Environmental Influences on Ethical Decision Making: Climate and Environmental Predictors of Research Integrity

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It is commonly held that early career experiences influence ethical behavior. One way early career experiences might operate is to influence the decisions people make when presented with problems that raise ethical concerns. To test this proposition, 102 first-year doctoral students were asked to complete a series of measures examining ethical decision making along with a series of measures examining environmental experiences and climate perceptions. Factoring of the environmental measure yielded five dimensions: professional leadership, poor coping, lack of rewards, limited competitive pressure, and poor career direction. Factoring of the climate inventory yielded four dimensions: equity, interpersonal conflict, occupational engagement, and work commitment. When these dimensions were used to predict performance on the ethical decision-making task, it was found that the environmental dimensions were better predictors than the climate dimensions. The implications of these findings for research on ethical conduct are discussed.

Keywords: ethical decision making, career experiences, environment, climate, research integrity

Few events in the sciences attract as much attention as violations of expectations for the appropriate conduct of research. In recent years, a number of well-publicized cases involving fraud, plagiarism, and death of human participants (Bechtel & Pearson, 1985; Kochan & Budd, 1992; Marshall, 1996) have led to questions...
about the integrity of investigators and the principles they are following in their work. Although few would dispute the "problematic" nature of these events, Steneck (2004) argued that scientific integrity may be undermined by a number of less dramatic but more pervasive behaviors, ranging from questionable data trimming to inappropriate allocation of authorship. In fact, these less dramatic forms of unethical behavior appear to be relatively common (Martinson, Anderson, & de Vries, 2005) and may represent a noteworthy threat to the integrity of the scientific enterprise.

The apparent frequency with which these less dramatic but more pervasive unethical behaviors are observed brings to fore a new question. What is the source of these behaviors? Although there is reason to suspect that characteristics of an individual, such as fear and narcissism, influence ethical conduct (Mumford & Helton, 2000), there is also reason to suspect that a number of other phenomena, such as underestimation of normative expectations (Pimple, 2002), work demands (Reall, Bailey, & Stoll, 1998), and environmental press (Sims & Keon, 1999), also influence ethical behavior. With this point in mind, the intent of the study presented here is to examine the influence of environmental experiences and climate perceptions on day-to-day ethical decision making by scientists during the early stages of their careers.

ETHICAL DECISION MAKING

A variety of criteria have been used to assess the propensity for ethical behavior by scientists. One approach that has been applied involves asking scientists to report exposure to unethical conduct by colleagues (e.g., Newman, McCoy, & Rhodes, 2000). Another approach has involved assessing ethical conduct with respect to violations of government guidelines (e.g., Davis & Riske, 2001). Although studies applying these and other potential criterion measures have value, they leave open a fundamental question. Exactly what decisions were made by the scientist that led to the occurrence of unethical behavior?

Recognition of the importance of ethical decision making has led a number of investigators to assess ethical conduct through measures explicitly intended to assess people's decisions or attributes of these decisions (e.g., Rest, Narváez, Bebeau, & Thoma, 1999). The logic underlying these decision-making studies is quite straightforward. Essentially, it is argued that engagement in unethical conduct depends on the choices people make when placed in situations where ethical concerns might be operating (Lovell, 2002; Miner & Petocz, 2003). The decision-making tasks applied in these studies, accordingly, present realistic decision situations where the individual is asked to select a preferred response, or responses, from a set of response options that vary with respect to the degree of ethical behavior. Peoples' choices are then used to provide an assessment of their ethical orientation. Although the idealized and decontextualized nature of these
decisions represents a limitation on generality, application of the method has become widespread in studies of ethics (Barnett & Vaicys, 2000; Eastman, Eastman, & Tolson, 2001; Forte, 2004; Mayo & Marks, 1990; Paolillo & Vitell, 2002) in part because of risk minimization and the direct measure of decision making provided by these measures.

Although studies applying ethical decision-making measures have met with some success, it is also clear that decision-making measures represent a domain-specific strategy for assessing the propensity for ethical behavior. Accordingly, effective application of these measures depends on careful specification of the kind of decisions to be examined. Recently, Helton-Fauth et al. (2003) reviewed the available literature bearing on ethical conduct in the sciences. This review led to the identification of four general, higher order dimensions reflecting decisions that involve ethical considerations: data management, study conduct, professional practices, and business practices. Within each of these four broad areas, 2 to 6 more specific dimensions were identified. A total of 17 specific dimensions examined behaviors such as data massaging, institutional review board practices, exploitation of staff or collaborators, and conflicts of interest. When these specific dimensions were evaluated with respect to relevant codes of scientific conduct (e.g., American Medical Association, American Institute for Biological Science, American Psychological Association), it was found that more than 80% of the relevant ethical behaviors could be accounted for by one or more of these dimensions. As a result, there is a reason to suspect that these dimensions might provide an appropriate framework for the development of ethical decision-making measures (Motowidlo, Dunnette, & Carter, 1990).

Although formulation of a taxonomy of ethical behavior provides a basis for the development of measures of ethical decision making, the broader question at hand, the environmental variables influencing these decisions, remains. Perhaps the most commonly applied strategy in the measurement of environmental influences may be found in studies of work and organizational climate. Climate measures present people with statements describing select characteristics of their work environment (James, James, & Ashe, 1990; Parker et al., 2003; Schneider & Reichers, 1983). For example, climate questions have been developed that ask, “Do people in your work group look forward to new assignments?” or “Will people who turn an assignment in late be punished?” In responding to these questions, people are asked to indicate the extent to which these events characterize their workplace. Thus, climate measures seek to assess people’s perceptions of, or beliefs about, select aspects of their environment.
A number of studies have sought to identify climate dimensions that might influence ethical decision making (e.g., Agarwal & Malloy, 1999; Hartman, Yrle, & Galle, 1999; Victor & Cullen, 1988). In one recent study along these lines, Peterson (2001) examined how ethical behavior was related to perceptions of egoism (e.g., self-interest, company profit, and efficiency), benevolence (e.g., friendship, team interest, and social responsibility), and principle (e.g., personal morality, rules, and law). He found that perceptions of an egotistic environment, for example, perceptions of self-interest, were positively related to self-reported unethical behaviors such as stealing, calling in sick, and expense account padding. Climate perceptions related to benevolence and principle, however, were found to be negatively related to self-reported unethical behaviors. Other studies by Forte (2004), Fritzsche (2000), and Sims and Keon (1999) have shown that climate perceptions are also related to ethical decision making, especially among younger professionals who use their perceptions of the normative social environment as guidelines for action.

Although there is reason to suspect that climate perceptions are related to both ethical behavior and ethical decision making, the relationship between climate and ethics may be quite complex. For example, climate variables correlated with ethical behavior and ethical decision making are also related to other variables, such as organizational commitment and job satisfaction (Barnett & Schubert, 2002; Koh & Boo, 2001; Schminke, Ambrose, & Neubaum, 2005). The effects of climate perceptions on behavior and decision making, moreover, may be moderated by a number of organizational-level variables (Morris, Schindehutte, Walton, & Allen, 2002) including organizational age (Neubaum, Mitchell, & Schminke, 2004), leadership (Sims & Brinkmann, 2002; Thomas, Schermerhorn, & Dienhart, 2004), and work group characteristics (VanSandt, 2003). Finally, certain aspects of climate, such as perceived support and challenging missions, have been found to contribute to effective performance on the part of scientists (Ekvall & Ryhammer, 1999; Hunter, Bedell, & Mumford, 2007). As a result, one could expect that certain aspects of climate would be positively related to ethical behavior and ethical decision making.

ENVIRONMENTAL EXPERIENCES

Climate perceptions, of course, do not arise in a vacuum. Instead, climate perceptions are held to develop as a function of people’s behavior and experiences in their environment. In fact, the available evidence indicates that people’s experiences, especially early career experiences, may have a particularly strong effect on their perceptions of the work environment (Muchinsky, 2004). These experiences, moreover, appear to have a rather complex set of effects on people’s development as scientists.
In one recent study along these lines, Mumford et al. (2005) content analyzed obituaries for 499 scientists working in the physical, life, health, and social sciences. This analysis revealed that exposure to select events such as mentoring (Zuckerman, 1977), intense educational experiences (Subotnik & Steiner, 1993), and laboratory quality (Dunbar, 1995) discriminated more successful from less successful scientists producing multiple correlations with ratings of creative performance in the .50s—even when relevant controls, such as years in the profession and age at time of death, were taken into account.

Not only does the available evidence indicate that environmental experiences influence career achievement in the sciences, it seems likely that exposure to certain experiences will also influence ethical behavior and ethical decision making. For example, Jasanoff (1993) conducted an “in-depth” qualitative analysis of prior cases of scientific misconduct. Analysis of these cases indicated that poor mentoring, production pressure, and commitment to a particular theoretical perspective all appeared to play a role in multiple cases of misconduct. In another study along these lines, Goldberg and Greenberg (1994) asked 1,500 professionals working in the biological, health, and social sciences to indicate whether they had observed ethical breeches such as fabricating and plagiarism. They then asked these professionals to indicate the presumed causes of the misconduct incidents. They found that competition, production pressure, and poor study design were commonly held to be causes of these breeches. Other experiences that appear tied to ethical behavior, and ethical decision making, include poor role modeling by supervisors (Gelman & Gibelman, 2002), disregard of standard laboratory procedures (Jansen & von Glinow, 1985), conflict with peer groups (Levenson, 1986), and ineffectual collegial exchange (Akre, Falkum, Hoftvedt, & Aasland, 1997).

The joint influence of climate and experiences on ethical conduct, however, broaches a final question. More specifically, how do climate perceptions and environmental experiences operate together in shaping ethical behavior and ethical decision making by scientists? One model proposes that environmental experiences lead to climate perceptions, with climate perceptions in turn leading to ethical decision making (Sims & Keon, 1999). In contrast to this model, however, one might argue that career experiences determine both climate perceptions and ethical decision making—although climate perceptions might still exert some unique effects on ethical decisions. In fact, this later model may be more likely to apply among younger scientists who are less strongly embedded in a professional network (Zuckerman, 1977).

**METHOD**

**Sample**

The sample used to examine the relationship of ethical decision making to climate and environmental experiences consisted of 102 first-year doctoral students at-
tending a large research university in the southwest. The 40 men and 60 women (2 did not designate) who agreed to participate in this study were recruited no earlier than 4 months after beginning work at the university and no longer than 9 months. Sample members were drawn from programs awarding doctoral degrees in the biological (28%), health (28%), and social (44%) sciences where independent research work is required for award of a terminal degree. Of the sample members, 64% were majority group members (European/Caucasian), 32% were minority group members (Asian, Hispanic, African, Middle Eastern, or Native American), and 4% did not indicate. A typical sample member was 27 years old and had completed 17 years of schooling prior to admission to the doctoral program. Although 59% of the sample was employed in nonresearch positions (such as teaching assistantships), 41% was employed in full-time research roles. All sample members, however, were actively engaged in research at one of the university’s laboratories.

General Procedures

The study presented here was conducted as part of a larger, federally funded initiative concerned with research integrity. The university provided names, department assignments, e-mail addresses, and telephone numbers for all doctoral students entering the university in 2005. This information provided the background needed for a multiple-stage recruitment effort. In the first stage, flyers announcing that the study was being conducted and that $100.00 would be paid for participation were placed in the mailboxes of 1st-year doctoral students in relevant biological, health, and social science departments. In the next stage, phone calls were made to each student, and up to three e-mails were sent recruiting the student to participate in the study. Overall, roughly 25% of those contacted agreed to participate.

In both telephone calls and e-mails it was noted that the study was concerned with research integrity. More specifically, the study was described as an investigation of social effects on the students’ educational experiences with integrity and problem solving. If a student agreed to participate in the study, he or she was asked to select a time and location where a battery of paper-and-pencil measures could be completed. At the time a student arrived to complete this battery of measures, he or she was again informed as to the nature of the study and asked to read and sign an informed consent form.

After students had completed the informed consent document they were asked to begin working through the measures. Initially, students participating in this study were asked to complete a background information form and a career experiences inventory in which they were asked a series of multiple-choice questions to indicate the nature of their experiences to date at the university. They were then asked to complete a climate inventory describing the laboratory in which they were currently conducting their research work. After completing the climate inventory,
participants completed two measures examining ethical decision making in the sciences. Next, they were asked to complete a battery of standard psychological tests examining cognitive ability and dispositional characteristics. In the final segment of this test session, participants completed an ethical decision making measure tailored to issues they might encounter in their day-to-day work. It is of note that these field-specific ethical decision-making measures were administered last as work-oriented, problem-solving measures to minimize potential demand characteristics. Participants were given 4 hr to complete the battery of measures. Pilot studies indicated that 4 hr was in fact sufficient time to complete all measures included in the battery without placing undue time pressure on participants.

Ethical Decision Making

The ethical decision-making measure participants completed provided the primary criterion variables in this study. This decision-making measure was developed to reflect ethical issues participants might encounter in their day-to-day work using a variation of the low-fidelity simulation approach recommended by Motowidlo et al. (1990). This measure, although tailored to work in biological, health, and social science fields, provided scores on the data management, study conduct, professional practices, and business practices dimensions identified by Helton-Fauth et al. (2003).

Development of this ethical decision-making measure, accordingly, began with Helton-Fauth et al.’s (2003) review of ethical codes of conduct in the biological, health, and social sciences. The review led to the identification of 17 constructs subsumed under the areas of data management, study conduct, professional practices, and business practices:

- Data management: data massaging and publication practices
- Study conduct: institutional review board, informed consent, confidentiality protection, protection of human participants, protection of animal subjects
- Professional practices: objectivity in evaluating work, recognition of expertise, awareness of professional commitment, protection of intellectual property, protection of public welfare and the environment, exploitation of staff or collaborators
- Business practices: conflict of interest, deceptive bid and contract practices, inappropriate use of physical resources, and inappropriate management practices

Evidence for the validity of the taxonomy in accounting for ethical principles articulated across various scientific fields has been provided by Helton-Fauth et al. (2003).
After identifying these dimensions, online Web sites applying to the biological, health, and social sciences (e.g., On-line Ethics Center for Engineering and Science, Office of Research Integrity, American Biological Association) were reviewed to identify scenarios, or case studies, that might be used to assess ethical decision making with respect to one or more of these dimensions. Overall, in each area of biological, health, and social sciences, 45 cases were identified that might be used as a basis for development of the decision-making measures. The particular cases selected for use in developing the scenarios to be applied in a given field were those that were relevant to day-to-day work, involved both technical and ethical decisions, and would be understandable and potentially challenging to both 1st-year doctoral students and professionals currently working in the field. A panel of three psychologists and a subject-matter expert in the biological, health, and social sciences then selected a subset of 10 to 15 cases in each professional area that covered a range of different events. After these cases had been selected, they were rewritten into a short general scenario, typically one to two paragraphs in length.

Once the scenarios had been formulated, the decision-making aspect of the measures was developed. Based on the general nature of the scenario, the panel of psychologists and the relevant subject-matter expert was asked to generate a list of 8 to 12 events that might occur in the general situation presented in the scenario. Half of these events were to have only technical implications, and the remaining half were to have implications for 1 of the 17 dimensions of ethical conduct identified by Helton-Fauth et al. (2003). The joint presentation of technical and ethical events was intended to minimize demand characteristics. Panel members were then asked to review the list of events and for each scenario to select 2 ethical events and 2 technical events for inclusion in the final measure. The following criteria guided the selection of these events: The events must be likely to occur in the scenario, and the events could be organized into a general sequence of events flowing from the scenario.

After the sequence of event statements had been generated by panel members, the panel was asked to generate potential actions that might be taken in response to an event. All response options generated for an ethical decision-making event were to be based on the particular dimension of ethical behavior under consideration. The response options generated were required to reflect actions that might resolve the problem, or issues, implicit in the event. Response options, however, were to differ with respect to ethical implications. Hence, for each event, 6 to 12 response options were to be generated in which one third of the options reflected unethical behavior, one third questionable behavior, and one third ethical behavior. The response options, and scoring of these response options, were reviewed by a panel of three senior psychologists, all involved with this study and familiar with the literature on ethical conduct, who suggested any necessary revisions with regard to response options and scoring.
On average, three events were formulated for each of the 17 ethical dimensions applying in the three fields under consideration. In responding to these events, participants were asked to read through the scenario. After they had read the scenario, participants were to assume the role of the primary actor in each event following a scenario. They were to select the two response options that they believed most likely would resolve the problem raised by the event. In scoring participants’ responses, response options reflecting high, moderate, and low ethical behavior received scores of 3, 2, and 1, respectively. The average score of all events subsumed under a dimension provided the basis for dimensional scoring. Dimensional scores were then aggregated to obtain overall ethical decision-making scores with respect to data management, study conduct, professional practices, and business practices. Table 1 provides an illustration of these ethical decision-making measures.

When dimensional scores were aggregated into the general dimensions of data management, study conduct, professional practices, and business practices, the resulting average split-half reliability estimate, an estimate used because the ethical decision-making measures represent a form of a cognitive test, was .74 in our sample. Some initial evidence bearing on the validity of these scales was provided by examination of their convergent and divergent validity within this sample. 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 ($r = .18$). Study conduct, however, was found to be more strongly related to business practices ($r = .53$) but less strongly related to data management ($r = .22$) and professional practices ($r = .35$). Some further evidence bearing on the validity of these measures was obtained through their correlations with the ability and personality measures. Here it was found that scores on all four dimensions were not strongly related to scales examining intelligence ($\tilde{r} = .19$), divergent thinking ($\tilde{r} = .18$), and social desirability ($\tilde{r} = -.03$). Stronger relationships, however, were obtained with a measure of cynicism ($\tilde{r} = -.26$).

**Climate**

Development of the climate inventory began with a review of prior studies examining either ethical climate (e.g., Argandona, 1999; Barnett & Schubert, 2002; Hartman et al., 1999; Victor & Cullen, 1988; Viader-Cohen, 1998) or aspects of climate related to performance in research and development organizations (e.g., Amabile, Conti, Coon, Lazerby, & Herron, 1996; Ekvall & Ryhammer, 1999; West, 2002; Witt & Beorkrem, 1999). Based on the literature review, 14 dimensions were identified that might be related to ethical behavior and ethical decision making in scientific organizations: procedural justice, distributive justice, social context, individual caring, law and code, trust, freedom, lack of conflict, debate, risk taking, humor, idea time, idea support, and challenge. Prior studies were then
used to formulate operational definitions for each of these dimensions appropriate for research organizations.

These operational definitions were then presented to a panel of four doctoral students, investigators on this project, in industrial and organizational psychology. Panel members were asked to apply the operational definition developed for each climate variable to generate 5 to 10 questions that might be used to measure this dimension. In generating these questions panel members were told that viable climate questions must capture perceptions of behavior in the workplace; reflect
norms, expectations, or typical patterns of social interactions; and reflect behaviors or events that might be observed by doctoral students working in research laboratories. These items were framed as statements to which respondents would indicate their level of agreement, such as “People here do not steal other’s ideas” and “Meeting social responsibilities is seen as a critical goal.” Prior to starting work on generating these statements, panel members received 20 hr of instruction from the senior psychologists involved in the project concerning the procedures to be applied in generating climate questions.

The questions generated by panel members were reviewed by three senior psychologists, all of whom were familiar with the climate literature. Questions generated to assess a given climate dimension were reviewed for construct coverage, concreteness with respect to relevant behaviors, potential for socially desirable responding, objectivity, and clarity. Questions failing to meet one or more of these criteria were either revised or eliminated. The pool of revised questions was then reviewed by three senior psychologists who selected the best 75 questions, between 5 and 8 for each dimension.

All questions presented in the climate inventory were written in the present tense to describe participants’ current work group and work environment. Each question presented either a short positive or a short negative statement describing the work environment. Participants were asked to indicate the frequency with which these events occurred in their workplace using a 5-point Likert scale from 1 (never) to 5 (always). Table 2 provides an illustrative set of climate questions developed for the 14 dimensions under consideration.

Environmental Experiences

In contrast to the climate questions, which examined perceptions of the workplace, the environmental experiences questions examined events that might have hap-

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Examples of Climate Questions</th>
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<tbody>
<tr>
<td>People here are adequately rewarded for their work or research.</td>
<td></td>
</tr>
<tr>
<td>Distribution of rewards and credits is fair here.</td>
<td></td>
</tr>
<tr>
<td>The processes by which decisions are made about credit allocation (e.g., authorship, paper or conference presentations, grades) are fair here.</td>
<td></td>
</tr>
<tr>
<td>The work environment here is characterized by infighting.</td>
<td></td>
</tr>
<tr>
<td>There are power and territory struggles here.</td>
<td></td>
</tr>
<tr>
<td>People here do not listen to each other in encouraging new initiatives.</td>
<td></td>
</tr>
<tr>
<td>People here exhibit a sense of humor.</td>
<td></td>
</tr>
<tr>
<td>People here are given the right type and amount of resources they need to do their work.</td>
<td></td>
</tr>
<tr>
<td>A wide variety of viewpoints are expressed here.</td>
<td></td>
</tr>
<tr>
<td>People here are given the autonomy and resources needed to define much of their own work.</td>
<td></td>
</tr>
<tr>
<td>People here are expected to honor all agreements and show respect for others.</td>
<td></td>
</tr>
<tr>
<td>Role models here set an example by sticking to their commitments and agreements.</td>
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</table>
pened to participants during their first few months at the university. These environmental influences questions were developed in accordance with the recommendations of Mumford, Costanza, Connelly, and Johnson (1996) and Mumford, Stokes, and Owens (1990) for the construction of background data or life history questions. Accordingly, development of these items began with a review of the literature to identify dimensions of experience that might influence ethical behavior and scientific performance at the individual level (e.g., Arlow & Ulrich, 1980; Harrison & Feit, 1999; Mullins & Sherman, 1993), the group level (e.g., Rallapalli, Vitell, & Szeinbach, 2000; Schminke & Wells, 1999; Trevino & Youngblood, 1990), and the organizational level (e.g., Kim, Emmett, & Sikula, 2001; Verschoor, 1998; Weaver, Trevino, & Cochran, 1999). These experiential dimensions included stress, individual competence, intrinsically interesting work, and competitive pressure at the individual level; leadership, group cohesion, and normlessness at the group level; and accountability, munificence, and professional solidarity at the organizational level. For each of the 43 experiential dimensions identified across these three levels, operational definitions were formulated indicating how these dimensions would be expressed in a scientific work environment.

Development of the environmental questions intended to provide measures of these dimensions was carried out by four doctoral students in industrial and organizational psychology. Prior to beginning generation of these background data questions, panel members were provided with 40 hr of training concerning the development of background data questions by two senior psychologists; this training focused on the development of environmental experience questions. Following training, these four doctoral students were asked to generate 10 to 15 questions that might reflect experiences occurring early in students’ graduate careers bearing on a dimension. These questions might ask, “How often have you had to wait for others in your laboratory to give you material you needed to complete your part of a process?” or “How often have you wondered if your major professor approved or disapproved of work you had done?” Responses to these questions, which could be scored along a 5-point continuum, were formulated by panel members at the time they generated questions accompanied, as necessary, by a “not applicable” response option (Mumford et al., 1990).

The initial set of questions developed by panel members was then presented to a review panel of three senior psychologists involved in this study. These psychologists reviewed item content for construct relevance, construct coverage, relevance to the experiences of the population, explicit situational focus, inappropriate potential to induce socially desirable responding, offensiveness, and invasion of privacy. Any questions that failed to meet one of these review criteria were either dropped or edited. The 414 questions that survived the selection process, 5 to 18 per dimension, were presented to participants in a random order to minimize construct guessing—as was the case in administering the climate questions. Table 3 provides four illustrative environmental questions developed to measure individual-, group-, and organizational-level variables.
## TABLE 3
Examples of Environmental Questions

<table>
<thead>
<tr>
<th>Individual</th>
<th>Group</th>
<th>Organizational</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often have you had to turn in two or more class projects in one week?</td>
<td>1. How often has your group challenged itself to develop unique research ideas or products?</td>
<td>1. How often has your research been delayed because the library did not have the resources you needed?</td>
</tr>
<tr>
<td>2. How often have you established set work schedules for undergraduate research assistants who are working on one or more of your projects?</td>
<td>2. How often has your group identified the merits of each individual’s work?</td>
<td>2. To what extent have departmental funds been available to acquire new technological resources (e.g., computers, software, other equipment)?</td>
</tr>
<tr>
<td>3. How often have you had to reschedule meeting times in order to complete work before a meeting?</td>
<td>3. To what extent have group members talked about guidelines for conducting research?</td>
<td>3. How often have the members of your lab finished their theses/dissertation studies on schedule?</td>
</tr>
<tr>
<td>4. How many times have you had to cancel meetings or miss classes in order to meet a deadline?</td>
<td>4. To what extent do group members contribute thoughtful ideas in lab meetings?</td>
<td>4. To what extent does department literature (e.g., handbooks, policies) stress the importance of ethical standards?</td>
</tr>
</tbody>
</table>
Analysis of the data gathered using the environmental experiences, climate, and ethical decision-making measures occurred in two stages. Initially an oblique factor analysis was conducted to provide dimensions capable of summarizing people’s responses to the environmental experience and climate questions. Based on the recommendations of Schoenfeldt and Mendoza (1994), responses to the background data questions were rationally scaled prior to factoring. The climate questions, however, were factored without prior scaling. The environmental and climate dimensions resulting from these initial analyses then provided the predictor set used in the next set of analyses.

In the second stage of analysis, the ability of the environmental and climate factors to account for ethical decision making was examined. Initially, scores on the four decision-making dimensions were correlated with scores on the environmental and climate factors. In the next set of analyses, a series of three partial least-squares regression analyses were conducted in which each ethical decision-making criterion measure was regressed on the environmental factors alone, the climate factors alone, and the climate factors followed by the environmental factors. It was anticipated that these analyses would indicate the unique effects exerted by environmental experiences and climate perceptions on ethical decision making.

RESULTS

Factors

Climate factors. Table 4 presents the results obtained from factoring the climate questions. Inspection of the scree plot, indicating the percentage of variance accounted for by each factor, suggested that either a four- or six-factor solution should be retained. Examination of the cumulative variance accounted for by these two potential factor solutions and the interpretability of the factors indicated that the four factor solution should be retained.

The first factor extracted in this analysis accounted for 27.85% of the variance. This factor produced an internal consistency coefficient (Cronbach’s alpha) of .95 as estimated using those questions yielding loadings above .40. This first factor was labeled equity because the majority of the questions yielding sizeable loadings were concerned with the allocation of rewards and resources and the procedures by which these rewards and resources were administered. Thus, questions bearing on whether people were rewarded ($r = .87$), they saw administration of awards as fair ($r = .85$), and fair processes were used in allocating credit ($r = .76$) all produced sizable loadings on this dimension.
The second factor obtained in this analysis accounted for 4.87% of the variance in responses to the climate questions, with questions yielding loadings above .40 producing an internal consistency of .84. The questions yielding sizeable loadings on this factor indicated that the work environment was characterized by infighting \( (r = .80) \), there were territory and power struggles in the laboratory \( (r = .70) \), and people working in the laboratory did not listen to each other \( (r = .69) \). Based on the distinct social conflict reflected in the questions yielding sizeable loadings, this second factor was labeled \textit{interpersonal conflict}.

The third factor to emerge in this analysis accounted for 3.91% of the variance, with the climate questions yielding loadings above .40 producing an internal consistency coefficient of .91. The nature of the questions yielding sizeable loadings on this dimension indicated that people were characterized as enjoying their work. Specifically, people exhibited a sense of humor \( (r = .76) \), had fun at work \( (r = .74) \),
a wide variety of viewpoints were expressed \((r = .70)\), and people discussed opposing perspectives on work problems \((r = .69)\). As a result of these loadings, this third factor was labeled *occupational engagement*.

The fourth and final factor identified in examining the climate questions accounted for 2.84% of the variance, with the items producing sizeable loadings yielding an internal consistency of .80. The climate questions producing sizable loadings indicated that there was a high degree of commitment to laboratory goals \((r = .73)\), people could request needed resources \((r = .61)\), people were expected to honor agreements \((r = .55)\), role models stressed organizational commitment \((r = .51)\), and people hoped their work would contribute to the greater good \((r = .51)\). This pattern of loadings suggests that this final climate dimension captured *work commitment*. Factor scores from this analysis were used as the climate predictors in subsequent analyses.

**Environmental experience factors.** Table 5 presents the results obtained from factoring of the environmental experiences questions following initial scaling of question responses. Examination of the scree plot indicated that either a five- or an eight-factor solution might be retained given the changes observed in variance accounted for. However, examination of the loadings of the dimensions on these factors indicated that the five-factor solution should be retained.

The first factor extracted in this analysis accounted for 36.90% of the variance. The internal consistency coefficient obtained for questions producing loadings above .40 was .95. As may be seen, a number of dimensions concerned with the behavior of the laboratory leader, or major professor, produced sizeable loadings on this dimension, including leader initiating structure \((r = .85)\), leader vision \((r = .84)\), leader direction of group process \((r = .79)\), leader intellectual stimulation \((r = .77)\), leader individual consideration \((r = .75)\), and leader expertise \((r = .74)\). In addition, prosocial norms \((r = .85)\), quality of group performance \((r = .82)\), expertise of group members \((r = .81)\), group trust \((r = .73)\), production pressure \((r = .67)\), and a lack of normlessness \((r = -.75)\) also produced sizeable loadings indicating that this factor should be labeled *professional leadership*.

The second factor extracted in analysis of the environmental experience questions accounted for 11.02% of the variance. The questions yielding loadings above .40 on this factor produced an internal consistency coefficient of .87. More centrally, the dimensions yielding sizable loadings on this factor included alienation \((r = .74)\), feedback indicating a lack of competence \((r = .74)\), stress \((r = .71)\), a negative reward structure \((r = .71)\), feedback ambiguity \((r = .69)\), and negative relationships with peer group members \((r = .68)\). As a result, this dimension indicated *poor coping*—either as a result of individual behavior or people’s interactions with their work group.
### TABLE 5
Factor Analysis Results for Environmental Measure

<table>
<thead>
<tr>
<th>Professional Leadership (36.90%; ( r_{tt} = .95 ))</th>
<th>Poor Coping (11.02%; ( r_{tt} = .87 ))</th>
<th>Lack of Rewards (4.30%; ( r_{tt} = .60 ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Initiating structure .85</td>
<td>1. Alienation .74</td>
<td>1. Long time for rewards -.69</td>
</tr>
<tr>
<td>2. Prosocial norms .85</td>
<td>2. Incompetence .74</td>
<td>2. Negative professional role models .59</td>
</tr>
<tr>
<td>3. Leader vision .84</td>
<td>3. Stress .71</td>
<td>3. Positive reward structure -.57</td>
</tr>
<tr>
<td>4. Quality of group performance .82</td>
<td>4. Negative reward structure .71</td>
<td>4. Leader individual consideration -.55</td>
</tr>
<tr>
<td>5. Expertise of group members .81</td>
<td>5. Feedback ambiguity .69</td>
<td>5. Leader vision -.50</td>
</tr>
<tr>
<td>6. Direction of process .79</td>
<td>6. Negative peer group .68</td>
<td>6. Professional solidarity -.43</td>
</tr>
<tr>
<td>7. Leader intellectual stimulation .77</td>
<td>7. Intrinsic work experience .61</td>
<td></td>
</tr>
<tr>
<td>8. Normlessness -.75</td>
<td>8. Competitive pressure .61</td>
<td></td>
</tr>
<tr>
<td>9. Leader individual consideration .75</td>
<td>9. Production pressure .49</td>
<td></td>
</tr>
<tr>
<td>10. Leader expertise .74</td>
<td>10. Turbulence .42</td>
<td></td>
</tr>
<tr>
<td>11. Group trust .73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Production pressure .67</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Limited Competitive Pressure (3.08%; ( r_{tt} = .86 ))</th>
<th>Poor Career Direction (2.44%; ( r_{tt} = .74 ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unethical norms .83</td>
<td>1. Positive reward structure -.70</td>
</tr>
<tr>
<td>2. Personalized competitive pressure -.81</td>
<td>2. Lack of situational control .60</td>
</tr>
<tr>
<td>3. Group conflict -.68</td>
<td>3. Integration of group -.59</td>
</tr>
<tr>
<td>4. Production pressure -.63</td>
<td>4. Quality of group performance -.59</td>
</tr>
<tr>
<td>5. Alienation .51</td>
<td>5. Competitive pressure -.58</td>
</tr>
<tr>
<td>6. Negative peer group -.50</td>
<td>6. Production pressure -.53</td>
</tr>
<tr>
<td>7. Leader intellectual stimulation -.49</td>
<td>7. Anomie .49</td>
</tr>
<tr>
<td></td>
<td>8. Feedback specificity -.47</td>
</tr>
<tr>
<td></td>
<td>9. Leader vision -.47</td>
</tr>
</tbody>
</table>
The third factor extracted in this analysis accounted for 4.30% of the variance. Questions yielding loadings above .40 resulted in an internal consistency coefficient of .60. The dimensions yielding sizable loadings included a long time frame for rewards \((r = -0.69)\), positive rewards \((r = -0.57)\), negative professional role models \((r = 0.59)\), and consideration from these role models \((r = -0.55)\). These loadings indicated that this dimension reflected a lack of rewards. The fourth dimension extracted in this analysis accounted for 3.08% of the variance, producing an internal consistency coefficient of .86. It was found that this dimension produced a sizable positive loading \((r = 0.83)\), whereas the personalized competitive pressure \((r = -0.81)\), group conflict \((r = -0.68)\), and production pressure \((r = -0.63)\) dimensions produced sizable negative loadings. These sizable negative loadings, combined with the fact that application of inappropriate norms is often associated with group disruption, led this factor to be labeled limited competitive pressure.

The fifth and final factor obtained in the analysis of the environmental variables accounted for 2.44% of the variance producing an internal consistency coefficient .74 when questions yielding loadings above .40 were examined. The dimensions producing sizeable loadings indicated the lack of positive reward structure \((r = 0.70)\), a lack of situation control \((r = 0.60)\), poor integration into the work group \((r = 0.59)\), low quality of group performance \((r = 0.59)\), limited competitive pressure \((r = 0.58)\), limited production pressure \((r = 0.53)\), feelings of anomie \((r = 0.49)\), a lack of specific feedback \((r = 0.47)\), and a lack of leader vision \((r = 0.47)\). Because these dimensions suggested poor, or inadequate, direction of the group vis-à-vis the individual this factor was poor career direction. Factor scores from this analysis were used as the environmental experiences predictors in subsequent analyses.

**Correlations**

*Climate and environmental experience correlations.* Table 6 presents the correlations among the various factor scales as well as their correlations with scores on the four ethical decision-making dimensions involving data management, study conduct, professional practices, and business practices. Broadly speaking, the correlations observed among the factors provide some evidence for the meaningfulness of the factor solutions. For example, the climate dimension, equity, was found to exhibit moderate positive relationships with occupational engagement \((r = 0.40)\) and work commitment \((r = 0.28)\) but a negative relationship with interpersonal conflict \((r = -0.20)\). Similarly, neither the negative relationship observed between interpersonal conflict and occupational engagement \((r = -0.21)\) nor the positive correlation observed between occupational engagement and work commitment \((r = 0.22)\) is especially surprising.

Not only did the correlations observed among the climate factors provide some evidence for their construct validity, the correlations observed among the environmental experience factors also provided some evidence bearing on their
TABLE 6

Correlations of Environmental Experiences and Climate Dimensions

| Items                  | Men          |          | Women         |          | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|-----------------------|--------------|----------|---------------|----------|----|----|----|----|----|----|----|----|----|----|----|----|
| 1. Equity             | .07 .84      |          | -.06 1.09     | 1.0      | -.20* | .40* | .28* | .32* | -.01 | -.38* | .20* | -.24* | .08 | .15 | .12 | -.03 |
| 2. Interpersonal conflict | -.03 .99    |          | .01 .92      | 1.0      | -.21* | .07  | -.03 | .43* | .14  | -.40* | -.14 | -.16 | -.07 | -.26* | -.24* |
| 3. Occupational engagement | -.12 .82    |          | .11 1.02     | 1.0      | .22* | .31* | -.13 | -.11 | .14  | -.15 | .15  | .10  | .21* | -.09 |
| 4. Work commitment    | .03 .85      |          | -.07 .96     | 1.0      | .14  | -.08 | -.15 | .07  | -.05 | .06  | .22* | .12  | .18  |
| 5. Professional leadership | -.03 1.09   |          | -.02 .95     | 1.0      | .30* | -.30* | -.31* | -.37* | .07  | -.07 | .11  | -.18 |
| 6. Poor coping        | -.07 .75     |          | .08 1.08     | 1.0      | .02  | -.48* | -.25* | -.27* | -.12 | -.20* | -.20* |
| 7. Lack of rewards    | -.31 .76     |          | .17 1.07     | 1.0      | .00  | .16  | -.21* | -.04 | -.36* | .03  |
| 8. Limited competitive Pressure | .02 1.01    |          | -.02 .93     | 1.0      | .23* | .19* | .21* | .24* | .22* |
| 9. Poor career direction | -.09 .98    |          | .11 1.11     | 1.0      | -.01 | .17  | .06  | .30* |
| 10. Data management   | 2.33 .20     |          | 2.32 .26     | 1.0      | .22* | .57* | .17  |
| 11. Study conduct     | 2.25 .33     |          | 2.33 .22     | 1.0      | .34* | .52* |
| 12. Professional practices | 2.27 .22   |          | 2.32 .20     | 1.0      | .22* |
| 13. Business practices | 2.26 .22     |          | 2.36 .30     | 1.0      | .22* |

*p < .05.
validity. For example, the professional leadership dimension was found to be negatively related to lack of rewards \((r = -0.30)\), limited competitive pressure \((r = -0.31)\), and poor career direction \((r = -0.37)\). However, the greater demands made on entering doctoral students in stronger laboratories led to a positive correlation between professional leadership and poor coping \((r = 0.30)\). Similarly, it was not surprising that poor coping was negatively related to limited competitive pressure \((r = -0.48)\) given the stress effects induced by competition.

Some additional evidence bearing on the meaningfulness of these factors is provided by the correlations observed among the climate and environmental factors. As one might expect, equity was positively related to professional leadership \((r = 0.32)\) and limited competitive pressure \((r = 0.20)\) but negatively related to lack of rewards \((r = -0.38)\) and poor career direction \((r = -0.24)\). Interpersonal conflict, as might be expected, was positively related to poor coping \((r = 0.43)\) but negatively related to limited competitive pressure \((r = -0.40)\). Although these relationships appear meaningful, generally, the environmental and climate factors did not evidence strong relationships, suggesting that they reflected different types of influences on ethical decision making.

**Correlations with ethical decision making.** Table 6 also presents the correlations of the climate and environmental measures with the ethical decision-making measures. With respect to the climate measures, it was found that interpersonal conflict among entering doctoral students was negatively related to ethical decision making with respect to both professional practices \((r = -0.26)\) and business practices \((r = -0.24)\). Apparently, an early climate laden with conflict tends to lead people to make unethical decisions in interactions with others. In contrast, occupational engagement was found to be positively related to ethical decisions involving professional practices \((r = 0.21)\)—a finding suggesting that engagement with others may lead to prosocial professional behavior. Finally, as might be expected, work commitment was positively related to ethical decisions about study conduct \((r = 0.22)\). Thus, doctoral students entering an environment they perceived as being committed to the work were more likely to make ethical decisions.

The correlations between the environmental experience measures and ethical decision making are also presented in Table 6. As may be seen, poor coping was negatively related to ethical decisions about data management \((r = -0.27)\), professional practices \((r = -0.20)\), and business practices \((r = -0.20)\). Apparently, doctoral students who are having difficulty adjusting to the demands of graduate education make poor decisions. In addition, lack of rewards was found to be negatively related to ethical decisions about data management \((r = -0.21)\) and ethical decisions about professional practices \((r = -0.36)\). These findings, of course, suggest that young graduate students might take actions to bring about rewards and reinforcements, even unethical actions, when these rewards and reinforcements are not provided by the work environment.
Although these findings seem reasonable, it should also be noted that limited competitive pressure proved positively related to ethical decision making. More specifically, limited competitive pressure was positively related to ethical decisions with regard data management \((r = .19)\), study conduct \((r = .21)\), professional practices \((r = .24)\), and business practices \((r = .22)\). Apparently, undue competitive pressure, when placed on people lacking requisite skills, can lead to unethical decision making across a number of domains. In addition, it was found that poor career direction was positively related to ethical decision making with respect to business practices \((r = .30)\), a finding that may reflect the broader effects of a lack of direction.

Regression Analyses

The results obtained in the regression analyses are presented in Table 7. As may be seen, when scores on the ethical decision-making criteria were regressed on the climate factors, the average multiple correlation was \(.27\). However, significant \((p < .05)\) multiple correlations were obtained only for ethical decisions involving professional practices \((R = .31)\) and business practices \((R = .37)\). In both cases, significant \((p < .05)\) regression weights were produced by the interpersonal conflict factor, which were \(-.22\) and \(-.29\) for professional practices and business practices, respectively. Again, it appears that conflict in the climate of a laboratory may vis-à-vis generalization led to unethical decisions involving others. In addition, in the case of business practices, work commitment was found to be positively related to ethical decisions \((β = .24)\). This result, given the correlational data presented earlier, may, however, reflect the operation of a suppressor effect.

When the ethical decision-making measures were regressed on the environmental experience factors, a larger average multiple correlation of \(.36\) was obtained. Three of the four ethical decision-making criteria produced significant multiple correlations—more specifically, decisions involving data management \((R = .37)\), professional practices \((R = .47)\), and business practices \((R = .33)\). In the case of data management, a significant \((p < .05)\) regression weight was produced by poor coping \((β = –.28)\), a finding suggesting that difficulty in adaptation may lead to poor decision making with regard to data management. In the case of professional practices, a significant \((p < .05)\) regression weight was produced by lack of rewards \((β = –.34)\). Apparently, lack of rewards may, at least among entry-level doctoral students, be associated with poor decisions regarding professional behavior. Finally, for business practices a significant \((p < .05)\) regression weight was produced by poor career direction \((β = .25)\). This finding, again, may reflect the failure of graduate school experiences to influence business decisions when overall direction was weak.

When the experience factors and climate factors were used in predicting the four ethical decision-making criteria, the average multiple correlation increased to
### TABLE 7
Regression of Ethical Decision Making Measure on Climate and Environmental Scales

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</tr>
</thead>
<tbody>
<tr>
<td>1. Equity</td>
<td>−.06</td>
<td>.07</td>
<td>−.02</td>
<td>−.09</td>
<td>1. Professional leadership</td>
<td>.12</td>
<td>.00</td>
<td>.14</td>
<td>−.02</td>
</tr>
<tr>
<td>2. Interpersonal conflict</td>
<td>−.13</td>
<td>−.03</td>
<td>−.22*</td>
<td>−.29*</td>
<td>2. Poor coping</td>
<td>−.28*</td>
<td>.01</td>
<td>−.12</td>
<td>−.05</td>
</tr>
<tr>
<td>3. Occupational engagement</td>
<td>.11</td>
<td>.01</td>
<td>.14</td>
<td>.19</td>
<td>3. Lack of rewards</td>
<td>−.16</td>
<td>−.13</td>
<td>−.34*</td>
<td>−.03</td>
</tr>
<tr>
<td>4. Work commitment</td>
<td>.02</td>
<td>.19</td>
<td>.07</td>
<td>.24*</td>
<td>4. Limited competitive pressure</td>
<td>.09</td>
<td>−.16</td>
<td>.18</td>
<td>.10</td>
</tr>
<tr>
<td>Overall multiple correlation</td>
<td>.20</td>
<td>.24</td>
<td>.31*</td>
<td>.37*</td>
<td>5. Poor career direction</td>
<td>.04</td>
<td>.16</td>
<td>.11</td>
<td>.25*</td>
</tr>
<tr>
<td>Overall multiple correlation</td>
<td>.37*</td>
<td>.27</td>
<td>.47*</td>
<td>.33*</td>
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</tr>
<tr>
<td>Block 1</td>
<td>1. Equity</td>
<td>.08</td>
<td>.07</td>
<td>-.16</td>
<td>-.02</td>
<td>2. Interpersonal conflict</td>
<td>.02</td>
<td>.05</td>
<td>-.06</td>
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</tr>
<tr>
<td>Block 2</td>
<td>5. Professional leadership</td>
<td>.14</td>
<td>-.05</td>
<td>.13</td>
<td>-.02</td>
<td>6. Poor coping</td>
<td>-.33*</td>
<td>.00</td>
<td>-.18</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>9. Poor career direction</td>
<td>-.07</td>
<td>.16</td>
<td>.04</td>
</tr>
</tbody>
</table>

*p < .05.
.42 with the data management, professional practices, and business practices dimensions producing significant \( p < .05 \) multiple correlations of .40, .51, and .43. Notably, however, only one factor, work commitment (\( \beta = .23 \)) produced a significant \( p < .05 \) regression weight for business practices. Addition of the experience factors resulted in significant \( p < .05 \) gains in prediction with respect to data management, due to poor coping (\( \beta = -.33 \)), and with respect to professional practices, due to lack of rewards (\( \beta = -.35 \)). Apparently, at least with regard to data and professional practices, environmental variables exert unique influences on ethical decision making that cannot be accounted for by climate.

**DISCUSSION**

Before turning to the broader conclusions flowing from this study, certain limitations should be noted. To begin, it should be recognized that we have, in our study, examined the influence of climate perceptions and environmental experiences on ethical decision making in a somewhat unique sample—specifically, 1st-year doctoral students in the biological, health, and social sciences. Although the relationship of climate and environment are of particular interest in this “early career” stage, caution is clearly called for in extending our findings to professional populations who have greater expertise.

Along somewhat different lines, it should also be recognized that the results obtained in this study have focused solely on ethical decision making. Although the decision-making measures applied in this study allowed multiple types of ethical decisions to be examined in accordance with the model proposed by Helton-Fauth et al. (2003), caution is called for in generalizing findings from studies of ethical decision making to actual incidents of ethical behavior in “real-world” settings. Moreover, it should be recognized that the ethical decision making being examined in this study focused on generic forms of ethical decisions applying across a variety of fields (Csikszentmihalyi, 1999). Accordingly, the question remains as to how climate and environmental factors might be related to more field-specific forms of ethical decision making.

Finally, it should be recognized that both climate perceptions and environmental experiences examined in this study were those appropriate to the sample at hand. As a result, it is possible, and indeed likely, that a different set of climate and experiential factors might emerge in other populations. Moreover, it seems likely that shifts might be observed in how climate variables and environmental experiences are related to ethical decision making. Even bearing these caveats in mind, however, we believe the results obtained in our study have some noteworthy implications for understanding how the situation in which people find themselves influences ethical decision making.
Perhaps the most clear-cut conclusion to emerge from studies of ethics is that climate makes a difference with regard to people’s ethical decision making (Forte, 2004; Fritzsche, 2000; Sims & Keon, 1999). In fact, the results obtained in our study indicate that climate perceptions are associated with ethical decision making among 1st-year doctoral students. In our study, four general dimensions of climate were identified—equity, interpersonal conflict, occupational engagement, and work commitment. Although occupational engagement and work commitment were positively related to certain forms of ethical decision making, specifically professional practices for occupational engagement and study conduct for work commitment, only one climate dimension exerted strong, consistent relations with ethical decision making. More specifically, in both the correlation and regression analyses that focused strictly on climate, perceptions of interpersonal conflict were found to be negatively related to ethical decisions by young scientists with regard to professional practices and business practices.

The influence of interpersonal conflict on these kinds of ethical decisions might be accounted for by a variety of models. For example, these negative associations may reflect generalization of work environment beliefs to appraisals of other events calling for social interaction. It is possible, however, that conflict in the immediate work environment may, at least among younger students, be associated to the formation of mental models for interpreting other’s intentions. Mental models associated with a negative view of others may lead to unethical decisions as a self-protective mechanism (Mumford, 2006). Finally, it is possible this conflict might arise from more basic personality variables giving rise to both conflict and unethical decisions. We hope that future research will allow a more detailed examination of specific causal mechanisms underlying these effects. In fact, such research, especially research examining maintenance or diminishment of these effects over time, may prove of practical value by identifying interventions likely to minimize conflict among entry-level doctoral students.

Although interpersonal conflict was related to unethical decision making with respect to professional and business practices, the effects of climate perceptions on ethical decisions were not as large as the associations emerging from specific environmental experiences of 1st-year doctoral students. In our factoring of the environmental experiences inventory, five factors emerged—professional leadership, poor coping, lack of rewards, limited competitive pressure, and poor career direction. These environmental experience dimensions, in fact, produced more significant correlations and substantially larger multiple correlations with the four ethical decision-making measures than the climate dimensions. Moreover, they added to the prediction resulting from the climate factors for two of the four ethical decision-making dimensions. Thus it appears, at least among 1st-year doctoral students, that experience exerts stronger effects on ethical decision making than the climate of the work group.
In fact, the focus of 1st-year doctoral students on adapting to a professional field and learning basic operations within this field, may lead them to be particularly sensitive to environmental influences with respect to subsequent ethical decision making. Although the importance of early career experiences and subsequent ethical decisions is not surprising (e.g., Gelman & Gibelman, 2002; Mumford et al., 2005), the specific nature of the dimensions giving rise to these effects is of greater interest.

The correlational analysis indicated that limited competitive pressure was positively related to ethical decision making across all four types of decisions. Taken at face value, this pattern of findings suggests that ethical decision making might be improved if people are not placed under excessive or undue pressure in the early phases of their career. In fact, excessive competitive pressure may lead to the acquisition of beliefs likely to engender the potential for unethical decisions throughout an individual’s career. By the same token, however, science is competitive (Feist & Gorman, 1998). Thus what may be required is effective management of competitive pressure vis-à-vis the individual’s readiness and capabilities.

In this regard, however, it is important to bear in mind the point that limited competitive pressure did not produce significant prediction of ethical decision making in the regression analyses. When relationships among the environmental experience factors were taken into account, poor coping was found to be strongly negatively related to ethical decisions involving data management, whereas lack of rewards was found to be strongly negatively related to ethical decisions involving professional practices. Thus competitive pressure per se may not be the critical influence on ethical decisions, but, instead, poor coping and a lack of rewards. Apparently, environmental experiences that disrupt individual performance tends to be associated in unethical decisions with regard to data management, whereas a lack of rewards for individuals, vis-à-vis frustration mechanisms, is related to unethical decisions with respect to professional practices.

More broadly, the findings sketched out previously, although complicated, do paint a coherent picture of the environmental experiences and climate influences that could give rise to unethical decisions on the part of entering doctoral students. Poor coping may not only give rise to unethical decisions, the resulting performance decrements will result in a lack of rewards. A lack of rewards, and poor coping, will in turn give rise to perceptions of interpersonal conflict which, in turn, will lead to unethical decisions. This model, of course, should be explicitly tested in subsequent efforts. Nonetheless, it suggests that maladaptation to the professional environment may be an important source of unethical decisions and, presumably, unethical behavior due to both direct effects and indirect effects through lack of rewards and perceptions of conflict.

Although the associations between poor coping, lack of rewards, perceptions of conflict, and ethical decision making can be readily explained, they have note-
worthy implications with regard to the management of 1st-year doctoral students. More specifically, major professors should attempt to minimize alienation, stress, and feelings of incompetence while developing a strong group in which feedback is provided in unambiguous terms. Moreover, major professors, or supervisors, should provide entering doctoral students with positive, albeit appropriate, feedback that stresses the value of the professional work being done. In fact, interventions that seek to provide the directors of entering doctoral students with the competencies needed to manage students in this fashion may prove of substantial value in enhancing ethical decision making. We hope that this study will provide an impetus for future research along these lines.

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