The philosophy of moral development: Moral stages and the idea of justice. Harper and Row; San Francisco: 1981.
- Kolodner JL. Educational implications of analogy: A view from case-based reasoning. *American Psychologist* 1997;52:57–66.
- Lankau MJ, Scandura TA. An investigation of personal learning in mentoring relationships: Content, antecedents, and consequences. *Academy of Management Journal* 2002;45:779–790.
- Lurie Y. Humanizing business through emotions: On the role of emotions in ethics. *Journal of Business Ethics* 2004;49:1–11.
- Martinson BC, Anderson MS, de Vries R. Scientists behaving badly. *Nature* 2005;435:737–738. [PubMed: 15944677]
- Merrifield PR, Guilford JP, Christensen PR, Frick JW. The role of intellectual factors in problem solving. *Psychological Monographs* 1962;76:1–21.
- Morrison EW. Newcomer information seeking Exploring types, modes, sources, and outcomes. *The Academy of Management Journal* 1993;36:557–589.
- Motowidlo SJ, Dunnette MD, Carter GW. An alternative selection measure: The low-fidelity simulation. *Journal of Applied Psychology* 1990;75:640–647.
- Muijen HS. Corporate social responsibility starts at a university. *Journal of Business Ethics* 2004;52:235–245.
- Mumford MD, Connelly S, Scott G, Espejo J, Sohl LM, Hunter ST, Bedell KE. Career experiences and scientific performance: A study of social, physical, life, and health sciences. *Creativity Research Journal* 2005;17:105–129.
- Mumford MD, Devenport LD, Brown RP, Connelly S, Murphy ST, Hill JH, Antes AL. Validation of ethical decision-making measures: Evidence for a new set of measures. *Ethics and Behavior* 2006;16:319–345.
- Mumford MD, Murphy ST, Connelly S, Hill JH, Antes AL, Brown RP, Devenport LD. Environmental influences on ethical decision-making: Climate and environmental predictors of research integrity. *Ethics and Behavior* 2007;17:1–30.
- Narvaez, D.; Lapsley, DK. The psychological foundations of everyday morality and moral expertise. In: Lapsley, DK.; Power, FC., editors. *Character psychology and character education*. University of Notre Dame Press; Notre Dame: 2005. p. 140-165.
- National Institute of Medicine. Integrity in Scientific Research: creating an environment that promotes responsible conduct. National Research Council; Washington, D. C.: 2002.
- O'Fallon MJ, Butterfield KD. A review of the empirical ethical decision-making literature: 1996-2003. *Journal of Business Ethics* 2005;59:375–413.
- Peterson, NG.; Mumford, MD.; Borman, WC.; Jeanneret, PR.; Fleishman. An occupational information system for the 21st century: The development of O*NET. American Psychological Association; Washington, DC: 1999.
- Reall MJ, Bailey JJ, Stoll SK. Moral reasoning on hold during a competitive game. *Journal of Business Ethics* 1998;17:1205–1210.
- Reeves LM, Weisberg RW. The role of content and abstract information in analogical transfer. *Psychological Bulletin* 1994;115:381–400.
- Resnick DR. From Baltimore to Bell Labs: Reflections on two decades of debate about scientific misconduct. *Accountability in Research* 2003;10:123–135. [PubMed: 14577424]
- Rest, JR.; Narvaez, D.; Bebeau, MJ.; Thoma, SJ. Postconventional moral thinking: A neo-Kohlbergian approach. Lawrence Erlbaum; Mahwah, NJ: 1999.
- Ruch, FL.; Ruch, WW. Employee Aptitude Survey. Psychological Services; Los Angeles, CA: 1980.
- Schneider, B.; Bowen, D. Winning the service game. Harvard Business School Press; Boston: 1995.
- Schneider B, Parkington J, Buxton V. Employee and customer perception of service in banks. *Administrative Science Quarterly* 1980;25:252–267.
- Sigmon ST, Boulard NE, Whitcomb-Smith S. Reporting ethical practices in journal articles. *Ethics and Behavior* 2002;12:261–275. [PubMed: 12656070]

- Steneck, NH. Standards of ethical standards of conduct: Introduction to the responsible conduct of research. Dept. of Health and Human Services, Office of Research Integrity; Washington, D.C.: 2004.
- Steneck NH. Fostering integrity in research: Definitions, current knowledge, and future directions. *Science and Engineering Ethics* 2006;12:53–74. [PubMed: 16501647]
- Tenbrunsel AE, Smith-Crowe K, Umphress EE. Building houses on rocks: The role of ethical infrastructure in organizations. *Social Justice Research* 2003;16:285–307.
- Treviño LK, Weaver GR, Reynolds SJ. Behavioral ethics in organizations: A review. *Journal of Management* 2006;32:951–990.
- Tereskerz PM. Research accountability and financial conflicts of interest in industry: Sponsored clinical research. *Accountability in Research* 2003;10:137–158. [PubMed: 14979317]
- Victor B, Cullen JB. The organizational bases of ethical work climates. *Administrative Science Quarterly* 1988;33:101–125.
- Weisberg, RW. Expertise and reason in creative thinking: Evidence from case studies and the laboratory. In: Kaufman, JC.; Baer, J., editors. *Creativity and reason in cognitive development*. Cambridge; New York: 2006.
- West MA. Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review* 2002;51:355–424.
- Whitbeck, C. Authorship and mentoring concerns in faculty: Trainee discussions. Paper presented at the ORI Research Conference on Research Integrity; San Diego, CA. Nov. 2004
- Wrightsman, LS. *Assumptions about human nature: A social—psychological approach*. 1st Ed. Brooks/Cole; Monterey, CA: 1974.
- Zuckerman, H. *Scientific elite*. Free Press; New York, NY: 1977.

Examples of Work Event Exposure Items

Unethical Events		Technical Events	
1)	Selectively replace subjects or rerun analyses when gathering data	1)	Establish procedures for entry of scanned data
2)	Publish in "least publishable units" (i.e., write up results as several small articles vs. one or two larger ones)	2)	Release data or study findings prior to completion of full data analysis
3)	Discuss data that personally identifies human subjects with others not involved in the research	3)	Develop a consistent procedure to assign subject codes in a data set
4)	Overstate benefits of participation in a study to human subjects	4)	Provide sufficient instructions to participants
5)	Conduct research without Institutional Review Board approval	5)	Provide clear application forms to IRB
6)	Include a subject whose health status doesn't quite meet standards in a study considered to be low risk	6)	Answer questions that participants may have during an experiment
7)	Maintain anonymity of manuscript reviewers	7)	Provide clear and specific comments in reviews of manuscripts of drafts or articles
8)	Suggest what the "acceptable" results of a study should be to research assistants	8)	Monitor ongoing data analysis on a project
9)	Accept payment for serving as an expert witness in judicial proceedings	9)	Inform study assistants of preliminary experimental hypotheses
10)	Accurately describe program content, goals, or costs associated with a research proposal	10)	Ask for deadline extensions on deliverables for grants and contracts

Note. Technical events are filler items included to mask the unethical events presented. Technical events were developed to address similar issues to those broached by unethical events.

Figure 1.
Example event exposure items.

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.

-
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

Figure 2.
Example ethical decision-making scenario.

Table 1

Means and Standard Deviations for Full Sample, More Experienced Students, and Less Experienced Students

Event Frequency	Full Sample (N = 246)		Less Experienced (n = 149)		More Experienced (n = 97)		p-values (N = 246)	
	M	SD	M	SD	M	SD	df	p
1) Data Management	2.20	0.74	2.03	0.75	2.45	0.67	1, 237	19.57 .00
2) Study Conduct	2.05	0.72	1.87	0.76	2.33	0.53	1, 240	25.97 .00
3) Professional Practices	2.04	0.81	1.95	0.82	2.16	0.77	1, 244	4.00 .05
4) Business Practices	2.04	0.71	1.99	0.70	2.11	0.71	1, 235	1.64 .20

Table 2
Correlations and Regressions of Ethical Decision-Making with Exposure to Unethical Events

	Exposure to Unethical Events											
	Data Management			Study Conduct			Professional Practices			Business Practices		
	r	β ₁	β ₂	r	β ₁	β ₂	r	β ₁	β ₂	r	β ₁	β ₂
Ethical Decision-Making												
Data Management												
Full Sample (<i>R</i> ₁ = .27 *, <i>R</i> ₂ = .33 *)	-.19 **	-.09	-.14 ^a	-.19 **	-.12 ^a	-.12	-.15 *	-.11	-.05	-.18 **	-.06	-.03
Less Experienced (<i>R</i> ₁ = .39 *, <i>R</i> ₂ = .42 *)	-.25 **	-.04	-.10	-.23 **	-.12	-.11	-.19 *	-.17 *	-.09	-.30 **	-.19 ^a	-.17
More Experienced (<i>R</i> ₁ = .18, <i>R</i> ₂ = .27)	-.10	-.16	-.19	-.17 ^a	-.08	-.10	.01	.01	.04	-.01	.10	.13
Regression Weights for Controls												
Intelligence	<u>Full</u>	<u>Less</u>	<u>More</u>									
	.08	.07	.09									
Divergent Thinking	.02	.05	-.05									
Cynicism	-.08	-.07	-.09									
Narcissism	-.13 ^a	-.11	-.14									
Study Conduct												
Full Sample (<i>R</i> ₁ = .35 *, <i>R</i> ₂ = .41 *)	-.18 **	.05	.10	-.33 **	-.25 **	-.19 **	-.24 **	-.14 *	-.08	-.24 **	-.12 ^a	-.18 *
Less Experienced (<i>R</i> ₁ = .45 **, <i>R</i> ₂ = .44 **)	-.26 **	.06	.07	-.35 **	-.23 **	-.15 *	-.38 **	-.28 **	-.21 *	-.31 **	-.13	-.19 ^a
More Experienced (<i>R</i> ₁ = .32 *, <i>R</i> ₂ = .50 **)	-.02	-.01	.12	-.29 **	-.31 **	-.26 *	.01	.13	-.09	-.11	-.10	-.20 ^a
Regression Weights for Controls												
Intelligence	<u>Full</u>	<u>Less</u>	<u>More</u>									
	.19 **	.05	.32 **									
Divergent Thinking	.13 *	.09	.16									
Cynicism	-.04	-.09	.01									
Narcissism	-.03	.06	-.15									
Professional Practices												
Full Sample	-.19 **	-.09 **	-.13	-.18 **	-.09 **	-.07	-.25 **	-.23 **	-.16 *	-.12 ^a	.04	.04

	Exposure to Unethical Events											
	Data Management			Study Conduct			Professional Practices			Business Practices		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Ethical Decision-Making												
$(R_1 = .30^{**}, R_2 = .38^{**})$												
Less Experienced	-.27**	-.09	-.21*	-.22**	-.11	-.06	-.26**	-.22*	-.05	-.24**	-.07	-.06
$(R_1 = .36^{**}, R_2 = .48^{**})$												
More Experienced	-.13	-.11	-.09	-.21*	-.08	-.13	-.27**	-.22*	-.25*	-.06	-.19 ^a	-.15
$(R_1 = .32^*, R_2 = .42^*)$												
Regression Weights for Controls												
Intelligence	Full	Less	More									
	.18**	.14 ^a	.22*									
Divergent Thinking	.07	.10	.03									
Cynicism	-.02	-.08	.03									
Narcissism	-.14*	-.25**	-.08									
Business Practices												
Full Sample												
$(R_1 = .25^{**}, R_2 = .35^{**})$												
Less Experienced	-.25**	.03	.01	-.37**	-.28**	-.26**	-.33**	-.24**	-.13	-.29**	-.08	-.13
$(R_1 = .44^{**}, R_2 = .51^{**})$												
More Experienced	.07	-.01	-.04	-.03	-.04	-.13	.08	.08	.09	.09	.09	.01
$(R_1 = .12, R_2 = .29)$												
Regression Weights for Controls												
Intelligence	Full	Less	More									
	.11 ^a	.17*	.02									
Divergent Thinking	.14*	.14 ^a	.08									
Cynicism	.03	-.01	.19									
Narcissism	-.19**	-.13	-.24 ^a									

Note. r = correlation, β_1 = standardized regression weight with no controls, β_2 = standardized regression weight with controls, R_1 = multiple correlation with no controls, R_2 = multiple correlation with controls

**
 $p < .01$

*
 $p < .05$

^a
 $p < .10$.

Table 3
Correlations and Regressions of Climate Perceptions with Exposure to Unethical Events

	Exposure to Unethical Events											
	Data Management			Study Conduct			Professional Practices			Business Practices		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Climate Perceptions												
<u>Equity</u>												
Full Sample ($R_1 = .15, R_2 = .28^*$)	-.13 ^a	-.11	-.20 [*]	.00	.09	.06	-.01	.01	-.02	-.11 ^a	-.09	-.03
Less Experienced ($R_1 = .13, R_2 = .27$)	-.07	-.09	-.12	.06	.14	.12	.05	-.00	-.01	-.03	-.03	-.01
More Experienced ($R_1 = .24, R_2 = .51^{**}$)	-.17 ^a	-.13	-.37 ^{**}	-.06	-.03	-.12	-.07	.04	.11	-.20 [*]	-.17	-.12
<u>Regression Weights for Controls</u>												
Intelligence	Full	Less	More									
	-.06	.05	-.23 [*]									
Divergent Thinking	-.13 [*]	-.09	-.26 [*]									
Cynicism	.08	.04	.22 [*]									
Narcissism	-.14 [*]	-.21 [*]	-.10 [*]									
Interpersonal Conflict												
Full Sample ($R_1 = .31^{**}, R_2 = .44^{**}$)	.20 ^{**}	.12	.22 ^{**}	.09	.02	.03	.20 ^{**}	.23 ^{**}	.16 [*]	.13 [*]	-.00	-.08
Less Experienced ($R_1 = .39^*, R_2 = .46^{**}$)	.22 ^{**}	.16 ^a	.24 [*]	.08	.03	.00	.22 ^{**}	.33 ^{**}	.21 [*]	.12	-.10	-.13
More Experienced ($R_1 = .23, R_2 = .50^{**}$)	.17	.09	.25 [*]	.09	.06	.20 ^a	.15	.08	.00	.14	.09	-.00
<u>Regression Weights for Controls</u>												
Intelligence	Full	Less	More									
	.11 ^a	.02	.23 [*]									
Divergent Thinking	.13 ^a	.10	.26 [*]									
Cynicism	.19 ^{**}	.20 [*]	.12									
Narcissism	.12 ^a	.13	.13									
Occupational Engagement												
Full Sample ($R_1 = .12, R_2 = .21$)	.11 ^a	.01	.07	.07	.04	.05	.00	-.01	-.05	.12 ^a	.10	.05
Less Experienced ($R_1 = .12, R_2 = .19$)	.05	-.06	-.03	.11	.13	.13	-.00	.06	.01	.04	-.03	-.05
More Experienced ($R_1 = .30^a, R_2 = .44^*$)	.22 [*]	.16	.31 [*]	.00	.01	.08	.01	-.14	-.22 ^a	.25 [*]	.24 [*]	.18
<u>Regression Weights for Controls</u>												
Intelligence	Full	Less	More									

	Exposure to Unethical Events					
	Data Management		Study Conduct		Professional Practices	
	r	β_1	β_2	r	β_1	β_2
Climate Perceptions						
Intelligence	.11	.08	.15			
Divergent Thinking	.03	-.03	.21 ^a			
Cynicism	.09	.09	.01			
Narcissism	.10	.11	.10			
Work Commitment						
Full Sample ($R_1 = .17$, $R_2 = .25^a$)	.08	.05	.08	.01	-.06	-.03
Less Experienced ($R_1 = .24^a$, $R_2 = .34^a$)	.08	.09	.11	-.08	-.16	-.10
More Experienced ($R_1 = .39^{**}$, $R_2 = .38$)	.09	.03	.08	.20 [*]	.23 [*]	.22 ^a
Regression Weights for Controls						
Intelligence	.10	.07	.19 ^a			
Divergent Thinking	-.16 [*]	-.17 ^a	.00			
Cynicism	.03	-.00	.02			
Narcissism	.11	.19 [*]	.02			

Note. r = correlation, β_1 = standardized regression weight with no controls, β_2 = standardized regression weight with controls, R_1 = multiple correlation with no controls, R_2 = multiple correlation with controls

**
 $p < .01$

*
 $p < .05$

^a
 $p < .10$

Table 4
Correlations and Regressions of Acceptability of Breaches with Exposure to Unethical Events

	Exposure to Unethical Events											
	Data Management				Study Conduct				Professional Practices			
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Acceptability of Breaches												
<u>Data Management</u>												
Full Sample ^b ($R_1 = .13, R_2 = .21$)	.09	.08	-.01	.07	-.01	-.02	.09	.05	.03	.10	.05	.08
Less Experienced ^c ($R_1 = .44^*, R_2 = .46$)	.16	.03	.03	.24 ^a	.26	.16	.35 [*]	.31 [*]	.23	-.07	-.25	-.20
More Experienced ^d ($R_1 = .23, R_2 = .26$)	.05	.10	.00	.01	-.05	-.05	-.06	-.15	-.13	.18	.18	.23 ^a
<i>Regression Weights for Controls</i>												
Intelligence	Full	Less	More									
	.00	-.05	.03									
Divergent Thinking	-.16	-.13	-.04									
Cynicism	.08	.14	-.03									
Narcissism	-.02	-.05	-.08									
<u>Study Conduct</u>												
Full Sample ^b ($R_1 = .26^a, R_2 = .39^*$)	-.02	-.02	-.09	.23 ^{**}	.26 ^{**}	.29 ^{**}	-.07	-.15	-.20 [*]	.05	.01	-.00
Less Experienced ^c ($R_1 = .24, R_2 = .38$)	-.04	-.15	-.16	.13	.20	.20	.14	.16	.06	-.04	-.11	-.09
More Experienced ^d ($R_1 = .39^*, R_2 = .47^*$)	-.01	.07	-.03	.26 [*]	.33 ^{**}	.35 ^{**}	-.15	-.34 ^{**}	-.35 ^{**}	.08	.08	.05
<i>Regression Weights for Controls</i>												
Intelligence	Full	Less	More									
	.16 ^a	.28	.15									
Divergent Thinking	-.15	-.08	-.17									
Cynicism	.11	.16	.06									
Narcissism	.25 [*]	.16	.28 [*]									
<u>Professional Practices</u>												
Full Sample ^b ($R_1 = .15, R_2 = .24$)	-.03	-.11	-.19 ^a	.12	.07	-.09	.10	.10	.07	.10	.09	.08
Less Experienced ^c ($R_1 = .29, R_2 = .35$)	-.17	-.31 ^a	-.27	.06	.15	.14	.13	.20	.08	-.02	-.01	-.04
More Experienced ^d ($R_1 = .15, R_2 = .34$)	.05	.00	-.08	.14	.08	-.16	.10	.01	.04	.16	.11	.10
<i>Regression Weights for Controls</i>												
	Full	Less	More									

	Exposure to Unethical Events											
	Data Management			Study Conduct			Professional Practices			Business Practices		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Acceptability of Breaches												
Intelligence	-.07	-.09	-.03									
Divergent Thinking	-.11	.06	-.19									
Cynicism	.10	.19	-.08									
Narcissism	-.14	.02	-.22									
Business Practices												
Full Sample ^b ($R_1 = .20, R_2 = .33a$)	.08	.17 ^a	.20 ^a	.11	.05	.10	-.07	-.18 ^a	-.24 [*]	.08	.00	-.02
Less Experienced ^c ($R_1 = .34, R_2 = .48$)	-.17	-.26	-.20	.09	.26	.40 ^a	.11	.16	.04	-.16	-.21	-.20
More Experienced ^d ($R_1 = .40^{**}, R_2 = .44^*$)	.19 ^a	.38 ^{**}	.43 ^{**}	.11	.06	.07	-.12	-.38 ^{**}	-.39 ^{**}	.15	.05	-.07
Regression Weights for Controls												
Intelligence	.05	-.05	.09									
Divergent Thinking	-.17 ^a	-.08	-.13									
Cynicism	.06	-.02	-.02									
Narcissism	.24 [*]	.39 [*]	.17									

Note. r = correlation, β_1 = standardized regression weight with no controls, β_2 = standardized regression weight with controls, R_1 = multiple correlation with no controls, R_2 = multiple correlation with controls

**
 $p < .01$

*
 $p < .05$

^a
 $p < .10$

^b
 $n = 133$

^c
 $n = 49$

^d
 $n = 84$