

Departmental Climate and Student Experiences in Graduate Geography Programs

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Abstract This study explores how graduate students enrolled in M.A./M.S. and Ph.D. geography programs perceive the social and academic climate of their departments. A second objective is to understand how these students self-assess their own professional abilities, values, and goals, and whether these self-assessments differ across demographic and institutional contexts. The survey instrument for this research is based on data collected from graduate student focus groups and on validated constructs of academic culture and climate from previous research. *T*-tests, ANOVA, and regression analyses identified significant differences among graduate students and their perceptions of departmental climate when compared on the basis of gender, citizenship, race/ethnicity, disciplinary subfield, and institutional type. Interview data provide additional context for analysis of the survey data. The primary areas in which we detected differences in graduate students' experiences were 1) diversity issues, 2) disciplinary and institutional cultures, 3) career planning and development, 4) financial matters, and 5) quality of the learning environment. These differences result from the varying social and academic dynamics of graduate programs, illustrating the importance of the local environment in shaping student experiences.

Keywords Graduate education · Departmental climate · Professional development · Disciplinary culture · Geography

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Introduction

This study investigates the role of departmental climate in shaping graduate student experiences in M.A./M.S. and Ph.D. geography programs. Looking across various types of department and institutional environments, we explore how students' perceptions of departmental climate vary with regard to gender, race and ethnicity, citizenship, research interests, and institutional type. In addition, we compare students' professed career goals, self-reported academic achievements, level of engagement in mentoring and professional development activities, and overall satisfaction with the academic and social characteristics of their programs.

The sample population includes masters and doctoral students in an effort to understand the experiences of students in different stages of professional development. In doing so, the present study builds upon prior work that explores the relationships between student values and practices and those of departmental and disciplinary communities (Austin 2002; Bieber and Worley 2006; Henkel 2000). It also provides insight into why some students experience graduate programs as unsupportive, isolating journeys (Nyquist et al. 1999).

Whereas much of the available research has investigated issues in graduate education by making broad distinctions between the experiences of students and faculty in the sciences and humanities (e.g., Golde and Dore 2004), much less is known about how issues related to disciplinary culture and departmental climate affect the attitudes and experiences of individuals in the early stages of academic professionalization. These issues broadly range from mentoring and advising practices to departmental politics and the dynamics of gender and race on campus (Kuh and Whitt 1988; Lucas and Murray 2002).

By systematically surveying graduate students across a range of departmental and institutional settings, the perspectives offered in this article complement existing work that is more focused on the experiences of individuals and groups within a single department or type of institution (e.g., Boice 1992, 2000; Rice University 2003; Komaki 2005). An analysis of organizational culture in higher education, as reflected in perceptions of departmental climate, can take many forms, and the literature provides valuable examples from researchers employing methods and theoretical frameworks from sociology, cultural anthropology, psychology, and education. Understanding graduate students' perceptions of departmental climate can provide a barometer for what graduate school life is like and how it is experienced.

This study further recognizes that, although graduate students in geography (or any discipline) can be viewed as a community by virtue of their affiliation with an academic discipline, it would be a mistake when interpreting departmental climate to overlook the diversity of personal backgrounds and contexts (cultural, economic, gender, career interests, and so forth) that characterize the graduate student population. Because academic climate is one of many important factors related to the overall departmental and institutional culture in which individuals develop professionally (Cameron and Ettington 1988; Peterson and Spencer 1990), it is important to understand how the conditions, practices, and characteristics of departments are positively or negatively viewed and experienced by diverse groups of graduate students. In recognizing the significance of diversity, it is then possible to identify factors and practices that create intellectually and emotionally supportive environments for all members of a graduate program.

Furthermore, interpreting students' self-assessment of their scholarly abilities and experiences in the context of the overall social and academic environment can illustrate how factors related to departmental and institutional culture potentially influence issues ranging from student attrition and faculty leaving academic careers (Nerad and Miller 1996; Rosser 2004) to the challenges faced by many women and minority graduate

students attempting to become better integrated in the department (Garcia 2000; Cooper and Stevens 2002). This information is useful because it also addresses the practical, conceptual, and empirical challenges regarding the adequacy of graduate degrees as preparation for careers in the academy, as well as other career fields (Austin and McDaniels 2006; Golde and Dore 2001; Wulff and Austin 2004).

Context of the Study

The present study adopts an approach that complements, but departs methodologically from much of the research conducted in the past decade exploring issues affecting the professional development and experiences of graduate students. The literature related to academic professionalization focuses mostly on doctoral education and the personal abilities and experiences of new faculty. Less emphasis has been placed on the experiences and characteristics of master's students and programs that provide early teaching and research experiences for many students. Still, the existing body of research provides helpful advice for students and faculty who are just getting started in their careers and may be struggling with adjustments to the culture of an academic position. Boice (1992, 2000), for instance, has found that early patterns of success among new faculty “quick starters” are closely related to efficient and strategic time management, which helps the new professor balance the professional obligations of teaching, research, and service. Boice, furthermore, notes that new faculty benefit when they proactively seek advice from their colleagues and engage in professional development activities (such as teaching development workshops or proposal writing seminars), yet because academic institutions provide varying amounts of in-service professional development, these opportunities are often not available to all faculty.

Studying the behaviors of individual faculty can reveal factors that explain relative patterns of success and difficulty among new professors, yet this approach does not necessarily account for issues experienced by individuals at earlier stages of academic development in graduate school. A focus on individual behavior, moreover, does not fully account for the overall social and academic dynamics occurring in departments that may enhance opportunities for some individuals, but limit the potential success of others. Even the most talented scholars can suffer from the negative consequences of political infighting, territoriality among faculty fighting for more space or resources, department chairs who cultivate favoritism, cliques of graduate students who form overly competitive relationships with their peers, gender and racial discrimination, campus homophobia—to mention a few of the many factors and conditions that can deteriorate the campus climate and ultimately cause many individuals to leave academic positions (Cameron and Ettington 1988; Peterson and Spencer 1990; Rosser 2004). At times the challenges of a graduate program are more acute for women and minorities, who often report feeling marginalized from a lack of peer support, mentoring, or classroom incivility (Antony and Taylor 2004; Phillips et al. 1994; Boice 2000; Garcia 2000; Cooper and Stevens 2002).

Although many of the career concerns and issues faced by graduate students are shared across disciplinary boundaries, the academic department remains the focal point of student and faculty experiences within a discipline (Lee 2004). Therefore, a discipline-based study of the impact of departmental climate can provide an understanding of the relationship between disciplinary cultures as manifest in departments and the relative patterns of student success and failure within those graduate programs. Certainly, no single department can fully represent the range of student, faculty, and administrative cultures that make up a single academic discipline. But by systematically sampling graduate students across a

range of graduate programs and institutional types, the present study seeks to identify relationships between student experiences and their perceptions of departmental climate, and how these relationships may vary on the basis of personal variables, program characteristics, and learning environments.

Disciplines also create an important context within which to interpret issues related to departmental climate. Douglas Toma, quoted in Lucas and Murray (2002, p. 4), reminds us that “disciplines determine the substantive knowledge with which scholars work, how they organize that knowledge, how they may draw on other disciplines, what types of work their colleagues value, and the language and symbols they use” (Toma 1997, p. 681). In a study of faculty culture in physics, Hermanowicz (2005) notes that a discipline-based approach can “capture what life is like on the inside of departments by representing people’s experience and interpretation of educational organizations.”

Our Focus on Geography

We purposefully focus our study of departmental climate on geography for two reasons. First, a study of graduate students in geography programs can reveal information relevant to graduate education across a wide variety of educational settings. The relatively small size of the discipline facilitates a survey across many types of academic departments and institutions. As of 2007, there were 93 doctoral geography programs in the United States graduating about 150–200 Ph.D.s each year, of which about 80–100 move into the professoriate. In addition, 87 geography programs granted degrees through the master’s (AAG 2006).

A second reason to focus on geography is because the discipline is situated within higher education institutions in diverse ways. As noted by Healey (2005), geography is considered an interdisciplinary field, with scholars specializing in social science, environmental science, technology, and humanities fields, spanning the dimensions of Biglan’s (1973) classification of pure versus applied, soft versus hard disciplines. This diversity is reflected in the organizational structure of academic geography departments. For example, some geography programs can be found in colleges of liberal arts, others are affiliated with social science departments, and still others are aligned with the natural sciences. Although there are numerous stand-alone geography departments, roughly one-third of undergraduate and graduate programs are based in ‘hybrid’ departments (e.g., Geography and Planning, Geography and Urban Studies, Geography and Geology, and so forth).

Geography faculty, moreover, are sometimes employed in joint-appointments with their time divided between geography and some other discipline or department on campus. Similarly, graduate students enrolled in interdisciplinary degree programs such as the NSF Integrative Graduate Education and Research Traineeship programs may split their time in more than one department. For all of these reasons, the field of geography represents an ideal case discipline for understanding graduate student experiences in neighboring fields. That information, in turn, can inform practices across a greater range of programs than otherwise might be implied by a focus on a single discipline.

Methodology

Focus Groups

To ensure that our study addressed issues of significance to current graduate students, we conducted eight focus group interviews with students enrolled in M.A./M.S. and Ph.D

geography programs. We acquired a stratified random sample of 285 individuals (20% of the potential population) from the 2005 AAG database of graduate student members to ensure representation of institutional types and gender diversity. Race/ethnicity and citizenship of the participants could not be determined in advance from the AAG database (this demographic information was not collected systematically by the association at the time of this study).

Electronic invitations to participate in a focus group were sent to the 285 individuals in our sample, ten percent (28) of whom were available and agreed to serve on the suggested dates (October and November 2005). Of this number, 16 students were female and 12 were male. Five students were enrolled in a master's program and 23 students were enrolled in Ph.D. programs. In terms of research specialization, seven students were pursuing studies in physical geography, 15 were concentrating in human geography, three were studying topics in nature-society relations, and the remaining three were undecided about their research topic. Nearly half of the participants incorporated geographic technologies such as GIS in their research.

Each focus group session ranged from 4 to 6 participants and lasted approximately 60 min. The focus groups were convened to explore what a sample of graduate students considered to be some of the key aspects affecting their academic and social experiences with regard to issues such as program diversity, advising and mentoring, instructional development, research training, career goals, and placement.

The specific interview questions and related probes relevant to this study included:

- What are some of the professional opportunities and benefits you have received or hope to receive from your degree program? How is your program helping you achieve your professional goals? (Probes: Opportunities to learn new skills, advance knowledge, get a job outside of academia, gain experience in different places, develop networks, travel for field research, learn how to teach effectively)
- What are the most significant challenges or concerns that you have at this stage in your degree program? How are you managing these issues? Are you finding support from other students, family members, professors, or staff members in your department? (Probes: Balancing work and family, lack of opportunities to conduct research, lack of teaching opportunities, inadequate financial support, difficult relationship with advisor, unclear standards for comprehensive exams, difficulty with time management or completing degree)
- Discuss the working relationships and interactions that exist among graduate students in your program: Are they collaborative, competitive, supportive? What factors, in your opinion, are responsible for producing this environment? How has this student culture affected your satisfaction with your degree program?
- To what extent are graduate students in your program encouraged to participate in departmental or university service activities, and to become members of professional organizations?
- To what extent does your department create an environment supportive of diversity? (Probes: Through the curriculum? Student composition? Faculty composition? Other ways?) Are students treated equally and with respect? (Probes: Masters versus Ph.D. students? Gender? Ethnicity? Gay students? International students?)

Interviews were conducted as moderated teleconferences and were tape recorded for purposes of transcription. The transcripts were used to identify major topics of specific concern to geography graduate students and analyzed to ensure those topics were subsequently addressed by the survey.

Survey

A three-part, 148 item survey was developed to acquire the primary data for this research. Part I of the survey was designed to collect demographic information from respondents, students' career aspirations, and their reasons for pursuing a graduate degree. Part II of the survey asked respondents to describe their professional preparation by indicating the types of courses, training, and educational experiences they have had to date in their current graduate program. Part III of the survey asked respondents to answer 107 Likert-scale items, 96 of which were adapted from a study by Lee (2004) exploring the values, assumptions, beliefs, and ideologies that faculty have about academic work and institutions. Although the Lee study provides many quantitative measures of academic culture and climate, it was restricted to college faculty and thus does not fully account for student perspectives. Because the present study aimed to examine departmental climate from the perspective of graduate students, some modification to the original survey items was required prior to survey implementation. For example, items rating the quality of faculty collegiality were rephrased to specify the role of graduate student social networks in providing a source of support. Likewise, whereas the Lee study measured the value placed on research by faculty in different disciplines, we wanted to know the extent that doing research *as a career goal* was a driving influence on a student's decision to pursue a graduate degree. Other questions in our survey, such as those asking about internships and financial stressors, were based on particular aspects of graduate student professional development and concerns such as financing a degree program or obtaining funding for a dissertation project.

A draft survey was subsequently published online and piloted with the same 28 graduate students who participated in the focus groups. These graduate students then provided feedback on the clarity of the instructions for completing the survey, while also providing a small dataset that permitted us to develop our data coding procedures. They, in addition to six geography faculty and administrators, provided input on the survey instrument.

The survey was sent as a Web-based form in April 2006 to a sample of 2,894 graduate students in all known institutions offering M.A./M.S. and Ph.D. geography programs in the United States. The sample was developed by identifying graduate students enrolled on a full-time or part-time basis in the 2005–2006 academic year according to the AAG membership database, supplemented with non-member students identified from department websites and university directories where possible. We received 682 returns, of which 605 provided responses to all three sections of the survey and were therefore subsequently included in the analysis. Of the 605 responses, 357 were from doctoral students and 248 were from master's students, all at various stages in their program; 97 institutions (81 doctoral, 16 master's programs) were represented in the sample.

To determine the extent to which the sample was representative of the general population of graduate students in geography, we compared our sample with the latest figures from the National Science Foundation's *Women, Minorities, and Persons with Disabilities in Science and Engineering* database (Table 1). The NSF report, which based its demographic estimates on several primary and secondary data sources, provided the most complete postsecondary disciplinary database available for estimating the graduate student population in geography (the AAG membership database does not include non-member students). In terms of gender, the proportion of males and females in the sample is slightly lower and higher than their respective proportions in the population. For citizenship, the sample proportions are roughly equal to the general population of geography graduate students. The race/ethnicity category is less precise because the NSF race/ethnicity

Table 1 Demographic comparison of sample ($n = 605$) with NSF estimates of geography graduate student population in 2004 by gender, race, citizenship (NSF 2006)

Category	Sample ($n = 605$)	NSF population estimate for 2004 ($N = 4,809$)
Gender	Male: 319 (53%) Female: 286 (47%)	Male: 2,802 (58%) Female: 2,007 (42%)
Race/Ethnicity	White: 489 (81%) Non-White ^a : 116 (19%)	White: 3,315 (69%) Non-White ^a : 675 (14%)
Citizenship	US/permanent residents: 496 (82%) Non-US/temporary residents: 109 (18%)	US/permanent residents: 4020 (84%) Non-US/temporary residents: 789 (16%)

^a Includes Black (Non-Hispanic), Hispanic (of any race), Asian, Native American, Native Hawaiian/Other Pacific Islander

breakouts are for U.S. citizens and permanent residents only, whereas our sample includes non-US citizen and temporary residents in all racial categories based on respondent self-identification. The majority of the respondents self-identified as White and being of Western European descent.

Results

Focus Group Findings

Here we provide a brief summary of the key themes that emerged from the focus groups with graduate students, and that subsequently informed the development of the survey. The primary themes over which we detected differences in graduate students' experiences were 1) diversity issues, 2) disciplinary and institutional cultures, 3) career planning and development, 4) financial matters, and 5) quality of the learning environment.

Diversity Issues

Most of the focus group participants agreed that their departments were supportive of diversity, but they were unclear about the actual ways in which diversity could be enhanced. Even when prompted about other types of diversity (e.g., related to geographical subfields or family status), the discussion of diversity focused on four broad topics: gender, international students and ethnic diversity, location of the university, and faculty composition and attitudes. Comments from the focus group participants illustrate some of the experiences and concerns of these students. Many participants observed cliques forming: "GIS students tend to be international students and they tend to socialize and collaborate on their own, separate from the rest of the graduate students," remarked one of our focus group participants. A few international students in the focus groups, moreover, were uncomfortable about the lack of diversity in the surrounding communities where they attended graduate school. One of them stated, "I would say across the board there is openness on the surface. Although, I am also in a school that sits in a part of the nation that is not very diverse, so some of this diversity is unusual outside of the university setting. We aren't welcome or understood outside of the university."

Disciplinary and Institutional Cultures

Students' professional preparation varied across sub-disciplinary research fields as well as on the basis of the institutional setting and nature of the graduate program. For example, a doctoral candidate noted, "It seems that it is the unwritten understanding that if you are going to get a Ph.D., you are going to go into an academic career, and you will strive for the largest and most prestigious school available." Another student entering the writing phase of her dissertation remarked: "What I get now in terms of support is, 'Oh yeah, I remember being in that position...you'll make it through,' but not a lot of specific examples of ways to trudge through the writing process. More practical advice should be given."

Beyond the writing process itself, many doctoral students mentioned the stress accruing from an atmosphere to "publish or perish." They wanted to know more about what it means for graduate students in regards to the number and types of publications needed to be successful. For example, one participant suggested: "I would like to see professors sit down with us and really talk about the publishing process in more depth because it is something we are expected to do, but not really taught how to do it." Another student offered a specific suggestion for making this work. "I wish that at some point in the degree program students would get paired with a professor who is in the publishing process, so that students can participate in the process."

Career Planning and Development

A source of stress for many of the focus group participants centered upon managing their time to balance numerous responsibilities at home and at school. This balancing act includes, but is not limited to: working at jobs outside of the department, commuting long distances, taking courses, teaching, writing, serving on committees, applying for funding, applying for jobs, and taking care of personal relationships. For both writing and teaching, students suggested that more formalized preparation in these areas should be implemented in graduate school. While specific activities were mentioned as being time consuming, students often remarked about the struggles of balancing their varied responsibilities and performing to high expectations. Knowing how to prioritize and stay focused was a difficult challenge for some of the students interviewed.

Students pursuing careers in academia were also concerned about being unprepared for teaching college courses. Teaching expectations were formidable for many of the participants, especially those pursuing a doctorate who were likely to be assigned as the sole instructor of an undergraduate course. For students planning careers in academics in particular, gaining teaching experience is viewed as an important professional opportunity in graduate school, yet one that many do not receive. Some of the focus group participants were distressed about having been "thrown into the classroom" with no prior experience. One student exclaimed, "Right now I am teaching undergraduates as an adjunct faculty member in the department. I've never taught before and I have two sections—one with 93 students and another with 95. I don't have a TA and I am doing it all on my own." Other students noted that they are required to enroll in professional courses in teaching methods, to participate in teaching workshops, and to be mentored by experienced faculty in their departments. A few students mentioned gaining important ideas and resources from their campus center for teaching and learning support.

While teaching and research are traditionally viewed as important areas of preparation for students who are planning academic careers, several students in the focus groups noted

the significance of learning different skills as being important for their career development. A few participants were interested in opportunities to learn GIS and to be exposed to state-of-the-art technology and equipment. Other students were offered experiential training as research assistants in a variety of settings, such as in the department, in community research projects, in collaborative projects with government agencies or industries, or through internships. They noted several benefits from these experiences, such as building networks, learning interviewing skills required for research, public speaking opportunities, and collaborative team work. For master's students especially, these opportunities were valued as a key to acquiring a job after graduation.

Although preparing for academic careers was the primary objective for most of the focus group participants, others desired alternatives but found little support. For example, one student planning a research career in the government confided:

“I think there is a different way that you are perceived when you walk into the department, whether you are a master's or Ph.D. student, and what your future will hold. Ph.D. students are very much geared or guided towards academia. I know of one Ph.D. student, who was planning on going into government work, and she found very little support in the department. I think she was treated sort of like a deviant for choosing a career path other than academia and found very little support for that.”

Financial Matters

Obtaining funding for research was cited by some of the survey respondents as being a problem. Again, the focus group participants provide some examples of students' varying experiences in applying for research grants. In regards to the application process, students' advisors were most often mentioned as helping them apply for funding. In addition, peers, other faculty members, departmental and college research offices provided support in the application process. Overwhelmingly, however, students in our focus groups funded their research out of their own pockets, except for a few who were successful in procuring research grants or who received summer fellowships from their departments for field work.

Learning Environment

The majority of students claimed that relationships among graduate students in their departments were supportive, but not necessarily collaborative.

From their perspective, opportunities to collaborate in teaching or research with other students and faculty are key elements of a favorable working environment. Despite valuing opportunities to engage in collaborative research, students explained that they are encouraged more to conduct individual research, particularly in regards to completing their dissertations, rather than to pursue collaborative research projects. Although most participants agreed that an appropriate level of competition among graduate students existed in their departments, they were clearly more satisfied in degree programs where collaborative environments existed. One student explained, “Faculty seem to discourage collaboration because we are graduate students and we are supposed to be engaged in our own work.” An international student added, “Unless we take the initiative to do it ourselves, there doesn't seem to be much collaborative effort. As an international student, a non-native speaker, it is difficult for me to take the initiative to work with other students.”

By and large, the majority of the students were active in their departments and professional organizations (which is perhaps not surprising since these are the students who

answered the call to participate in the focus groups). While the majority of students agreed that graduate students participated in service activities, they also suggested that these were not required, encouraged, or rewarded by their departments. One participant explained,

There is no discussion about who does what within the department, and I find that baffling. I think there is no real reward structure for doing service work within academia (at least that is the complaint that I have heard). It is often seen as a time sink and problematic. In some ways I don't think it is encouraged because of this negative connotation, but there is also no reward for engaging in service activities.

Thus, while service opportunities exist in most departments, many students do not feel obligated or motivated to participate.

Many geography departments have a required orientation week for new graduate students to get acquainted and learn about program policies. In addition, departments schedule lecture series, brown bag lunches, coffee hours and other professional and social activities as occasions for bringing graduate students together. Student organizations, such as graduate students unions and Supporting Women in Geography (SWIG), have contributed to supportive and collaborative environments as well. Some students explained that Internet groups have increased communication among graduate students. Interestingly, space and office location have had significant impacts on networks of interaction. On the one hand, students who are in environments in which office space is more clustered seem to be more satisfied about their working relationships with their peers. On the other hand, if students are dispersed throughout the building or across campus, this tends to undermine the development of coherent and cooperative working environments. This negative effect is magnified for students who have to commute long distances or do not spend a lot of time in the department.

Survey Analysis

The results of the focus group analysis provided us with information for developing and refining our survey questions and formulating hypotheses for statistical testing. Following the implementation of the survey, responses to the 107 likert items were coded and then factor analyzed using an exploratory principal components factor analysis with varimax rotation. This resulted in two categories of factors: variables that measure (1) student perceptions of the departmental climate, and (2) those that measure students' professional goals and program experiences (Table 2). All factors have Cronbach alpha scores >0.6 (indicating high internal reliability), with individual factor loadings >0.4 .

The factor constructs were used to explore two sets of research hypotheses that account for the possible influence of demographic and institutional factors on students' perceptions of departmental climate and their professional goals and program experiences. Expressed in null form, the hypotheses were:

Hypothesis 1 There is no difference in graduate students' perceptions of departmental climate when compared on the basis of gender, race, citizenship, research subfield, program enrollment, and institutional type.

Hypothesis 2 There is no difference in graduate students' professional goals and program experiences when compared on the basis of gender, race, citizenship, research subfield, program enrollment, and institutional type.

To address these hypotheses, *T*-tests (for paired subgroups) and ANOVA (one-way) were conducted to determine the significance of relationships in the factor scores when

Table 2 Factors related to (a) students' perceptions of departmental climate and (b) students' professional goals and program experiences

Factor name	Sample survey items and factor variables
(a)	
1. <i>Quality of academic advising, support, and curriculum</i> (21 variables, $\alpha = 0.916$)	Rate your level of satisfaction with the following areas in your current program: <ul style="list-style-type: none"> • Amount of contact with program faculty • Elective course offerings • Career counseling and advising
2. <i>Diverse, tolerant, and equitable environment</i> (10 variables, $\alpha = 0.848$)	Indicate your level of agreement or disagreement with the following statements about your current program: <ul style="list-style-type: none"> • I have felt discriminated against by faculty • Gay and lesbian students are treated fairly here • There is racial tension here
3. <i>Department commitment to students' affective development</i> (7 variables, $\alpha = 0.814$)	To what extent is each of the following goals a priority of your program: <ul style="list-style-type: none"> • To help graduate students examine and understand their personal values • To develop a sense of community among students and faculty • To develop leadership ability among graduate students
4. <i>Favorable Working Environment</i> (8 variables, $\alpha = 0.773$)	Which of the following attributes, from your perspective, is an accurate description of the work environment in your current graduate program? <ul style="list-style-type: none"> • Non-sexist • Collaborative • Respectful
5. <i>Unfavorable working environment</i> (4 variables, $\alpha = 0.703$)	Which of the following attributes, from your perspective, is an accurate description of the work environment in your current graduate program? <ul style="list-style-type: none"> • Hostile • Racist • Non-collegial
6. <i>Access to internship/employment opportunities</i> (2 variables, $\alpha = 0.593$)	Rate your level of satisfaction with the following areas in your current program: <ul style="list-style-type: none"> • On-campus job opportunities • Internship opportunities
7. <i>Department focus on improving prestige</i> (3 variables, $\alpha = 0.825$)	To what extent is each of the following goals a priority of your program: <ul style="list-style-type: none"> • To develop new faculty "stars" • To enhance the program's national image
8. <i>Social interaction among students</i> (4 variables, $\alpha = 0.762$)	Rate your level of satisfaction with the following areas in your current program: <ul style="list-style-type: none"> • Sense of community among students • Interaction with other students
(b)	
1. <i>Difficulty coping with program requirements or personal issues</i> (10 variables, $\alpha = 0.775$)	Since entering your current program, how often have you had the following experiences: <ul style="list-style-type: none"> • Sought personal counseling • Felt overwhelmed by all I had to do • Felt depressed
2. <i>Likelihood of leaving or suspending program</i> (7 variables, $\alpha = 0.775$)	Please estimate the likelihood that you will take the following actions during your current program: <ul style="list-style-type: none"> • Permanently leave program and not enroll in another program • Temporarily suspend your enrollment in this program • Transfer to another institution before finishing your degree

Table 2 continued

Factor name	Sample survey items and factor variables
3. <i>Importance of affecting social change</i> (6 variables, $\alpha = 0.806$)	Indicate the importance, to you personally, of the following goals: <ul style="list-style-type: none"> • Becoming involved in social justice programs • Influencing public policy • Becoming a community leader
4. <i>Importance of improving teaching skills</i> (4 variables, $\alpha = 0.763$)	Indicate the importance, to you personally, of the following goals: <ul style="list-style-type: none"> • Mentoring students • Being a good teacher
5. <i>Importance of scholarship and scholarly recognition</i> (4 variables, $\alpha = 0.724$)	Indicate the importance, to you personally, of the following goals: <ul style="list-style-type: none"> • Becoming a scholarly authority in my field • Obtaining professional recognition for my work
6. <i>Financial stress</i> (5 variables, $\alpha = 0.600$)	Please indicate the extent to which each of the following has been a source of stress for you in your current program: <ul style="list-style-type: none"> • Obtaining funding for my research • Paying tuition and related program expenses
7. <i>Importance of future financial success</i> (3 variables, $\alpha = 0.600$)	Indicate the importance, to you personally, of the following goals: <ul style="list-style-type: none"> • Being very well-off financially • To increase my salary/earnings potential
8. <i>Importance of program reputation</i> (5 variables, $\alpha = 0.772$)	How important were the following reasons when you made the decision to attend your current program: <ul style="list-style-type: none"> • The reputation of this program's faculty • The program's graduates get good jobs
9. <i>Importance of program diversity</i> (4 variables, $\alpha = 0.718$)	Indicate your level of agreement or disagreement with each of the following statements about your current program: <ul style="list-style-type: none"> • This department should hire more faculty of color • This department should fire more women faculty

compared among the following subgroups: male versus female, U.S. citizen versus non-U.S. citizen, masters versus doctoral student, white versus non-white, institutional type (research-doctoral institutions versus masters comprehensive institutions), and four sub-fields of geographical research (physical geography, human geography, nature and society relations, and geographic information science). For each comparison group, the mean score on a factor (as measured by a *T*-test or ANOVA statistic) served as a measure of the relevant factor construct. *T*-test and ANOVA means were directly proportional to the strength of the perceived factor construct.

Regression analyses on each of the departmental climate factors were then conducted in order to examine possible interaction effects between student background and environmental characteristics. Gender, race, citizenship status, student enrollment status, disciplinary field, and institutional type served as the independent variables. Interaction effects were then examined by including interactions between disciplinary field and institutional type with each of the student background variables as additional independent variables.

Survey Findings

We first present the overall findings for the graduate programs and students who were sampled in this study by standardizing the scales of variables comprising the factors

Table 3 Overall results for the sample of geography graduate students

Factor name	N	Minimum	Maximum	Mean	Standardized mean (Range: 0–89)
Quality of academic advising, support, and curriculum	528	16	89	60.12	53.79
Diverse, tolerant, and equitable environment	551	12	49	38.92	64.75
Difficulty coping with program requirements or personal issues	564	10	31	18.66	36.70
Likelihood of leaving or suspending program	595	7	27	10.85	17.13
Commitment to student's affective development	594	7	28	12.75	24.37
Social interaction among students	588	4	20	14.73	59.69
Importance of affecting social change	597	6	24	14.24	40.74
Importance of improving teaching skills	585	3	15	10.11	52.73
Favorable working environment	606	0	8	3.72	41.39
Importance of program reputation	582	5	15	9.32	38.45
Importance of scholarship and scholarly recognition	585	4	14	9.97	53.13
Hostile working environment	606	0	4	0.18	4.01
Department's focus on improving prestige	597	3	12	7.63	45.79
Importance of program diversity	584	3	21	13.75	53.15
Financial stress	582	4	15	8.63	37.46
Importance of future financial success and supervision	593	3	11	6.02	33.60
Access to internship/employment opportunity	596	0	8	2.54	28.26

(Table 3). This was done by converting each scale to have same upper and lower limits using the following formula:

$$Y = (X - X_{\min}/X_{\text{range}}) * n$$

where Y is new variable, X is original variable, X_{\min} is minimum observed value on the original variable, X_{range} is the difference between the maximum observed score and the minimum observed score on the original variable, and n is upper limit of the rescaled variable.

The results provide an indication of how graduate students generally perceive departmental climate in graduate geography, as well as insights into how these students as a collective self-define their abilities, goals, and outlooks. When considered together, geography graduate programs enjoy mostly favorable ratings of departmental climate. Students tend to perceive diverse, tolerant, and equitable environments in these programs, the existence of positive social interactions among students, and high quality of academic advising, support, and curriculum. In terms of student dispositions, geography graduate students as a whole are not very likely to leave their program and tend not to experience their working environment in the department as hostile. On the other hand, students report that departments have a relatively low commitment to affective development and provide limited access to internships and employment within departments.

While these findings provide a general overview of students' perceptions of their departmental climate and their own experiences, the following sections detail how these perceptions differ significantly on the basis of student and program characteristics.

Table 4 T-test comparison of graduate student perceptions on basis of citizenship (US vs. non-US citizens)

	Are you a US citizen	N	Mean	Significance
Commitment to student's affective development	No	106	13.76	0.003
	Yes	486	12.54	
Social interaction among students	No	103	13.68	0.000
	Yes	483	14.97	
Favorable working environment	No	109	2.74	0.000
	Yes	495	3.94	
Importance of scholarship and scholarly recognition	No	104	10.79	0.000
	Yes	480	9.79	
Financial stress	No	106	9.47	0.000
	Yes	474	8.44	
Importance of future financial success and supervision	No	107	6.61	0.000
	Yes	485	5.88	

Comparative Analysis of Student Perceptions of Departmental Climate

The following is a summary of results illustrating differences in students' perceptions of departmental climate and students' professional goals and program experiences (results are significant at $p < 0.05$). Only statistically significant results are reported in the data tables.

Citizenship (Table 4) The citizenship variable was dichotomous: respondents were classified as being either a U.S. citizen or non-U.S. citizen (self-identified).

Compared with U.S. citizens, non-citizens (a) report *fewer* strong social interactions with their fellow students, (b) are *less* likely to perceive the working environment of their department in favorable (i.e., more collegial and civil) terms, (c) experience *higher* levels of financial stress, (d) express a *stronger* desire to become a recognized scholar in their field and achieve financial success after graduation, and (e) perceive their departments to be *more* committed to their affective development.

Race (Table 5) Because the overall representation of racial minorities was low in the sample (as for the discipline more generally), we pooled all minority respondents into one non-white category. The race variable was therefore dichotomous: respondents were classified as being either white or non-white (self-identified).

Compared to white students, non-white students (a) perceive their department environments as being *less* tolerant, equitable, and diverse, (b) are *less* likely overall to perceive the working environment in favorable terms (i.e., as collegial and civil), (c) are *more* likely to think their departments should place a greater emphasis on diversifying the student and faculty staff, (d) experience *higher* levels of financial stress, while expressing *more* desire for post-graduation financial success, (e) are *more* likely to pursue a graduate degree with the goal of affecting social change and to become recognized for their scholarship, and (f) place *greater* weight on the scholarly reputation and prestige of a department when considering where to pursue graduate study.

Table 5 T-test comparison of graduate student perceptions on basis of race and ethnicity (White vs. Non-White)

	White vs Non-White	N	Mean	Significance
Diverse, tolerant, and equitable environment	Non-White	95	37.33	0.005
	White	447	39.31	
Commitment to student's affective development	Non-White	104	13.92	0.001
	White	479	12.51	
Social interaction among students	Non-White	98	14.18	0.050
	White	481	14.91	
Importance of affecting social change	Non-White	106	15.40	0.001
	White	480	13.99	
Favorable working environment	Non-White	106	3.01	0.001
	White	489	3.88	
Importance of program reputation	Non-White	101	9.88	0.016
	White	470	9.23	
Importance of scholarship and scholarly recognition	Non-White	103	10.53	0.006
	White	472	9.85	
Department's focus on improving prestige	Non-White	104	8.10	0.042
	White	482	7.56	
Importance of program diversity	Non-White	102	14.91	0.000
	White	472	13.51	
Financial stress	Non-White	102	9.28	0.004
	White	469	8.45	
Importance of future financial success and supervision	Non-White	103	6.79	0.000
	White	480	5.86	

Note: Non-White racial and ethnic minorities were pooled because of their overall low representation in the sample

Gender (Table 6) The gender variable was dichotomous: respondents were classified as either male or female (self-identified). Compared to male students, women (a) perceive their departments to be *less* tolerant, equitable, and diverse places, (b) are *more* likely to believe that their programs should place more emphasis on supporting diversity and multiculturalism in hiring and curriculum practices, (c) report *greater* difficulties coping with program requirements and personal issues, (d) consider themselves *more* likely to leave or suspend their program of study, (e) place a *higher* appreciation on having a supportive community characterized by strong social interactions among graduate students, and (f) express a *greater* desire to become agents of social change after completing their degree.

Program Enrollment (Table 7) The program enrollment variable was dichotomous: respondents were classified as being enrolled in either a master's or doctoral degree program.

Compared to master's students, doctoral students (a) perceive their department environments to be *less* tolerant, equitable, and diverse, (b) consider their departments to be *less* committed to students' affective development, (c) place *less* importance on internship opportunities and achieving financial success after completing the degree, (d) are *more*

Table 6 T-test comparison of graduate student perceptions on basis of gender (male vs. female students)

	Gender	N	Mean	Significance
Diverse, tolerant, and equitable environment	Male	291	39.47	0.026
	Female	258	38.27	
Difficulty coping with program requirements or personal issues	Male	297	17.81	0.000
	Female	265	19.60	
Likelihood of leaving or suspending program	Male	312	10.49	0.014
	Female	280	11.25	
Social interaction among students	Male	308	14.36	0.004
	Female	278	15.17	
Importance of affecting social change	Male	312	13.85	0.011
	Female	282	14.66	
Importance of program diversity	Male	308	12.87	0.000
	Female	274	14.74	

likely to perceive their working environments in unfavorable terms (i.e., as being discriminatory, unfriendly, and disrespectful), (e) are *more* likely to feel their departments should dedicate more effort to diversifying the program, (f) report *greater* amounts of financial stress and difficulty coping with program requirements and their own personal issues, (g) give *more* weight to a program's reputation and prestige when choosing a department, and (h) express a *greater* desire to improve their teaching skills.

Research Subfield (Table 8) The research subfield variable consisted of four categories of disciplinary research specialization: physical geography, human geography, nature-society relations, and geographic information science.

Compared with their peers conducting research in human geography and nature-society relations, students with interests in physical geography (a) are *more* likely to view their departments as diverse, tolerant, and equitable places, (b) express *less* inclination to apply their degrees working toward social change, and (c) are *less* concerned about program diversity. Compared to students in other subfields, students interested in geographic information science research (a) place *greater* priority on the availability of internships and gaining financially, (b) are *less* likely to consider departmental scholarly prestige when choosing programs, (c) view gaining teaching experience as *less* of a priority, and (d) report *fewer* difficulties coping with program requirements and personal issues.

Institutional Type (Table 9) The program enrollment variable was dichotomous: respondents were classified as attending a graduate program at either a master's comprehensive institution or a research-doctorate institution.

Compared to students in master's comprehensive institutions, students in research-doctorate institutions (a) indicate *more* difficulty coping with program requirements and personal issues, (b) are *more* likely to indicate they are considering leaving or suspending their program enrollment, (c) place *higher* importance on the program's reputation and obtaining scholarly recognition when choosing programs, (d) place *higher* importance on improving their teaching skills as a career objective, and (e) report *fewer* opportunities to access internships through their departments.

Table 7 T-test comparison of graduate student perceptions on basis of program enrollment (M.A./M.S. vs. Ph.D)

	Current enrollment status: master vs doctor	N	Mean	Significance
Diverse, tolerant, and equitable environment	Master	202	40.22	0.001
	Doctor	329	38.32	
Difficulty coping with program requirements or personal issues	Master	213	17.62	0.000
	Doctor	333	19.38	
Commitment to student's affective development	Master	220	13.25	0.027
	Doctor	350	12.52	
Importance of improving teaching skills	Master	219	9.00	0.000
	Doctor	351	10.92	
Favorable working environment	Master	225	4.14	0.002
	Doctor	357	3.51	
Importance of program reputation	Master	221	8.93	0.001
	Doctor	345	9.62	
Importance of scholarship and scholarly recognition	Master	221	9.26	0.000
	Doctor	348	10.53	
Hostile working environment	Master	225	0.12	0.044
	Doctor	357	0.22	
Department's focus on improving prestige	Master	220	7.10	0.000
	Doctor	354	8.02	
Importance of program diversity	Master	219	13.08	0.000
	Doctor	341	14.26	
Financial stress	Master	213	8.19	0.002
	Doctor	346	8.89	
Importance of future financial success and supervision	Master	222	6.47	0.000
	Doctor	355	5.74	
Access to internship/employment opportunity	Master	224	2.93	0.001
	Doctor	349	2.28	

Interaction Effects Between Student Background and Environmental Characteristics

Regression analyses revealed the following significant interaction effects between student background and environmental characteristics¹:

At Doctoral Universities (a) Doctoral students report *greater* difficulty coping with program requirements and personal issues compared to Masters students, (b) white students indicate a *lower* importance of affecting social change compared to non-White students, (c) doctoral students perceive a *higher* departmental focus on improving prestige compared to master's students.

¹ In order to limit the length of this manuscript, the 14 regression tables were not included. Readers may contact the authors directly for a copy of the regression tables.

Table 8 ANOVA comparison of graduate student perceptions on basis of research subfield

		Diverse, tolerant, and equitable environment	Difficulty coping with program requirements or personal issues	Importance of affecting social change	Importance of improving teaching skills
Physical geography	Mean	40.38	18.46	13.73	10.43
	N	112	115	118	115
	Std. Deviation	5.194	4.187	3.856	3.012
Human geography	Mean	38.30	19.05	14.81	10.87
	N	212	222	228	229
	Std. Deviation	6.502	4.356	3.680	3.116
Nature and society relations	Mean	37.79	19.50	16.06	10.57
	N	92	90	96	96
	Std. Deviation	6.764	4.209	3.518	2.771
Geographic information science	Mean	39.66	17.33	12.33	8.22
	N	113	118	131	129
	Std. Deviation	6.098	3.929	3.672	3.269
Undecided	Mean	39.57	21.00	13.00	7.86
	N	7	6	7	7
	Std. Deviation	9.624	5.550	4.690	3.132
Total	Mean	38.95	18.65	14.22	10.10
	N	536	551	580	576
	Std. Deviation	6.310	4.279	3.896	3.248
ANOVA Significance		0.013	0.001	0.000	0.000

Table 8 continued

Subfield	Favorable working environment	Importance of scholarship and scholarly Recognition	Department's focus on improving prestige	Importance of program diversity	Financial stress	Importance of future financial success and supervision	Access to internship/employment opportunity
Physical geography	Mean	10.09	7.45	13.01	8.15	6.03	2.47
	N	116	119	115	116	117	119
Human geography	Std. Deviation	2.344	2.403	2.861	2.595	1.776	2.514
	Mean	10.04	7.80	14.38	8.96	5.77	2.05
Nature and society relations	N	231	230	226	226	234	229
	Std. Deviation	2.213	2.545	3.493	2.770	1.798	2.105
Geographic information science	Mean	10.44	8.11	14.67	8.78	5.60	2.40
	N	95	96	93	95	95	97
Undecided	Std. Deviation	2.117	2.228	2.688	2.745	1.633	2.163
	Mean	9.43	7.16	12.68	8.28	6.77	3.55
ANOVA significance	N	127	129	126	122	131	127
	Std. Deviation	2.425	2.294	3.090	2.382	1.879	2.516
ANOVA significance	Mean	9.00	8.43	11.43	9.43	6.14	2.71
	N	7	7	7	7	7	7
ANOVA significance	Std. Deviation	3.266	1.618	3.867	3.259	2.193	2.628
	Mean	0.013	0.023	0.000	0.035	0.000	0.000

Table 9 T-test comparison of graduate student perceptions on basis of institutional type (comprehensive master's vs. research doctoral)

	T-test group statistics			
	Institutional type	N	Mean	Significance
Difficulty coping with program requirements or personal issues	Comprehensive Master's	55	16.49	0.00
	Research Doctoral	488	18.88	
Likelihood of leaving or suspending program	Comprehensive Master's	57	9.89	0.04
	Research Doctoral	511	10.96	
Importance of improving teaching skills	Comprehensive Master's	55	9.05	0.01
	Research Doctoral	510	10.27	
Importance of program reputation	Comprehensive Master's	54	8.70	0.05
	Research Doctoral	509	9.42	
Importance of scholarship and scholarly recognition	Comprehensive Master's	57	8.79	0.00
	Research Doctoral	507	10.14	
Department's focus on improving prestige	Comprehensive Master's	57	6.60	0.00
	Research Doctoral	512	7.77	
Access to internship/employment opportunity	Comprehensive Master's	57	3.30	0.01
	Research Doctoral	511	2.48	

At Comprehensive Universities (a) Doctoral students report *lower* difficulty coping with program requirements or personal issues compared to Masters students, (b) doctoral students perceive a higher departmental focus on improving prestige compared to master's students. (Note: some of the doctoral students in our sample are enrolled in newly established programs at institutions classified as comprehensive universities).

At Geography Departments (a) Doctoral students report *greater* difficulty coping with program requirements or personal issues compared to master's students, (b) doctoral students report a *lower* favorable working environment compared to masters student's, (c) U.S. citizens perceive a *higher* departmental focus on improving prestige compared to non-U.S. citizens, (d) female students indicate *less* access to internship and employment opportunities compared to male students.

At Hybrid Departments (a) Doctoral students report *greater* difficulty coping with program requirements or personal issues compared to master's students, (b) doctoral students report a *less* favorable working environment compared to masters student's, (c) U.S. citizens indicate a *lower* departmental focus on improving prestige compared to non-U.S. citizens, (d) female students indicate *greater* access to internship and employment opportunities compared to male students.

Enhancing Departmental Climate and Program Experiences for Graduate Students

The following discussion includes broad recommendations, linked to the survey and focus group results, that we offer for consideration to academic departments seeking to enhance the climate of graduate programs and the experiences of students enrolled in those programs. Perhaps the overarching conclusion we can make is that factors related to the

departmental environment are at least as important as individual aptitude for understanding the quality of student experiences in graduate programs. In other words, context matters when understanding the experiences of graduate students and their perceptions of departmental climate. Whether we are referring to the characteristics of students or to the conditions within departments, our analysis shows that attention to local context can reveal important information that would otherwise be obscured by an aggregate analysis only. Although the data in this study focus on geography graduate students, many of the recommendations are relevant to programs in neighboring social and academic sciences given the hybrid nature of many programs and the diverse research interests of students in the sample.

The present study provides additional evidence that variables from completion rates in a graduate program to the academic performance of graduate students are sensitive to factors “that are not simply a function of personal attributes” (CGS 2003, p. 11). To the extent that departmental climate is rooted in the organizational cultures of academic departments, the perspectives of the graduate students who participated in this study illustrate how context, both demographic and disciplinary, can help explain why student experiences can vary within and across different types of graduate programs, with positive and negative consequences (Cameron and Ettington 1988; Peterson and Spencer 1990).

Students are more likely to complete a degree program when they are engaged socially through departmental activities such as colloquia, retreats, guest seminars, and regular social gatherings (Nerad and Miller 1996; CGS 2003). Furthermore, students who are mentored—whether formally by a faculty advisor or committee, through informal peer networks, or by other methods—are more likely to complete their degree in a reasonable amount of time. Similarly, Anderson (1996) and Boice (2000) show that program integration and successful academic performance are both facilitated by collaboration and active participation in social networks with other students and faculty in the department, on campus, and in the discipline.

Judging from our findings, it seems that the lack of socialization in some departments may be contributing to the difficulty of many geography programs in attracting and retaining women and minorities. Institutional research on academic climate (e.g., Komaki 2005; Rice University 2003) as well as studies of faculty leaving academe (e.g., Rosser 2004) reveal that the perceptions individuals have of their workplace, together with their overall job satisfaction, are powerful influences when deciding whether to leave a department for another academic position or a new career entirely. In geography, the survey results indicate that the combination of financial stress, social isolation, and perception of “unfavorable” working environments threaten to compel many women and minority graduate students to terminate their degree programs. Among the students sampled, personal stress and program difficulties seem most acute among Ph.D. students attending geography programs at research-doctoral institutions.

It appears that women and minority students, as well as international (non-U.S. citizen) students experience the greatest amounts of social isolation in their programs. Similarly, women, minority, and international early-career geography faculty who were interviewed by Solem and Foote (2004) cited difficulties such as winning the respect of undergraduate students, the challenge of lecturing in a secondary (non-native) language, and having their research dismissed as unworthy by some senior faculty. All of these reasons contribute to the perception of some departments as being unfriendly or unsupportive. Compounding this problem are the financial hardships faced by many international students and the increasingly onerous regulations governing visas and entrance procedures in the aftermath of post-September 11 security crackdowns.

Despite these obstacles, international students are enrolling in graduate geography programs with high aspirations as shown in the survey. Furthermore, they seem to appreciate efforts by graduate programs to help them feel a sense of belonging in the department. This is an important point, because one of the most important factors promoting higher completion rates in graduate education is the extent to which students become integrated in the departmental community (CGS 2003). Studies have repeatedly shown that attrition in doctoral programs generally results from a lack of academic support and mentoring, poor socialization, and disengagement in departmental affairs and institutional life (Nerad and Miller 1996; Bair and Haworth 2004; Lovitts 2001).

One effective strategy that departments can employ to help students become better integrated is to participate in departmental service, as noted by Monk (2001). This might include giving a “good departmental citizen” award and explaining explicitly the value of that kind of work to professional success. Indeed, many of the students participating in the focus groups engaged in a wide variety of service activities in their departments, colleges, universities and professional organizations. Some were involved in serving on departmental committees and in helping organize departmental speaker series, whereas others served on institutional committees or volunteered with organizations such as local chapters of Supporting Women in Geography and on Association of American Geographers specialty groups. Through these sorts of activities students can gain valuable new skills, begin to develop their professional networks, and learn about their local departmental and institutional culture. While the majority of students in our sample indicated that they participated in some forms of service, they also suggested that these activities were not required or rewarded by the department. Several students felt that departments should encourage more participation in service activities for individuals planning to pursue an academic career, so that they will be better prepared for this dimension of responsibility.

Our findings also show cultural differences among students pursuing different subfields of research in geography. Prior work (e.g., Becher 1989; Lee 2007) implies that academic culture varies across disciplines and institutions in ways that are meaningful for understanding differences in the professional expectations and nature of academic work. This, in turn, suggests the cultures and practices of graduate programs will vary from place to place. Students with interests in human geography and those pursuing research in nature-society relations, who are disproportionately women or of ethnic minority backgrounds, are relatively more stressed, isolated, and dissatisfied than are their peers in the subfields of physical geography and geographic information science. There is a similar overall pattern in other social and environmental sciences, where attrition rates in doctoral programs tend to be higher in the humanities and social sciences (where students tend to study in more solitary fashion), than in physical and laboratory sciences, engineering, and professional degree fields, where the disciplinary cultures place more emphasis on apprenticeship and collaboration (Golde and Dore 2001).

Comments from the focus group participants show how choice of research subfield can have an impact on the outcomes experienced by students. For example, several students have struggled with developing and maintaining viable thesis and/or dissertation topics. Some are still in the early stages of developing a topic, while others have topics that have been labeled unacceptable for a variety of reasons. A few students were informed that their studies were too interdisciplinary, while others were told that their research was not sufficiently geographical in nature. For some, it is simply a matter of losing interest in their thesis or dissertation topic. In contrast, a few students have found themselves in the position of having research interests that are acceptable, but they do not fit well in regards

to the specializations of their departments. As a result, they feel isolated, marginalized, and lacking peers and faculty with whom they can collaborate.

To ameliorate some of these concerns, departments might consider designing collective activities, courses, and venues for appreciating and working across demographic and sub-disciplinary boundaries, and for appreciating the strengths of geographical research that come from these complementarities. Having opportunities for collaboration were cited by survey respondents as being an important factor promoting a favorable working environment. Another factor contributing to a positive climate was the presence of a community marked by strong social interactions among graduate students. Having such a sense of community was most important to women and minority geography students, yet they were also the least likely to have it.

Financing a graduate degree remains a signature concern for many students, especially minorities, non-citizen international students, and those pursuing a Ph.D. Students pursuing research in human geography experienced more financial hardships compared with their peers in physical geography and geographic information science, two fields in which funding opportunities and amounts are frequently higher. Although the availability of financial support enables many students to attend graduate school when they otherwise would not be able to do so, departments should note that the form of support can ultimately affect completion rates, especially at the doctoral level. Students holding teaching and research assistantships tend to complete their degrees at higher rates than those holding fellowships (Pion 2001). Unlike assistantships, graduate fellowships often do not require students to perform any departmental work or service in return for funding, making it difficult for some students to become integrated in a departmental community (Ehrenberg and Mavros 1992; Lovitts 2001).

Students considering careers in academia, which represented the greatest number interviewed in the focus groups, want to have more practical experience with the kinds of activities that they will be expected to perform after graduation. For those seeking jobs outside of academia, they suggested that departments could do a better job of preparing students and making them aware of job opportunities in government or private industry. Many of these students even felt marginalized within their departments for choosing an ‘alternative’ career path.

Completion rates are highest when the professional goals of entering students match the strengths and orientation of a graduate program. The survey respondents expressed a variety of career goals, including a desire for applied academic work that oftentimes cannot be realized in a traditional faculty position. Many students, however, were not aware of non-academic career possibilities, or were reluctant to explore these alternatives because they sensed those choices would not be supported by the faculty (especially in doctoral programs). Both women and minority faculty, for example, expressed an interest in careers that position them to become active in social and community-based work. Although these goals can be achieved in faculty positions, many other career options are available to graduate students.

Ultimately, we conclude from our analyses that professional development during graduate programs is a process influenced by an interlocking set of factors related to individual attitudes and abilities, the overall social and academic dynamics in the department environment, and the cultures of academic disciplines and institutions. We argue, then, that the prevailing “self-help” attitude taken by many academic departments toward their new scholars must change in favor of community-based approaches that engage all members of a department, and which address the needs of a diverse student population. Although recruitment efforts seeking to diversify the gender and racial

composition of graduate programs are worthy and important, what happens next is equally important in ensuring a healthy and supportive climate for those students. This requires attention to the social and academic dynamics that establish the working conditions in a department and which ultimately affect the quality of mentoring and interpersonal relationships upon which so many students rely.

References

- Anderson, M. (1996). Collaboration, the doctoral experience, and the departmental environment. *The Review of Higher Education*, 19, 305–326.
- Antony, J., & Taylor, E. (2004). Theories and strategies of academic career socialization: Improving paths to the professoriate for Black graduate students. In D. Wulff & A. Austin (Eds.), *Paths to the professoriate: Strategies for enriching the preparation of future faculty* (pp. 92–114). San Francisco, CA: Jossey Bass.
- Association of American Geographers. (2006). *Guide to Geography Programs in the Americas*. Washington, DC: Association of American Geographers.
- Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialisation to the academic career. *The Journal of Higher Education*, 73, 94–122.
- Austin, A. E., & McDaniels, M. (2006). Using doctoral education to prepare faculty to work within Boyer's four domains of scholarship. *New Directions for Institutional Research*, 129, 51–65.
- Bair, C. R., & Haworth, J. G. (2004). Doctoral student attrition and persistence: A meta-synthesis of research. In J. C. Smart (Ed.), *Higher education: Handbook of theory, research* (Vol. 29, pp. 481–534). New York: Agathon Press.
- Becher, T. (1989). *Academic tribes and territories*. Milton Keynes, UK: Open University Press.
- Bieber, J. P., & Worley, L. K. (2006). Conceptualising the academic life: Graduate students' perspectives. *The Journal of Higher Education*, 77, 1009–1035.
- Biglan, A. (1973). The characteristics of subject matter in different academic areas. *Journal of Applied Psychology*, 57(3), 195–203.
- Boice, R. (1992). *The new faculty member*. San Francisco: Jossey-Bass.
- Boice, R. (2000). *Advice for new faculty members: Nihil nimis*. Needham Heights: Allyn and Bacon Press.
- Cameron, K. S., & Ettington, D. R. (1988). The conceptual foundations of organizational culture. In J. C. Smart (Ed.), *Higher education: Handbook of theory, research* (Vol. 4, pp. 356–396). New York: Agathon Press.
- Cooper, J., & Steven, D. (Eds.). (2002). *Tenure in the sacred grove: Issues and strategies for women and minority faculty*. Albany, NY: State University of New York Press.
- Council of Graduate Schools (CGS). (2003). *Inclusiveness series*. Washington, DC: Council of Graduate Schools.
- Ehrenberg, R. G., & Mavros, P. G. (1992). *Do doctoral students' financial support patterns affect their time-to-degree and completion probabilities?*. Cambridge, MA: National Bureau of Economic Research.
- Garcia, M. (Ed.). (2000). *Succeeding in an academic career: A guide for faculty of color*. Westport, Conn. and London: Greenwood Press.
- Golde, C. M., & Dore, T. M. (2001). *At cross purposes: What the experiences of doctoral students reveal about doctoral education*. Philadelphia, PA: The Pew Charitable Trusts.
- Golde, C. M., & Dore, T. M. (2004). The survey of doctoral education and career preparation: The importance of disciplinary contexts. In D. H. Wulff & A. E. Austin (Eds.), *Paths to the professoriate: Strategies for enriching the preparation of future faculty* (pp. 19–45). San Francisco: Jossey-Bass.
- Healey, M. (2005). Linking research and teaching exploring disciplinary spaces and the role of inquiry-based learning. In R. Barnett (Ed.), *Reshaping the university: New relationships between research, scholarship and teaching* (pp. 67–78). Maidenhead: McGraw-Hill International.
- Henkel, M. (2000). *Academic identities and policy change in higher education*. London: Jessica Kingsley Publishers.
- Hermanowicz, J. (2005). Classifying universities and their departments: A social world perspective. *Journal of Higher Education*, 76, 26–55.
- Komaki, J. (2005). *Faculty climate survey report*. Boulder, CO: Office of Institutional Research at the University of Colorado.
- Kuh, G. D., & Whitt, E. J. (1988). *The invisible tapestry: Culture in American colleges and universities*. Washington, DC: Association for the Study of Higher Education.

- Lee, J. J. (2004). Comparing institutional relationships with academic departments: A study of five academic fields. *Research in Higher Education*, 45, 603–624.
- Lee, J. J. (2007). The shaping of the departmental culture: Measuring the relative influences of the institution and discipline. *Journal of Higher Education Policy and Management*, 29, 41–55.
- Lovitts, B. E. (2001). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. New York: Rowman and Littlefield.
- Lucas, C., & Murray, J., Jr. (2002). *New faculty: A practical guide for academic beginners*. New York: Palgrave Press.
- Monk, J. (2001). Valuing service. *AAG Newsletter*, 36, 3.
- Nerad, M., & Miller, D. S. (1996). Increasing student retention in graduate and professional programs. *New directions for institutional research*, 92, 61–76.
- Nyquist, J. D., Manning, L., Wulff, D. H., Austin, A. E., Sprague, J., Fraser, P. K., Calcagno, C., & Woodford, B. (1999). On the road to becoming a professor: The graduate student experience. *Change*, 31(3), 18–27.
- Peterson, M. W., & Spencer, M. G. (1990). Understanding academic culture and climate. In W. G. Tierney (Ed.), *Assessing academic climates and cultures*. *New Directions for Institutional Research*. San Francisco: Jossey-Bass.
- Phillips, G., Gouran, D., Kuehn, S., & Wood, J. (Eds.). (1994). *Survival in the academy*. Cresskill, NJ: Hampton Press.
- Pion, G. M. (2001). *The early career progress of NRSA predoctoral trainees and fellows*. Bethesda, MD: National Institutes of Health.
- Rice University (2003). *Academic climate survey technical report*. Accessed July 22, 2007 at: <http://professor.rice.edu/images/professor/AcademicClimate.pdf>.
- Rosser, V. (2004). Faculty members' intentions to leave: a national study on their worklife and satisfaction. *Research in higher education*, 45, 285–309.
- Solem, M. N., & Foote, K. E. (2004). Concerns, attitudes, and abilities of early career geography faculty. *Annals of the Association of American Geographers*, 94, 889–912.
- Toma, D. (1997). Alternative inquiry paradigms, faculty cultures, and the definition of academic lives. *Journal of higher education*, 68, 681.
- Wulff, D. H., & Austin, A. E. (Eds.). (2004). *Paths to the professoriate: strategies for enriching the preparation of future faculty*. San Francisco: Jossey-Bass.