



CEW Research Reports.....

A SURVEY OF THE GRADUATE EXPERIENCE

Sources of Satisfaction
and Dissatisfaction
Among Graduate Students
At The University of Michigan

By

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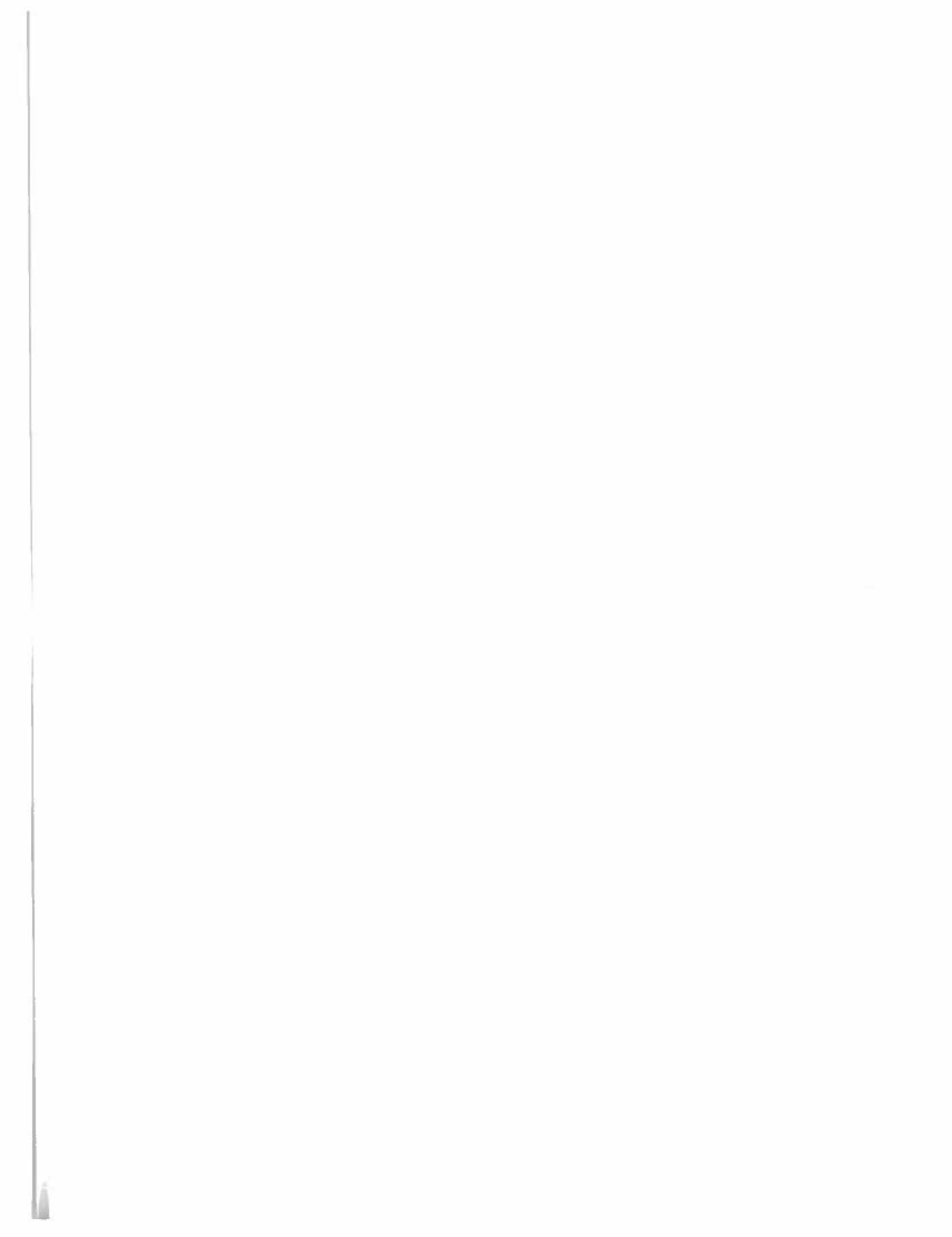


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Preface

Major research universities throughout the country have given increased attention in recent years to the quality of the graduate experience. Scholarly works such as *In Pursuit of the Ph.D.* by William Bowen and Neil Rudenstine (Princeton University Press: New Jersey, 1992) have drawn attention to low completion rates and lengthy time-to-degree figures. Sharing these concerns, the Horace A. Rackham School of Graduate Studies has conducted cohort studies at the University of Michigan to look at completion rates and time to degree for students in various disciplines. These studies show that, overall, women have slightly lower completion rates and longer times to degree than their male counterparts. Concern about this gap led to the Project on the Graduate Experience described in this report. The Center for the Education of Women and the Graduate School decided to explore the conditions of graduate study at the University of Michigan--to gather data about students' experiences, attitudes, and perceptions that might lead to greater understanding of the academic environment as it is experienced by students. A major objective of this study was to gauge the climate for women in graduate education and to evaluate how this differs from the climate for men.

The Project on the Graduate Experience was a collaborative effort of the Center for the Education of Women (CEW) and the Rackham School of Graduate Studies. John D'Arms, Rackham Dean, and Susan Lipschutz, Senior Associate Dean, provided encouragement and support for the project. Nancy Cantor, Professor of Psychology and Assistant Dean, Rackham; Carol Hollenshead, Director, CEW; Susan Frazier-Kouassi, Research Fellow, CEW; and Jean Manis, Research Investigator, CEW, participated in the initial design of the study. The project was funded by the Office of the Vice-President for Research, and was carried out by CEW.

Maia Bergman of the Graduate Office of Data Systems developed the sampling procedures. David Burkam served as statistical consultant and carried out the multivariate analyses. Andrea Doyle joined the project as an editorial consultant to assist in preparation of reports. Deborah Siegel, Marisa Smith, Hayat Alvi, and Charlotte Droll provided research assistance at various stages of the project. Jean Manis assumed primary responsibility for the preparation of this report.

In the pages that follow we present in both quantitative and qualitative detail the findings of our study. The data discussed are presented in the tables in Appendix A. In addition, to give readers direct access to student voices, we have quoted liberally from our respondents' comments. Their vivid reactions serve to flesh out the figures, and hence to aid in our understanding of them.

It is clear that men and women alike value the academic excellence, the rigor and challenge of their University of Michigan experience. As one student put it, "The quality of education is superb, the faculty is extremely knowledgeable in their field of expertise." Students also valued the abilities of other students, and a sense of community among students and faculty, and the encouragement and guidance offered by supportive mentors. But not all students experienced this stimulating and benign environment, and inevitably we have devoted more attention to the sources of dissatisfaction revealed by our respondents. Our goal is to stimulate consideration by the faculty and administration of those areas in need of improvement, and of the steps that can be taken to increase the probability of a rewarding experience for all students.

Studies at other universities (including Princeton, Carnegie Mellon, and Berkeley, among others) have tapped similar issues and reached similar conclusions—for example, that mentoring and advising are key factors, and that women do report more discriminatory treatment and sexual harassment than men. The pattern and magnitude of gender differences may vary somewhat from one institution to the next, but the consistency of these basic findings suggests that they are not peculiar to any given institution.

Graduate education will no doubt always be stressful as well as stimulating. And at institutions the size of the University of Michigan, the delivery of services and provision of resources is necessarily accomplished within a bureaucratic structure. What concerns us here is the nature of that bureaucracy: What characteristics lead students to perceive it as cold, uncaring, or indifferent to their welfare? What changes in policy or practice would promote a stronger sense of community in the University as a whole, a community respectful and supportive of all its members?

It is our hope that the questions raised in this report will lead all those who care about the nature of education at Michigan to seek ways of addressing these issues. With leadership and concerted and collaborative effort and creativity, we believe we can make the graduate experience at the University of Michigan a more positive one for all students.

Summary of Findings

The Project on the Graduate Experience sought to explore the impact of the academic climate on graduate students: To what extent and in what ways does it provide a supportive environment for degree completion and professional development, and to what extent and in what ways does it contribute to feelings of alienation, isolation, and dissatisfaction?

Overall Levels of Satisfaction

About 60% of the respondents expressed moderate to high levels of satisfaction with their academic experiences at U-M. (In open-ended responses, the quality of the academic programs and faculty was cited most frequently by students as a source of satisfaction and value.)

The highest levels of satisfaction were expressed in ratings of various specific resources or facilities: computer facilities, 80% moderately or very satisfied; recreational facilities, 75%; libraries, 73%; student health services, 69%.

Academic and career advising received less favorable ratings: Only 33% (academic advising) and 25% (career advising) indicated moderate to high levels of satisfaction, while 38% said that they were moderately or very dissatisfied with the career advising they had received, and 27%, with academic advising.

Students were reasonably satisfied with their advisors' substantive knowledge in relevant disciplines (75% moderately or very satisfied) but were considerably less satisfied with their advisors' knowledge of University, school or departmental policies and procedures (50% moderately or very satisfied) and guidance concerning effective job search studies (33% moderately or very satisfied).

With respect to their financial support, 48% of the respondents were moderately or very satisfied, but 25% were moderately to very dissatisfied.

Nearly a fifth of the women were moderately to very dissatisfied with campus security; 43% of them said that they sometimes felt unsafe while studying, working, or moving about campus.

"Institutional concern for students" elicited the most negative response: only 15% of the respondents expressed moderate to high satisfaction.

Students in master's programs were less satisfied than those in Ph.D. programs.

Major Sources of Dissatisfaction, Delay, or Difficulty

Lack of adequate mentoring and advising was one of the most frequently cited sources of dissatisfaction. Students felt that pressure on the faculty to pursue their own research agendas left too little time for mentoring; academic advisors were seen as frequently not sufficiently knowledgeable about departmental and University policies and procedures.

Lack of adequate mentoring and advising, financial concerns, and time devoted to TA responsibilities were the three most frequently cited sources of delay or difficulty by Ph.D. students.

At the master's level, women were more dissatisfied than men with the mentoring they had received thus far.

Among master's students, financial issues were mentioned most frequently as a source of dissatisfaction, followed by lack of adequate advising and mentoring.

Student Perceptions of U-M Environment

Student perceptions of the academic environment, based on descriptions obtained from adjective check-lists, proved to be the best predictors of academic satisfaction. Those who saw U-M as *personally supportive*, as *exciting*, or as *demanding* expressed higher levels of satisfaction, and those who saw it as *alienating* expressed lower levels of satisfaction.

Women were less likely than men to perceive the U-M as accepting, and more likely to perceive it as alienating.

Most students (71%) described U-M as bureaucratic, and 65% described it as competitive; less than 20% described U-M as friendly; less than 10% as supportive, cooperative, or welcoming.

Attitudes about Cooperation and Competition

More than four-fifths of the students expressed a desire for a more cooperative, less competitive classroom atmosphere. In response to the statement "I would like more cooperative or interactive approaches to learning at U-M," 82% agreed with this view, 40% "strongly" and 42% "somewhat." While women were more likely than men to agree strongly with the statement (46% compared to 33%), nevertheless 77% of the men agreed, either somewhat or strongly.

With respect to the effects of competition, 52% of the respondents agreed with this statement: "The competitive atmosphere at U-M contributes to feelings

of alienation and isolation." Three-fifths of the women, and 45% of the men, agreed with this view.

Sexual Harassment and Discriminatory or Derogatory Treatment

Nearly a fifth of the women had experienced sexual teasing, jokes, or innuendoes from faculty members; nearly 40% had experienced such behavior from other students. Other types of unwelcome sexual behavior experienced by women from faculty included: sexually suggestive looks or gestures, 8.6%; deliberate touching, crowding, or pinching, 5.7%; pressure for sexual favors, 1.5%.

Unwelcome sexual attention was not more prevalent in those areas that have traditionally had the fewest women faculty or students.

Women (34%) were more likely than men (20%) to report having experienced discriminatory or derogatory treatment. For women such treatment frequently took the form of behavior that personally belittled or embarrassed the respondent, or that ignored or devalued the respondent's contributions or opinions.

Attitudes of Selected Student Populations

Students of color did not differ significantly from other students in their attitudes on most topics. However, African-American students reported having experienced discriminatory or derogatory treatment more frequently than did other students (40%, compared to 31% of Latino students, 26% of Caucasian students, and 16% of Asian-American students). Students of color in Ph.D. programs were less satisfied than other students with the mentoring they had received thus far.

Women in the physical sciences, mathematics, and engineering did not appear to have more negative experiences than other women. They did, however, appear to enjoy their classes somewhat less than other women, and expressed greater doubt about whether they would complete their degrees.

Nontraditional students--in particular, those who had children, or who commuted to campus--felt that the University should be more understanding and flexible with regard to their needs. (One-fifth of our respondents had children.) With respect to family issues, women rated U-M as significantly less helpful, concerned, and flexible than did men.

Conclusions

There are important steps which universities can take to address the concerns expressed by our respondents. Suggestions for doing so can be found in the recommendations at the end of this report. •

A SURVEY OF THE GRADUATE EXPERIENCE

In planning the Project on the Graduate Experience, we sought to explore a variety of factors within the academic culture at U-M that contribute to the quality of the graduate experience for students. The objective was to learn more about the experiences of graduate students at the University of Michigan, and to gain a better understanding of how well the University is meeting the needs of its students. We hoped to identify those features of the academic climate that promote a positive experience, as well as those which contribute to feelings of alienation, isolation, or dissatisfaction.

A second objective was to gauge the climate for women in graduate programs at the University of Michigan, and to compare women's and men's experiences and perceptions. With respect to women in academia, "the higher the fewer" is still an accurate description. Recruiting more women to graduate programs constitutes one approach to changing the situation; providing a supportive environment for degree completion and professional development is equally critical. The focus of this study is on the latter set of issues. A particular goal has been to assess the prevalence and impact of those subtle attitudes and behaviors that devalue women; these "micro-inequities," which may flourish in the environment largely undetected, are antithetical to creating a supportive environment.

Methodology

The data described in this report were collected by mailed questionnaire in the spring of 1991. In selecting the sample, we first included all students of color and all women students in mathematics, engineering, and the physical sciences, because we wanted to obtain adequate data on these populations that tend to be underrepresented at U-M and other institutions. We also attempted to select a sample of students who had children, in order to assess problems among these nontraditional students.¹ We then selected a random sample of the remaining women and men students enrolled in doctoral and other degree programs administered by the Rackham Graduate School.² Questionnaires were returned anonymously.

There were 1008 respondents, which represents a response rate of about 42%--a figure similar to that we have obtained in other surveys of highly pressured populations. The respondents are about two-thirds Ph.D. students and one-third masters students. (See Table 1 in Appendix A for a demographic description of the respondents.)

¹A list of students with dependents was obtained from the Financial Aid Office.

²This sampling procedure therefore did not include students enrolled for graduate professional degrees--e.g., J.D.'s, M.D.'s, M.B.A.'s, M.S.W.'s--which are awarded by the individual professional schools.

Because we over-sampled for the groups mentioned above, we have weighted the data to generate results representative of a true random sample of the Rackham graduate student population. The weighting procedure took account of the respondent's probability of falling within the sample, but did not correct for different response rates. The number of students contacted, the number of respondents, and the response rates for our four sample groups are shown in Part II of Table 1.

Comparisons on demographic characteristics between our respondents and the total Rackham student population in the winter term, 1991, are given in Table 2 of Appendix A. Clearly, women were more likely than men to respond to the survey; even after weighting, 51% of our respondents were women, compared to 38% in the total Rackham population. However, since all results are presented with gender comparisons, this discrepancy does not appear to constitute a problem in interpretation. None of the comparisons for ethnicity or citizenship reflect differences of more than three percentage points. The same is true for three of the five academic divisions; with regard to the other two, our respondents include a smaller percentage (29% vs. 39%) in Division 2 (physical sciences, mathematics, and engineering) and a higher percentage (22% vs. 17%) in the humanities. (Since Division 2 has many more men than women, and Division 4 has fewer, these discrepancies reflect the different response rates for men and women.) With respect to degree level, our respondents include 68% in Ph.D. programs, compared to 64% of the total Rackham population. By most of the criteria available, then, it would appear that our respondents constitute a reasonably close approximation of the total Rackham student population.

Tables showing gender comparisons on major topics are presented in Appendix A. In our discussion, we will highlight gender differences as they appear. Results concerning students of color, women in science, and non-traditional students will be summarized in special sections under those headings.

Overall Levels of Satisfaction

Early in the questionnaire students were asked to indicate how satisfied they were with various aspects of their experiences at Michigan. On three general items--"your U-M experience," "your academic experience" and "your academic progress"--about 60% of the respondents indicated that they were moderately or very satisfied, and very few expressed strong dissatisfaction. (See Table 3) The highest levels of satisfaction were expressed in connection with various specific resources or facilities: Library facilities, 73%, computer facilities, 80%, recreational facilities 75%, student health services, 69% (again, these figures represent the percent indicating that they were either moderately or very satisfied.)

Close to half of the respondents indicated moderate to high satisfaction with three other academic items--"quality of instruction in lectures," "guidance in research activities," and "interdisciplinary opportunities." Slightly more--57%--gave this response with respect to "accessibility of faculty."

Approximately half of our respondents were moderately or very satisfied with their financial support. However, one-fourth indicated moderate to strong dissatisfaction with this area.

Items tapping career and academic advising elicited fewer favorable responses--only 33% (academic advising) and 25% (career advising) indicated moderate to high levels of satisfaction. These items also revealed higher levels of dissatisfaction: 38% said that they were moderately or very dissatisfied with the career advising they had received, and 27%, with academic advising.

"Institutional concern for students" was the item revealing the lowest level of satisfaction--only 15% of the respondents indicated that they were moderately or very satisfied with this aspect of their U-M experience. Half of the respondents gave intermediate responses, and 35% were very or moderately dissatisfied, with women expressing more dissatisfaction than men. Student reaction to another item--"campus security"--was also rather negative, and also reflected a difference in reaction between men and women: only 39% of the women, but 49% of the men, indicated moderate or high levels of satisfaction; overall, 16% were moderately or very dissatisfied, and 40% gave intermediate reactions.

The four areas of experience which elicited expressions of moderate to strong dissatisfaction from at least 25% of our respondents--academic and career advising, institutional concern for students, and financial support--provide the basis for many of the complaints voiced by students in different contexts throughout the questionnaire.

Satisfaction with Advising or Mentoring

As indicated above, many students were not very satisfied with the academic advising they had received. One section of the questionnaire explored the subject of mentoring in some depth. In answer to the general question, "How satisfied are you with the extent of mentoring you have received thus far at U-M?", 42% of the respondents indicated that they were moderately or very satisfied. Nearly 30% indicated that they were very or moderately dissatisfied--33% of the women, and 24% of the men.³ Overall, women were

³Respondents had six response options to choose from, ranging from very dissatisfied to very satisfied.

significantly less satisfied than men with the mentoring they had received thus far. However, this difference appears to reflect greater dissatisfaction among women in master's programs. Among both women and men, students in master's programs were significantly less satisfied than those in Ph.D. programs. Among Ph.D. students, women and men did not differ significantly in level of satisfaction with mentoring thus far; among master's students, women were less satisfied than men.

Of those respondents who currently had a mentor, 62% reported moderate or high satisfaction with the relationship, which suggests that many students eventually find a helpful relationship. (The question was: "If you currently have a mentor, how satisfied are you with this relationship?" About 30% of the respondents did not answer, presumably because they did not regard any of their current advisors or professors as mentors.) Asked whether there were faculty members other than their official advisor who served as mentors for them, 62% of the Ph.D. women said "yes," compared to 50% of the men; among the master's students, 40% of the women, compared to 46.5% of the men, said "yes." Whether the Ph.D. women are more likely than other students to seek other mentors (possibly because their advisors do not meet their needs), or more likely to find them when they do, or more likely to have mentors from previous jobs or from undergraduate work, we cannot say.

Advisors, of course, are not necessarily mentors; the great majority of students said that they had a faculty advisor (96% of Ph.D. students, 88% of master's students, with no gender difference). At both Ph.D. and master's levels, women were more likely to say that their advisor had been appointed by their department (among Ph.D.'s, 45% vs. 32%; among master's students, 80% vs. 69%). It appears that simply having a departmental system of appointing advisors does not insure a satisfactory outcome, with respect to how adequately this function is carried out. (The greater level of dissatisfaction among women in master's programs may be related to the fact that they are less likely to have mentors other than, or in addition to, their official advisors.)

Asked about how satisfied they were with various specific qualities of their advisors, students were reasonably satisfied with their advisors' substantive knowledge in relevant disciplines (75% moderately or very satisfied), but were considerably less satisfied with their advisors' knowledge of university, school, or departmental policies and procedures (50% moderately or very satisfied). Over half of the respondents were moderately or very satisfied with their advisors' qualities of empathy, kindness, understanding, or ability to be a good listener. Somewhat lower levels of satisfaction (42% moderately or very satisfied) were associated with advisors' efforts to provide specific suggestions or guidance about courses to take, or advice about desirable research experience or jobs. Only a third of respondents were moderately or

very satisfied with their advisors' guidance concerning effective job-search strategies; 35% of the respondents were moderately or very dissatisfied with their advisors on this dimension.

In open-ended comments on the extent and quality of mentoring they had received, many respondents linked inadequate mentoring to the pressures on faculty to conduct their own research.

"Faculty are so busy with research, recruiting other faculty, and general administration that they often have little time to spare with students. Students need to be really pushy to get attention."

"I have received no mentoring at U-M. Faculty are too busy with their other jobs or doing research to care about being a mentor."

Many comments stressed the importance of mentoring:

"I consider this problem the most important at U-M."

"I believe mentoring may be the single most important experience a doctoral student can have and should be given highest priority in future graduate experience planning."

"There is no formal system in my department for mentorship, and I think a lot of my peers suffer for it."

"I have worked closely with three faculty...who have provided excellent mentoring relationships. Their examples, advice, and confidence in me have been critical to my academic and career pursuits."

Other comments cited a lack of adequate guidance in the first year or two of graduate study:

"I really just winged it for my first three years of coursework and was ready to leave after I'd finished my prelims. This mentor relationship is really necessary."

"The quality and nature of mentoring which I have received since prelims is very different from before the comprehensive exams. I received very little guidance in my first two years here...no assistance in course selection, field selection, etc. It was not until I began research for my dissertation that I felt my faculty had much interest in me. It is, I think, a reflection of the department's and the university's emphasis on research, at the great expense of teaching."

Several women expressed a desire for more women faculty, so that there would be more women available to serve as mentors:

"I'd really like to hear a woman's point of view sometimes! My advisor/mentor is great on professional topics, but with his homemaker wife, he has no advice at all about career vs. family issues. He sees having children (by a professional woman--not by a man, of course) as an end to one's career."

"I can't help but wish that there were more women of color on the faculty to mentor students."

Some students commented that they felt no particular need for mentoring, and others that it was possible to find adequate help if the student assumed responsibility for doing so. Most of the students who added comments, whether their own experiences had been good or bad, reaffirmed the importance of the mentoring function.

The importance of mentoring or guidance also stood out in a set of items that listed various factors that might have significantly slowed the students' progress, or caused them particular difficulties (Table 4). Out of 23 such items, the three checked most frequently (by about 30% of the respondents, in each case) as a source of delay or difficulty were "financial pressures," "time devoted to TA responsibilities," and "lack of mentorship or guidance." After checking which factors had caused problems or delays, respondents were asked to indicate which factors had presented the most serious problems for them (Table 5). These same three factors were named most frequently by Ph.D. students as one of the three most important sources of delay or difficulty. Among students in master's programs, 23% of the women, compared to 9% of the men, indicated that lack of mentorship or guidance was one of the most important problems. (Among Ph.D. students, there was no significant gender difference on this issue.)

Finally, student dissatisfaction with the advising or mentoring function was one of the two most important themes in their responses to an open-ended question at the end of the survey. ("What aspects of your experiences at U-M have been most disturbing, disappointing, or problematic?") Twenty-one percent of the respondents mentioned inadequate or misguided advising or mentoring--with women more likely to voice this complaint than men (26% vs. 16%). (The other major theme--financial problems--was mentioned by 23% of both men and women.)

Student Perceptions of Their Environment

Early in the questionnaire, before probing particular issues in depth, we sought to obtain an overall picture of how students viewed the University of

Michigan. We presented respondents with a set of 45 adjectives, and asked them to check those which they felt described the U-M. They were asked to do this twice, once for the U-M generally, and again for their particular department or school. The adjectives were taken from a set of 180 descriptive terms that had been used in a similar survey at Princeton.⁴

Student perceptions of the U-M can be summarized as follows, running from the descriptions most frequently endorsed to those least often endorsed:

- Bureaucratic (71%)
- Competitive, demanding, intellectually rigorous (65%, 58%, 52%)
- Stressful, ambitious, intense (54%, 51%, 44%)
- Political, elitist (43%, 38%)
- Stimulating, exciting (36%, 33%)
- Liberal (30%)
- Conservative (30%)
- Biased, cold (25% each)
- Creative, inspiring (22%, 17%)
- Masculine (19%)
- Friendly (19%)
- Lonely (19%)
- Accepting, aware, accommodating, tolerant (17% to 13%)
- Conscientious, ethical, integrated (11% to 12%)
- Adaptable, conscientious, open, flexible, supportive, welcoming (12% to 9%)
- Rejecting (7%)
- Warm, caring (4-5%)

The order of endorsement followed roughly the same pattern for both men and women (see Table 6). However, there were several gender differences: Women were more likely than men to describe the U-M as bureaucratic, stressful, political, elitist, biased, masculine, empirical, rejecting, and caring; men were more likely than women to see the U-M as liberal, accommodating, open, and realistic.

With respect to the departmental/school descriptions (Table 7), the adjectives suggesting academic rigor receive the highest level of endorsement--demanding (57%), competitive (54%), intellectually rigorous (53%). Only a third of the respondents described their departments as bureaucratic. Otherwise, the general order remains similar to that for the U-M as a whole, but with somewhat higher levels of endorsement for the "psychologically

⁴Clark, Joyce D. Women's Needs Assessment Survey: Women's Views of Their Experiences at Princeton University, prepared for the Women's Needs Assessment Task Force, Princeton University, March 1990.

supportive" descriptions: accepting, adaptable, cooperative, accommodating, etc.. For example, 40% of our respondents described their department as friendly, 36% as supportive, and 25% as welcoming. (The corresponding figures for U-M descriptions were 19%, 10%, and 9%.) In brief, the departmental or school descriptions sound warmer and friendlier--but still not overwhelmingly so.

Composite scores were created to represent student perceptions of the academic environment, based on factor analyses and conceptual groupings of the adjective descriptions of U-M as a whole and of the student's own school or department. The factor analyses revealed five underlying dimensions, which we labeled as follows: (1) PERSONAL, which included eight descriptive terms--warm, caring, welcoming, supportive, friendly, flexible, adaptable, and cooperative; (2) ACCEPTING, which included six terms--accepting, tolerant, accommodating, liberal, aware, and open; (3) EXCITING, which included four terms--exciting, inspiring, stimulating, and creative; (4) DEMANDING, which included six terms--demanding, intense, competitive, stressful, intellectually rigorous, and ambitious; and (5) ALIENATING, which included five terms--cold, lonely, remote, impersonal, and rejecting. Scores on these dimensions reflected the number of terms within each grouping that a respondent had checked as descriptive of the U-M or of their department or school. (Four of the five factor scores were highly skewed. See Appendix B for measures of skewness.)

The level of endorsement of these perceptions of the environment can be shown simply by the percentage of students who had checked at least one of the descriptive terms in each set:

Perception of Environment:	Describing U-M	Describing R's School/Dept.
Personal	35.6%	62.8%
Accepting	52.8%	64.0%
Exciting	54.9%	51.8%
Demanding	88.4%	85.9%
Alienating	52.0%	34.3%

The most commonly held perception of the U-M is that related to academic rigor, and this is true for the departmental descriptions as well. Slightly more than half of the students describe the U-M as accepting and as exciting. A smaller proportion--36%--view U-M as personally warm and supportive, while roughly half of them find it alienating. Students see their department or school as more personally supportive, more accepting, and less alienating than the U-M as a whole, but even so a third of them reflect a sense of alienation.

Multivariate Analyses of Academic Satisfaction

We constructed a composite measure of academic satisfaction based on respondents' ratings of how satisfied they were with six aspects of their U-M experiences: (a) overall U-M experience; (b) academic experience; (c) academic program; (d) quality of instruction in lectures; (e) guidance in research activities; and (f) accessibility of faculty.⁵

Student perceptions of the academic environment, as measured by the adjective factor scores described above, proved to be the strongest predictors of academic satisfaction. We entered these adjective factor scores as the last step in a four-stage hierarchical regression analysis of academic satisfaction. The first step took account of the effect of three personal background factors--gender, ethnicity, and citizenship. The second step added measures of respondent's University program--whether they were in a Ph.D. or a Master's program, and which of the five divisions of the University they were enrolled in (e.g., Social Sciences). The third step added total years in the program and whether the respondent had held teaching or research assistantships. And the fourth step added the environmental perceptions (of either the U-M overall or the respondent's department or school).

The first three steps of the model together explain only a very small percent of the variance in academic satisfaction--roughly 5 percent. Inclusion of the departmental perceptions of climate, however, accounts for an additional 27% of the variance (overall $R^2 = .315$). Not surprisingly, perceptions of the particular department appear to have a somewhat larger effect than perceptions about the University in general. In either case, satisfaction *decreases* as the perception of alienation *increases*. Conversely, satisfaction *increases* as the perception of excitement and personal attention increases. Students whose descriptions indicate that they perceive their department as demanding are also more satisfied. Whether departmental or overall U-M perceptions are used, the top three predictors, of all the measures described above, are student perceptions--alienation, excitement, and personal attentiveness or support.

In the analysis described above, men and women did not differ with respect to level of academic satisfaction. Conceivably, however, the other predictors may interact in different ways for men and women. We therefore repeated the regression analyses separately by gender. The results suggest that the

⁵A factor analysis of the 21 satisfaction questions listed in Table 3 grouped these six items in one factor. The composite z-scored measure (mean=0, standard deviation=1) was scaled so that 0 represents "average" satisfaction, a positive score represents greater satisfaction, and a negative score represents lesser satisfaction. The composite measure produced a normal distribution of scores, and hence provided an appropriate dependent variable for regression analyses.

factors affecting academic satisfaction operate in a similar fashion for women and men. (This is not to say, however, that men and women are equally likely to hold a given perception. In fact, gender is related to the likelihood of holding certain views, a finding which will be discussed in the following section.)

The only predictor other than student perceptions of the climate that remained significant in the last step of the regression analysis was that of citizenship: non-citizens were more satisfied than citizens. Two other predictors remained significant when the model included perceptions of the U-M overall, rather than departmental perceptions: students in Ph.D. programs were more satisfied than those in Master's programs, and years in program were negatively associated with satisfaction--that is, the longer a student had been in his or her program, the lower the satisfaction. Among U.S. citizens, there were no significant differences by race or ethnic group. With respect to differences by academic division, students in Division 1--biological and health sciences--appeared to be more satisfied than other students, but this effect disappeared once the environmental perceptions were added. The greater satisfaction of students in Division 1, and of students in Ph.D. programs, appears to reflect primarily differences among women; when the analyses were repeated separately for men and women, these effects were significant only among women.

Influences on Student Perceptions of the Environment

We also used hierarchical regression techniques to determine whether the environmental perceptions held by students could be predicted by the background or program variables.⁶

Three background variables were entered in the first step--gender, ethnicity, and citizenship--followed by degree type (Ph.D. or Master's), University division, and teaching/research experience (whether the student had held appointments as a GSTA, GSRA, both, or neither). For each of the five environmental dimensions described above, we ran logistic regressions for perceptions of the U-M and for perceptions of respondent's department or school.

⁶Because of the highly skewed nature of the original factor scores, these perceptual measures were not suitable for use as outcome measures in ordinary regression analyses. We therefore collapsed the scores on the five factors in order to compare those students who checked none of the adjectives in a given scale with those who had checked at least one adjective. We then employed these dichotomous variables in logistic regression analyses to estimate the relationship between student characteristics (background and program variables) and the likelihood of checking at least one adjective in a given factor.

Factors Affecting Perceptions of U-M as a Whole

Gender. Women were more likely to describe the U-M as alienating, and less likely to describe it as accepting, than were men.

Ethnicity. There were no significant relationships between the major ethnic or racial groupings--African-Americans, Asian-Americans, Latinos, and Caucasian--and any of the environmental dimensions.

Degree level. None of the perceptions of U-M were predicted by whether the respondent was enrolled in a Ph.D. or a Master's program.

Division. Respondents in the biological and health sciences (Division 1) were more likely than other students to describe the U-M as exciting.

Teaching/Research experience. Students who had had teaching assistantships only were more likely to describe the U-M as demanding, and less likely to describe it as personal or accepting, than were students who had had neither teaching nor research assistantships. Those who had held both teaching and research assistantships were less likely than those who had had neither to describe the U-M as exciting or personal, but more likely to describe it as accepting.

Citizenship. Non-citizens were less likely than citizens to describe the U-M as demanding or as alienating, and more likely to describe it as personal.

Factors Affecting Perceptions of Department or School

Gender. Women again appeared to be more likely than men to describe their department or school as alienating, although the effect did not reach conventional levels of significance ($p=.093$).

Ethnicity. The major ethnic/racial groupings did not differ in their descriptions of their department or school.

Degree level. Ph.D. students were more likely than Master's students to describe their department as demanding.

Division. Students in Division 2--physical sciences, math, and engineering--were more likely than those in other divisions to regard their department as demanding. Those in Division 1 (biological and health sciences) found their department more personally supportive than did other students. Division 3 students--social sciences--also showed this trend, but not significantly ($p=.08$).

Citizenship. Non-citizens were less likely than citizens to describe their department as demanding, as personally supportive, or as accepting.

Attitudes about Specific Aspects of the Academic Climate

In general, gender comparisons across a wide range of issues related to academic climate revealed more similarities than differences; for the most part, women and men appear to be reporting on shared experiences and reactions. On some points, however, there are rather striking differences. Attitudes about various specific aspects of the graduate experience are summarized below.

Issues Related to Gender and Ethnicity

There were clear gender differences on questions touching directly on gender or ethnicity. For example, 67% of the women, compared to 44% of the men, agreed somewhat or strongly⁷ with this statement: "I would like more attention given to gender issues at U-M." Much the same pattern appeared on a similar statement concerning racial issues. ("I would like to see more attention given to racial/ethnic issues at U-M".) Overall, 58% of the students agreed with this statement--34% somewhat, 24% strongly; again, women were more likely than men to agree strongly--31% compared to 17%.

When presented with a list of 10 areas of concern--including sexual harassment and assault, racial harassment, harassment of gays and lesbians, alcohol use, and drug use--and asked to indicate to what extent each of them was a problem at U-M, women rated each of the ten as more of a problem than did men.

Attitudes about Competitiveness

Because earlier research among undergraduates at U-M suggested that women, in particular, disliked the intensely competitive atmosphere that seemed to characterize introductory science and math classes,⁸ we included two items to see how graduate students might react to this issue. A strikingly high level of endorsement came in response to this statement: "I would like more cooperative or interactive approaches to learning at U-M." Overall,

⁷Four response categories were offered: disagree strongly, disagree somewhat, agree somewhat, agree strongly.

⁸Manis, J. D., Thomas, N. G., Sloat, B. F., and Davis, C. An Analysis of Factors Affecting Choice of Majors in Science, Mathematics, and Engineering at the University of Michigan, Research Report #23, Center for the Education of Women, The University of Michigan, July, 1989.

82% of our respondents agreed with this view, 40% "strongly" and 42% "somewhat". While a noticeably larger percentage of women than of men agreed strongly with the statement (46% compared to 33%), nevertheless 77% of the men agreed, either somewhat or strongly. In response to a second statement relevant to the effects of competition--"The competitive atmosphere at U-M contributes to feelings of alienation and isolation"--52% of the respondents agreed either somewhat (31%) or strongly (21%). Sixty percent of the women, compared to 45% of the men, agreed with the statement.

In unstructured open-ended responses at the end of the survey, students made many interesting comments on the impact of the competitive environment. For example, a male Ph.D. student in a social science department had this to say:

"Within my program there is no confidence in the quality of the admitted graduate students and so all students must go through a 2-year "weeding out" process. This is very demoralizing and creates excessive competition that is not good for learning. I must admit that after having graduated from one of the most competitive Ivy league institutions, I was shocked to see the level of competition among students."

And from a man in the College of Engineering:

"The cut-throat atmosphere in the first two years of undergrad here [in the Engineering School] stunts one's ability to cooperate on a project. The faculty must recognize engineering is an inherently cooperative endeavor and encourage this behavior in its undergraduates."

There were other references to the "paralyzing" effect of the competition. Respondents appear to be referring not to the fact that the students are bright, and hence competitive in that sense, but rather that the environment pits each individual against all the others.

Interdisciplinary Contacts

The great majority (84%) of students agreed with this statement: "I would like to have more contact with students and faculty in other departments or schools." Indeed, 40% agreed *strongly* with this view—43% of women, and 37% of men.

Sense of Acceptance and Community

Individually, the majority of students appear to feel "at home" in their department: 71% agreed with the statement, "I feel accepted and supported in my department or school." However, the nature of a large institution such as U-M--many separate units, decentralized organization, a powerful bureaucracy, friction among contending groups--affects students' sense of unity and social harmony; 54% disagreed with the statement "I feel a sense of community at Michigan." Men and women did not differ in these views.

On the other hand, men were more likely to report a sense of difference between themselves and other students: 46% of men, compared to 32% of women, agreed with this statement: "Most graduate students at Michigan have values and attitudes that are different from mine."

Issues of Confidence

In terms of certainty about their career goals, or confidence that they would complete their degrees, or feeling dissatisfied with their academic efforts, men and women gave very similar reactions.

Women were more likely than men, however, to feel inhibited about speaking in the classroom. Asked how often in the past year they had "wanted to participate in class but felt inhibited," 51% of the men, but only 38% of the women, said that they almost never felt that way; 19% of the women, compared to 14% of the men, said that they felt that way "often" or "almost always."

Safety

Not surprisingly, women were much more likely than men to report feeling unsafe while studying, working, or moving about campus; 43% of the women said that they sometimes felt unsafe, and 11% felt that way often. By contrast, 88% of the men said that they almost never felt that way, compared to 47% of the women.

Sexual Harassment

Information about unwanted sexual attention was elicited in two forms: First, we presented respondents with a list of such behaviors and asked them to indicate how frequently they had experienced these behaviors from U-M faculty members, staff members, and students. (Response categories were "never," "once," "occasionally," and "frequently.") Secondly, we asked respondents to describe in their own words any instances of unwelcome sexual attention that they had experienced from members of the U-M community. Results from the first step are presented in Table 8; figures represent the percentage of respondents who had ever experienced the listed behaviors.

Nearly a fifth of the women reported that they had experienced sexual teasing, jokes, or innuendoes from faculty members, and a like percent reported hearing male faculty members make offensive comments about the bodies or sexuality of women students, staff, or faculty. Other types of unwelcome sexual behavior experienced by women from faculty included: sexually suggestive looks or gestures, 8.6%; deliberate touching, crowding, or pinching, 5.7%; pressure for sexual favors, 1.5%.

Unwelcome sexual attentions from faculty members included the following examples:

"A senior faculty member....often touches my neck or face as if he had an absolute right to do this...."

"Faculty member, at a committee meeting, kept directing his gaze towards my breasts."

"Faculty is notorious for harassing students, and I have avoided those who are well-known offenders. Therefore, I have not been harassed as much as my friends, who were occasionally in tears over their predicament."

"The professor I T.A.'d for used to touch me a lot (a pat on the back, a squeeze on the arm)...in front of the class (mostly male), which I felt really undermined my authority with them."

"A retired faculty member attempted to embrace me twice in an office visit, said he had noticed my "physical charms," had wondered what my breasts were like, asked when I would be alone where I lived...."

Respondents were more likely to have experienced the various listed behaviors from other students than from faculty or staff. Nearly 40% of the women indicated that they had experienced sexual teasing, jokes, or

innuendoes from other students; 36% reported hearing other students make offensive comments about the bodies or sexuality of women students, staff, or faculty.

The comments of a woman in a humanities department about the behavior of her fellow students summarize well the experiences and reactions of many women in departments where there are few women:

"The atmosphere is so thickly male that it is difficult for a woman to not feel alienated here. Graduate student men who choose to engage in exclusive or sexist behavior feel free to do so, and are in fact reinforced by the way all the other men will laugh at the sexist jokes. Women who protest are then labeled either "humorless" or "hysterical female," the message being, "Well, we all thought it was funny. What's wrong with you?" So the women either have to put up with it so as not to be excluded from the group, or have to distance themselves from the department to keep their sanity. I doubt that the men are being intentionally sexist. Most of the men seem fine on a one-to-one basis, and seem liberated and feminist on at least a theoretical level....Each instance in and of itself is not unmanageable. But it is annoying to have to put up with this sort of thing over and over again. The incidents tend to be borderline--more tiring than threatening...."

Aside from hearing other men make offensive comments of a sexual nature about women at U-M, men were far less likely than women to say that they had experienced unwelcome sexual attentions from faculty or staff members. Gender differences were less striking with respect to the behavior of other students. However, from their descriptions of the types of behavior they had experienced and how they had reacted, it appeared that men encountered less troublesome or disturbing behavior than did women, and were more easily able to deflect or discourage any unwanted attention. (A male T.A., for example, might describe perceived advances from a female student in his class, but report that the behavior did not persist once he had indicated a lack of interest, or made clear that it was inappropriate behavior.)

Women, on the other hand, frequently reported the expenditure of considerable "psychic energy" in dealing with persistent unwelcome attentions, especially when these came from faculty or others in positions of power or authority. In cases of overt sexual advances--touching, personal comments, pressure for a relationship--some women felt compelled to change their schedules or routines to avoid the offender, at times to the detriment of their academic programs. In more common types of cases, where the offensive behavior took the form of joking or other forms of sexist humor, women frequently reported that efforts to stop the behavior proved futile. The following was a typical comment:

"Visiting professors in our lab made many disparaging comments about women and the two of us in the lab. They were supposed to be jokes. I didn't like this and objected several times, but got tired of protesting and coming across as humorless.")

Several women, in describing how they had handled an unwelcome incident, said that they had followed procedures or techniques recommended by such offices as the Sexual Assault Prevention and Awareness Center—for example, writing a letter to the offender, describing the offensive behavior and how they felt about it. Knowing about such techniques seemed to give the respondent a greater sense of control in such a situation, and frequently led to a satisfactory resolution of the problem.

Multivariate Analyses of Sexual Harassment

We also used hierarchical logistic regression techniques to explore whether student background or program variables were related to the experience of unwanted sexual attention by respondents from U-M faculty, staff, or students. A simple dichotomy—whether the respondent had experienced any unwanted sexual attention—was used as the dependent variable for each set of regressions. In each set of regressions, we entered three background variables—gender, ethnicity, and citizenship—in the first step, followed by degree type, program division, and teaching/research experience.

Unwanted Sexual Attention from Faculty. Gender was a highly significant predictor—women were much more likely than men to report such behavior. Non-citizens were less likely than citizens to do so. Ph.D. students were marginally more likely to experience such behavior ($p=.0688$). Students in Division 2—physical sciences, mathematics, and engineering—were marginally less likely to report such experiences ($p=.0686$), compared to students in Division 4 (humanities). And students who had had appointments as teaching assistants, research assistants, or both, were more likely than those who had had no such appointments, to experience unwanted sexual attentions from members of the U-M faculty.

Unwanted Sexual Attention from Staff Members. Citizenship and teaching experience (or teaching and research appointments) were the only factors related to experiencing unwanted sexual behavior from staff members; these relationships were similar to those described for faculty.

Unwanted Sexual Attention from Other Students. Gender was again a significant factor, with women being more likely to report unwelcome behavior from other students. Non-citizens were again less likely to experience such behavior. Respondents who had had teaching appointments, or both teaching and research appointments, were also more likely to

experience such behavior than those students who had not had either type of appointment.

Note that unwanted sexual attention from any of these three sources was not related to ethnicity or race. Nor was such attention more prevalent in those areas that have traditionally had the fewest women among faculty or students. Women in any area of the university may experience unwelcome attention based on sexual attraction or stereotypes. Reactions to such attention may include, to varying degrees, feelings of anger, fear, resentment, annoyance, or boredom; in any case, the necessity of coping with the unwanted behavior constitutes a source of additional stress for women, beyond the tensions and problems experienced by all students.

Discriminatory or Derogatory Treatment

In addition to questions about sexual harassment, we asked respondents if they had experienced any form of discriminatory or derogatory treatment. In response to the question, "Have you ever been treated in such a way that you felt ridiculed or humiliated?", 34% of the women, compared to 20% of the men, reported that they had experienced such treatment. A fourth of the women said that they had encountered such treatment from faculty members; 13%, from other students; and 7%, from U-M staff members. (The corresponding figures for men were 17%, 7%, and 3%.) In terms of the situations in which such behavior occurred, respondents most frequently mentioned classroom settings and consultation with professors.

Respondents who felt that they had experienced discriminatory or derogatory treatment were asked to indicate the probable basis for the behavior—that is, whether they thought the behavior reflected a reaction to their gender, or race, or ideology, etc.. The two most frequently perceived bases of such behavior—gender and interests, values, or goals—were each checked more frequently by women than by men: gender, by 30% of the women, and 4% of the men, and interests or values, by 22% of the women, and 15% of the men (see Table 9). Men and women did not differ with respect to citing race or ethnicity, and ideological or theoretical views, as bases of derogatory treatment; each was checked by 13% of our respondents. Women were more likely to check age as a basis for such treatment—12%, compared to 5% of men. Religion and sexual orientation were each checked by 3% of respondents as triggers for derogatory treatment; men more frequently checked religion, and women more frequently checked sexual orientation.

Respondents' open-ended descriptions of the behaviors they considered derogatory or discriminatory revealed several types of interactions:

- (a) Incidents in which the respondent felt personally belittled, embarrassed, treated harshly or unfairly criticized;

- (b) Examples involving cultural, ethnic, or racial misunderstandings or stereotypes;
- (c) Situations in which respondent's contributions or opinions were ignored, devalued, or not taken seriously--frequently with the implication that others of the same gender or race were treated in the same manner;
- (d) Examples involving disagreement with or rejection of respondent's theoretical or ideological views;
- (e) Instances where respondent was denied needed academic or professional support (such as letters of reference, or jobs, or financial support).

Most instances involved faculty members interacting with students. Women were much more likely than men to feel belittled or ignored; students of color and foreign students were most likely to give examples involving racial or cultural stereotyping. The other categories--rejection of one's theoretical views, and denial of requested assistance or support--were not related to gender or ethnicity.

"The professor consistently put down women's comments. It was as if any contribution by a female was not worthy of further discussion."

"The introductory course had several incidents of 'putting down' women scholars. When I spoke out against this I was considered 'over emotional' and 'too sensitive.'"

"...deprecating remarks about Christianity and/or Christians are par for the course."

"There is a pervasive attitude that all Southerners are racists, religious fundamentalists, or, at the very least, stupid and parochial."

"(After doing well in an advanced course) faculty member congratulated me but didn't congratulate any other students who did as well. This lead me to believe that he didn't expect me to do well based on my gender and race. It was an insult and not a compliment."

"A faculty member praising the skills I would have as a teacher due to my experience with Puerto Rican riffraff."

"A professor was always teasing the Asian students....he asked them if they knew what the 'yellow peril' was, after calling them this."

"Chair of the dept. (and my advisor) continually put me down for being interested in fields other than his;...he insulted my intelligence and work in public and private...during class he yelled at me and another woman for being so stupid and unprepared. We were, essentially, verbally battered for 20 minutes. I reacted by leaving the discipline....I have no respect left for him; although he is one of the experts in the field, I have no desire to remember what academic accomplishments I achieved in his department."

Overall Reactions to U-M Experiences

At the end of the questionnaire, we asked students to comment on those aspects of their experience that they valued the most, and on those aspects that had been most disturbing, disappointing, or problematic. Their responses offer vivid examples which illustrate--and make clear the basis for--the attitudes and images described in this report.⁹

Most frequently cited among the valued aspects of their U-M experience is that of academic excellence, rigor, challenge, stimulation, and growth (see Table 10). Nearly a fourth of respondents mentioned these characteristics; men and women were equally likely to do so. Sample comments included the following: "The quality of education is superb. The faculty is extremely knowledgeable in their field of expertise and it is a pleasure to learn from highly qualified instructors." "It has been tremendously exciting being in this department...." "I value being in a top-notch department with high expectations of its students."

Two other frequently cited qualities, both touching on the nature of interpersonal relationships, were mentioned more often by women than by men: A sense of community in the respondent's department--supportive and helpful relationships among students and others in the department--was cited by 21% of the women and 13% of the men; having helpful professors or advisors was mentioned by 16% of the women and 10% of the men.¹⁰ Women were also more likely to mention a sense of intellectual growth, or learning, or "the education I've received." (An infrequent response, expressed by 4% of the women--that the respondent felt an increase in self-

⁹Many students--pushing to complete a long questionnaire--skipped the open-ended questions, or gave very brief answers; nor were they likely to recount again experiences they had already described in answers to earlier questions. Hence the absolute percentages mentioning a given aspect of their experience are small. Nevertheless, the issues raised are those that surface in workshops or discussions with students, and hence provide further testimony to their impact on student life.

¹⁰ If women are indeed more sensitive to the interpersonal aspects of a situation, it is not surprising that they may comment more frequently on both positive and negative experiences.

confidence, a growing sense that she belonged here and could do well--was voiced only by women.)

Facilities at U-M (including general and specific references) were cited positively by 12% of the respondents; libraries and computer facilities were each mentioned by 4-5%.

The attractions of Ann Arbor, including references to cultural opportunities and events and athletic events, were mentioned by 7% of the respondents.

The ethnic and cultural diversity within the U-M community was cited positively by 6% of the respondents.

With respect to disappointing or problematic aspects of their U-M experiences (Table 11), the factor mentioned most frequently by women was a lack of adequate advising or mentoring; 26% cited this problem, compared to 16% of the men.

The other most frequently mentioned area of concern, cited by 23% of both men and women, involved financial problems. Students referred not only to general financial problems and pressures, but to specific policies and regulations that created difficulties, such as the 10-term rule, to continual uncertainties about the level of funding available, or to misrepresentations or changes in the amount of support promised.

Central to many of the problems cited is the image of a large, impersonal, and seemingly uncaring bureaucratic establishment. That view is shared by men and women. However, women are more likely to mention various specific issues. For example, 8% of the women reported that they had encountered sexist behavior, or felt that there was a lack of concern about women's issues or problems. (Men, on the other hand, were more likely to comment on pressures to be "politically correct"--5% did so, compared to 1% of women.) Other areas mentioned more frequently by women concerned a view of the departmental atmosphere as cold, uninviting, arrogant, or biased--cited by 9% of women but only 4% of men; poor academic quality in respondent's program (11% of women, vs. 6% of men); poor teaching at U-M (5% of women, vs. 2% of men); lack of concern about commuter problems (5% of women, 2% of men); lack of concern about problems of student parents (5% vs. 1.5%).

An interesting attitude, voiced by a few women in their comments about mentoring or in their responses about disappointing aspects of their U-M experience, concerned their desire to be seen as "a whole person," to sense some recognition that their lives included other important dimensions beyond the student role, and that these various dimensions could not always be kept compartmentalized and separate. This view was not expressed at all

by men. Appendix C contains expressions of this view, together with other reactions that were voiced only by women. Together, these views may suggest some of the factors underlying the greater sense of alienation in women's descriptions of U-M.

Concerns of Students of Color

In the multivariate analyses, students of color did not differ significantly from other respondents (a) in overall satisfaction with their academic experiences at Michigan, or (b) in the images they held of Michigan, or (c) in reports of unwanted sexual attentions from U-M faculty, staff, or students.

In bivariate analyses restricted to Ph.D. students, students of color (grouped together) were less likely than other Ph.D. students to describe the U-M or their own school or department as exciting, and they were more likely to describe both as alienating. They were less satisfied than other students with their academic experiences at Michigan, as measured by our composite satisfaction score. Ph.D. students of color were also less satisfied than other Ph.D. students with the mentoring or advising they had received at Michigan: 36% reported that they were moderately or very satisfied, compared to 49% of Caucasian students. They were less likely than Caucasian students to be satisfied with the specific suggestions or guidance they had received about courses to take, and less likely to be satisfied with the extent to which their advisors had shown a personal interest in them. (In describing this lack of interest and encouragement, an African American man commented, "I've never been so invisible in my life!")

There were significant differences by race or ethnic group on those questions that asked directly about discriminatory or derogatory treatment. African-American students were more likely than others to believe (1) that important information (about possible jobs or training opportunities, for example) had not been shared with them as much as with other students (53%, compared to roughly 30% of other ethnic groups); (2) that they had been unfairly passed over for teaching or research assistantships (30%, compared to 19% of Asian-American students and 15% of Latino and Caucasian students); (3) that they had been treated in such a way that they felt ridiculed or humiliated (40%, compared to 31% of Latino students, 26% of Caucasian students, and 16% of Asian-American students.)

Close to half of the students of color (47%) reported that they had experienced at least some discriminatory or derogatory treatment that they interpreted as a reaction to their race or ethnic group. (By contrast, less than 3% of Caucasian students reported such treatment related to their race.) Students of color and

Caucasian students were equally likely to report gender-based discriminatory or derogatory treatment (21% overall). Only a fourth of students of color indicated that they had not experienced any discriminatory or derogatory treatment, compared to 41% of Caucasian students.

Some sample comments from students of color:

"In my department the white students are told about needed courses and scholarships."

"Faculty member, in class, remarked humorously about the benefit of Detroit (black) students learning Latin, to possibly read drug labels."

"A faculty member suggesting my daughter could identify me by my 'Latino smell.'"

"Students of color are expected to fend for themselves in terms of research activities. Most volunteer, thus are only on the fringes of the projects and are kept there by the actions of the research team....such as not being informed when meetings are scheduled, or about changes in the schedule."

"Before I came here, the department seemed very interested in my ideas and expressed confidence in my abilities. Once I began school here, I felt that the message was, 'You're not as prepared as the other graduate students.' I have felt very frustrated by this because it sets up a psychological system where I 'fail' to meet their expectations, lack confidence, and feel uncomfortable talking to faculty members. I feel as though I received the PR treatment before I came here, and now that I'm here it's a different story."

Concerns of Women in Physical Sciences, Math, and Engineering

Because of continuing concerns about attrition among women in the physical sciences, mathematics, and engineering, we included all women in Division 2 in the sample of students who received questionnaires. We then compared women across academic divisions, to see whether those in Division 2 differed from others in their perceptions of the environment, level of academic satisfaction, or other sources of satisfaction or dissatisfaction. We also compared men and women within Division 2, to see whether there were greater gender differences in this area than among our respondents as a whole.

In general, for men or women, academic division was not significantly related to overall academic satisfaction, to satisfaction with mentoring, or to the environmental perceptions held by students. Indeed, in comparisons of Ph.D. women across divisions on a variety of items, women in Divisions 1 and 2 frequently appeared to give somewhat more positive responses than did those in Divisions 4 and 5.

There are several factors that may be related to the relatively positive outlook of women in Division 2: First, students in Division 2, men or women, are the least likely to mention financial problems or constraints as sources of delay or difficulty. Second, they tend to complete their degrees in less time than students in other areas, and years in program is negatively related to overall academic satisfaction. Third, they are less reliant on positions as teaching assistants, and hence less likely to have experienced the unwanted sexual attentions--from students or faculty--to which teaching assistants are apparently more likely to be exposed. Fourth, they are least apt to have children, and hence least likely to face whatever problems or stresses accompany parental status.

Women in Division 2 were marginally more likely than those in other divisions to cite the difficulty of required course work as a source of difficulty or delay ($p=.0629$). However, they were less likely to describe their departments as demanding. And they were less likely than other women to say that they "almost always" felt stimulated and excited by their studies. They also appeared to hold more doubts about staying in school--33% of Division 2 Ph.D. women, compared to 49% of Ph.D. women generally, indicated that they almost always felt confident that they would complete their degree. (Speculation about possible factors underlying this greater uncertainty about finishing might suggest the following: lack of confidence in their abilities, possibly related to a lack of positive feedback and encouragement from faculty and/or students; dislike for the departmental or pedagogical atmosphere; or uncertainty about pursuing a career in science, among others.)

Two other comparisons point to pedagogical issues that may affect students' reactions to coursework in Division 2. Among female Ph.D. students, women in Division 2 were less likely than those in other areas to say that they "almost always" enjoyed their classes. And they were less likely to say that they expressed their views in class; compared to women in other divisions, more women in Division 2 said that they "almost never" expressed their views in class, and fewer said that they "almost always" did so. Men in Division 2 also were less likely than other men to say that they expressed their views in class, suggesting that students play a more passive role in Division 2 classes.

These classroom experiences--the perception of coursework as difficult (or tedious and time-consuming) but not necessarily as enjoyable or stimulating, and little sense of participation--may well be one of the factors affecting attrition among women in science.

One other difference by division among women in Ph.D. programs contradicts a common stereotype: Women in Divisions 1 and 2 were significantly less likely to perceive their academic environment as masculine than were women in Divisions 3, 4, or 5. Respondents who perceived the environment as masculine were more likely to express a sense of alienation. Masculinity may be a more salient dimension for women in the social sciences or humanities because of the issues they are interested in and because the subject matter they deal with is more deeply engendered.

With respect to gender differences, comparisons between women and men in Division 2 revealed no greater differences in views or experiences than was true for men and women generally, across all divisions.

Concerns of Nontraditional Students

As increasing numbers of women stay in the educational pipeline longer, preparing for professional or academic careers, many of them confront the issues and challenges related to becoming a parent. For many couples, postponing this step until degrees are completed, and careers well-launched, may simply not seem feasible or desirable. Other students, men as well as women, return to school after varying periods, many with family responsibilities and jobs to juggle along with their academic schedules. One goal of the present study was to explore how adequately the University of Michigan is meeting the needs of these nontraditional students.

Concerns of Parents

One-fifth of our respondents had children.¹¹ This proportion of roughly 20% held true for both men and women, and also for four of the five academic divisions; the fifth, education, showed a larger percentage (42%). In terms of overall satisfaction with their academic experiences, or with the mentoring they had received, there were no differences between students who had children and those who did not. However, parents were more likely to indicate that financial problems were a source of stress: Parents were more likely than other students to check "financial pressures" as a cause of delay or difficulty, and they were more likely to say that they had considered leaving school because of financial problems. When rating overall satisfaction with

¹¹Only 36 of the respondents who had children--18 women and 18 men--came from the special listing of students with dependents. Of the respondents generated by our random sample of Rackham students--that is, aside from the groups we over-sampled for--19% had children.

their financial support, 26% of parents, compared to 15% of other students, checked "no basis for judgment," suggesting that they had not received financial support from U-M.

In terms of their perceptions of the environment, there were two significant differences: First, parents were less likely than other students to describe their own department or school as personally welcoming and supportive. This perception may in part reflect the fact that students who have children may have less time to spend in the department, getting acquainted with faculty and other students. Secondly, however, parents were also less likely than other students to describe the U-M environment as alienating. It may be that the psychological warmth and intimacy experienced by the parent as part of the marriage and family unit provides a sense of belonging that the student living alone may not have. Or, it may be that students who have children are less apt to become intimately involved in departmental activities, and hence are less apt to form or express perceptions regarding the psychological climate.

To assess directly student perceptions of these issues, respondents were asked: "As an institution, how flexible, concerned, or helpful do you find the University of Michigan with regard to problems involving dependent care or other family responsibilities?" Respondents rated each of these dimensions--inflexible-flexible, indifferent-concerned, and not helpful-helpful--on seven-point scales. Parents rated U-M as significantly less helpful than did students with no children. (Mean scores were 2.98 for parents, compared to 3.31 for other students.) Parents and non-parents did not differ significantly on the other two dimensions.

Gender Differences

The lack of significant differences between parents and other students on the first two dimensions may reflect a strong gender difference which was not tied to parenthood: On all three dimensions, women's ratings were significantly lower than the men's. That is, women (parents and non-parents) felt that U-M was more inflexible, more indifferent, and less helpful than did men. Apparently, women, whether they have children or not, are attuned to these attitudes; they may be aware of problems faced by women who have children or other family responsibilities, and, whatever their own experiences, they may fear that the institution will not respond with understanding should they encounter such problems. Among the women, parents do not differ significantly from other women in their ratings of flexibility and indifference; they do, however, rate U-M as less helpful than do the women who do not have children. (Among the men, parents do not differ significantly from other men on any of the three dimensions.)

The greater difficulty faced by women students who have children, compared to men who are parents, is shown by their responses to this question: "How

difficult is it for you to coordinate your school and work schedule with your child care arrangements, or your children's schedules?" Women indicated significantly more difficulty than did men (mean score=4.62, compared to 4.05 for men, on a 7-point scale running from "not very difficult" to "extremely difficult.") This difference may reflect in part the fact that among the student parents, women tended to have more children, across a wider age range, than did the men. Women were also more likely than men to be single parents: only 76% of the women with children were currently married, compared to 92% of the men who had children.

In open-ended responses, women gave clear expression to their frustrations:

"In order to have my baby, nurture my family, and stay sane I've cut myself off quite a distance from my department. I already feel in disfavor for having a baby and I haven't had time to go to office hours etc. to get professors to know/like/respect me and my work. Considering that most graduate students are probably in the 25-35 age range, prime time for having kids, the university needs to become more family-oriented."

"This university's atmosphere is very bad for nontraditional students. Departmental activities are geared to students with no family responsibilities."

"Rules at this university are rigid--there seems to be no room for students who have difficulty meeting deadlines because of family responsibilities. I have found administrative people completely unsympathetic."

"There's little flexibility for when classes are offered. For example,is an excellent course, excellent faculty, but 4-6 is a horrible time for people with kids..."

"The lack of immediate understanding of my personal situation and its effect on my progress....I always feel it is my fault I have a sick mother and a child!"

"I was disappointed by the shortage of on-campus day care facilities. This has probably caused me the most problems. It is not particularly the cost of alternative day care that is the most problematic, but the time-consuming inconvenience of pick up and delivery away from campus bus routes."

"...I have found this to be the most conservative and non-diverse of four universities I have attended....The lack of accommodation in class

schedules, comments like "nothing should interfere with your work here" and paucity of child care all contribute to my perception."

"U-M keeps bankers hours with no thought for students coming from a distance to attend classes--there are never "evening hours" in which to take care of administrative paper work."

When respondents were asked to indicate those factors that had slowed their progress toward their degrees, or caused them particular difficulty, women were more likely than men to indicate problems related to multiple responsibilities and roles (Table 4). Among students in Ph.D. programs, women were significantly more likely to cite (a) time devoted to employment (other than GSA appointments); (b) family problems--finances, health, etc., of parents, children, or other relatives; (c) stress related to issues involving their partner's educational or career decisions. Women were also more likely to cite health problems.

One set of ratings was designed to assess the sense of stress or pressure associated with combining the student role with other aspects of life. Respondents were asked to indicate the extent to which the following statements described how they felt. (Four response categories were offered: not at all; a little; considerably; to a great extent.)

- (a) My studies and work leave me with too little energy for family or other relationships;
- (b) I don't have enough time for work and studies;
- (c) I don't have enough time for other activities and interests;
- (d) I feel that my life is too rigidly separated into different compartments;
- (e) Accommodating my career plans and goals with those of a partner is currently a source of stress;
- (f) Uncertainties about my career plans or goals are a source of stress for me.

Women found the first five of the six statements more descriptive of the way they felt than did the men. Only the last statement, concerning uncertainties about their own career goals, showed no gender difference. And among women who were married or living with a partner, or who were divorced or separated, women who had children found the first four statements more descriptive of their feelings than did women who had no children.

Finally, in the completely open-ended question about negative aspects of their experiences at U-M, women were more likely than men to mention two sorts of problems associated with nontraditional status: those related to being a parent, and those related to being a commuting student. (Five percent of the women--or about one-fourth of those with children--mention each of

these problems; for these students, these issues are as focal as complaints about academic quality, lack of mentoring, sexism, etc.)

Conclusions and Recommendations

For most students, the quality of their academic programs is the most important aspect of their U-M experience. The high quality of programs, professors, and fellow students constitutes the most frequently cited source of satisfaction among our respondents. Nevertheless, the survey findings suggest several areas where greater attention to the problems described by students might improve the quality of the graduate experience for all students. The following steps are recommended:

More attention should be given to the provision of adequate academic counseling, particularly in the student's early years. Having a departmental system of appointing advisors is not sufficient, if those advisors are not knowledgeable about relevant policies and procedures, or do not allow adequate time for consulting with students, or hold derogatory views about students based on characteristics such as gender or ethnicity.

Greater emphasis on mentoring as a prime responsibility of faculty members, and greater rewards for fulfilling this role, would encourage faculty to take this function more seriously. Departmental procedures should ensure that all students—not just those who are perceived to be the stars of the future—have access to sustained attention from concerned and responsible members of the faculty.

Faculty and administrators should provide leadership in establishing a welcoming atmosphere for all students within their school or department, and in setting norms for their students concerning appropriate professional behavior. Students—especially future faculty members—need to develop ethical standards governing interpersonal behavior, just as they learn norms concerning other aspects of academic or professional life. Departments need to be held accountable for maintaining such standards.

Student interest in more cooperative approaches to learning should be taken seriously. Providing challenges for students, and eliciting intense effort, does not depend on maintaining an aggressively competitive atmosphere.

Attention should be given to creating a safer environment for students. Education and prevention programs to eliminate sexual harassment, and measures to improve campus security, are necessary steps.

Greater attention should be given to the problems of students who have family responsibilities, who commute to class, or who must maintain outside jobs to support themselves. Such efforts would address student perceptions of the U-M as indifferent and unhelpful. Child care facilities, greater flexibility in office hours and class scheduling, improved policies and practices that recognize health issues and family responsibilities, and access to parking are issues of importance to nontraditional students.

Improvement in each of these areas should prove beneficial to most students. In particular, however, such efforts would help to ameliorate the problems felt most intensely by women and by students of color. That women find the U-M a more alienating environment than do men surely reflects their experiences here, as well as the attitudes and values that they come with, and the issues they are attuned to: They encounter more unwelcome sexual behavior, more derogatory attitudes, more difficulty in finding adequate mentoring, and more difficulties as parents. More than men, they perceive such issues as problems at U-M. Their values seem to blend less well with the prevailing ethos, in terms of cooperative versus competitive approaches, sensitivity to interpersonal relationships and to differential treatment of various groups within the community, and a desire to be seen as a whole person, with responsibilities, interests, and values beyond those embodied in the student role. Although voiced by only a few women, this latter view may suggest one basis for a sense of alienation. Becoming a parent may or may not be a part of a woman's plans, but the sense that doing so would be viewed with disfavor by powerful figures within her field is surely an alienating influence for many women. Women's interest in institutional flexibility reflects in part their experience, or anticipation, of having responsibilities in various roles, which cannot be entirely subjugated to academic demands.

At the same time, it should be remembered that, over most of the topics covered, men's and women's views about U-M showed far greater similarities than differences. To a large extent, women and men voice similar reactions to the U-M experiences they have shared in common. Most of the differences expressed reflect issues and areas where women have encountered behavior different from that generally experienced by men. These continuing inequities, subtle and otherwise, profoundly affect the quality of the graduate experience for many students.

Appendix A

GENDER COMPARISON TABLES

Table 1

I. Unweighted Sample Sizes^a

	<u>Ph.D. Students</u>			<u>Master's Degree Students</u>			
	<u>Women</u>	<u>Men</u>	<u>Total</u>	<u>Women</u>	<u>Men</u>	<u>Total</u>	<u>Grand Total</u>
By							
<u>U-M Division:</u>							
Div. 1:							
Biology and Health Sciences	63	48	111	55	27	82	193
Div. 2:							
Phys. Sci., Math, Engineering	97	129	226	51	50	101	327
Div. 3:							
Soc. Sci.	103	94	197	23	11	34	231
Div. 4:							
Humanities/Arts	71	44	115	67	19	86	201
Div. 5:							
Education	29	8	37	7	4	11	48
Total	363	323	686	203	111	314	1000
By							
<u>Project Sampling Groups:</u>							
Random sample ^b	159	213	372	102	75	177	549
Students of Color ^c	106	96	202	45	34	79	281
Women in Div. 2	90	-	90	50	0	50	140
Parents ^d	12	16	28	6	2	8	36
Total	367	325	692	203	111	314	1006
By							
<u>Citizenship Status:</u>							
U.S. Citizen	340	250	590	190	91	281	871
Permanent US resident	7	19	26	2	4	6	32
Non-citizen, non resident	20	56	76	11	16	27	103
Total	367	325	692	203	111	314	1006

Table 1 (continued)

	<u>Ph.D. Students</u>			<u>Master's Degree Students</u>			<u>Grand Total</u>
	<u>Women</u>	<u>Men</u>	<u>Total</u>	<u>Women</u>	<u>Men</u>	<u>Total</u>	
By <u>Racial/Ethnic Group:</u>							
African-American	52	25	77	21	9	30	107
Native American	1	4	5	1	1	2	7
Asian American	34	47	81	21	14	35	116
Latino/Hispanic	32	25	57	15	8	23	80
Caucasian	233	183	416	139	68	207	623
Asian non-citizen	7	18	25	2	4	6	31
Other	7	21	28	4	7	11	39
Total	366	323	689	203	111	314	1003

^aThere were 1008 respondents. N's vary slightly across groupings because of missing data.

^bThe random sample was drawn from the remaining population of Rackham graduate students after the other groups had been selected.

^cSelected from U.S. citizens and permanent residents.

^dA tentative effort was made to identify a group of potential respondents who were parents--the "parent" sample listed below, which included 91 names. In fact, 21% of the respondents--102 women and 104 men--had children.

II. Response Rates by Sample Groups

<u>Sample Group:</u>	<u>Number in Sample</u>	<u>Number of Respondents</u>			<u>Response Rate</u>
		<u>Women</u>	<u>Men</u>	<u>Total</u>	
Random sample	1283	262	289	551	42.9%
Students of color	753	151	130	281	37.3%
Women in Div.2	274	140	---	140	51.1%
Parents	91	18	18	36	39.6%

Table 2
Demographic Characteristics: PGE Survey Respondents and Total Rackham Population

	<u>PGE Survey Respondents^a</u> (N=1008)	<u>Total Rackham Population^b</u> (N=6068)
<u>Gender</u>		
Women	50.7%	38.2%
Men	49.3%	61.8%
<u>Ethnicity</u>		
Caucasian	85.4%	82.0%
Asian-American	5.2%	6.2%
African-American	4.7%	6.1%
Hispanic	3.6%	3.5%
Native American	0.4%	0.3%
<u>Citizenship</u>		
U.S. citizen	82.0%	81.7% ^c
Permanent resident	2.5%	
Non-resident alien	15.5%	18.3%
<u>Academic Division</u>		
Biological and health sci.	21.3%	20.6%
Physical sci., math, & eng.	29.1%	38.6%
Social sciences	23.0%	19.9%
Humanities	21.8%	16.6%
Education	4.8%	4.2%
<u>Degree Level</u>		
Master's program	31.9%	36.0%
Ph.D. program	68.1%	64.0%

^aPercentages for survey respondents are based on weighted data.

^bPercentages for the Rackham graduate student population for gender, academic division, and degree level are based on figures in Report No. 103 in Term Enrollment and Credit Hours, Office of the Registrar, The University of Michigan, Winter, 1991. Percentages for citizenship are based on Report No. 115 in the same document. Percentages for ethnicity are based on Report No. 831 in Minority Reports, Office of the Registrar, The University of Michigan, Fall, 1991. The U-M figures for ethnicity are based on U.S. citizens and permanent residents (N=4797). We have therefore calculated the percentage of survey respondents in various ethnic categories in the same way--that is, excluding non-resident aliens.

^cIncludes U.S. citizens and permanent residents.

Table 3
Satisfaction with U-M Experiences
 (All Respondents)^{a,b}

		<u>Women</u> %	<u>Men</u> %	<u>Total</u> %
Q.12.	Your UM Experience^c			
	Moderately or very dissatisfied	11.7	10.3	11.0
	Intermediate satisfaction	31.8	28.2	30.0
	Moderately or very satisfied	56.5	61.5	59.0
Q.13	Your Academic Experience			
	Moderately or very dissatisfied	10.2	8.4	9.3
	Intermediate satisfaction	30.0	27.9	29.0
	Moderately or very satisfied	59.7	63.8	61.7
Q.14	Your Academic Progress			
	Moderately or very dissatisfied	8.6	8.4	8.5
	Intermediate satisfaction	30.0	32.8	31.4
	Moderately or very satisfied	61.4	58.8	60.1
Q.15	Your Social Life			
	Moderately or very dissatisfied	18.0	16.0	17.1
	Intermediate satisfaction	39.5	47.0	43.2
	Moderately or very satisfied	42.5	36.6	39.6
Q.16	Your Housing *			
	Moderately or very dissatisfied	11.3	12.2	11.8
	Intermediate satisfaction	25.1	32.7	29.0
	Moderately or very satisfied	63.6	55.1	59.2
Q.17	Your Academic Advising			
	Moderately or very dissatisfied	28.5	25.2	26.9
	Intermediate satisfaction	37.4	42.3	39.8
	Moderately or very satisfied	34.1	32.5	33.3
Q.18	Your Career Advising			
	Moderately or very dissatisfied	38.3	38.0	38.2
	Intermediate satisfaction	33.8	39.7	36.6
	Moderately or very satisfied	27.9	22.3	25.2

Table 3 (continued)

		<u>Women</u> %	<u>Men</u> %	<u>Total</u> %
Q.19	Quality of Instruction in Lectures *			
	Moderately or very dissatisfied	19.0	13.4	16.2
	Intermediate satisfaction	33.2	39.4	36.3
	Moderately or very satisfied	47.8	47.1	47.5
Q.20	Guidance in Research Activities			
	Moderately or very dissatisfied	18.2	15.4	16.8
	Intermediate satisfaction	35.9	35.2	35.5
	Moderately or very satisfied	46.0	49.3	47.7
Q. 21	Accessibility of Faculty *			
	Moderately or very dissatisfied	15.1	10.0	12.6
	Intermediate satisfaction	27.5	30.8	29.1
	Moderately or very satisfied	57.4	59.2	58.3
Q.22	Library Facilities			
	Moderately or very dissatisfied	7.5	6.9	7.2
	Intermediate satisfaction	20.4	18.5	19.5
	Moderately or very satisfied	72.1	74.5	73.3
Q.23	Computer Facilities			
	Moderately or very dissatisfied	2.9	2.7	2.8
	Intermediate satisfaction	20.0	15.4	17.6
	Moderately or very satisfied	77.1	81.9	79.6
Q.24	Interdisciplinary Opportunities			
	Moderately or very dissatisfied	11.6	14.6	13.1
	Intermediate satisfaction	38.9	43.2	41.0
	Moderately or very satisfied	49.5	42.2	45.9
Q.25	Campus Atmosphere			
	Moderately or very dissatisfied	11.1	8.1	9.6
	Intermediate satisfaction	51.1	52.5	51.8
	Moderately or very satisfied	37.9	39.4	38.6
Q.26	Institutional Concern for Students *			
	Moderately or very dissatisfied	39.6	30.8	35.3
	Intermediate satisfaction	47.2	52.3	49.7
	Moderately or very satisfied	13.2	16.9	15.0

Table 3 (continued)

		<u>Women</u> %	<u>Men</u> %	<u>Total</u> %
Q.27	Campus Security **			
	Moderately or very dissatisfied	19.3	12.8	16.1
	Intermediate satisfaction	42.2	38.2	40.3
	Moderately or very satisfied	38.5	49.0	43.7
Q.28	Recreation Facilities			
	Moderately or very dissatisfied	1.5	3.6	2.6
	Intermediate satisfaction	22.5	22.6	22.6
	Moderately or very satisfied	76.0	73.7	74.8
Q.29	Intramural Athletics/Activities			
	Moderately or very dissatisfied	4.1	4.2	4.1
	Intermediate satisfaction	28.4	26.9	27.4
	Moderately or very satisfied	67.6	68.9	68.4
Q.30	Student Health Services **			
	Moderately or very dissatisfied	3.1	7.3	5.2
	Intermediate satisfaction	22.4	29.5	25.9
	Moderately or very satisfied	74.5	63.3	68.9
Q.31	Counseling Services			
	Moderately or very dissatisfied	18.9	12.5	15.5
	Intermediate satisfaction	34.3	40.1	37.4
	Moderately or very satisfied	46.8	47.4	47.1
Q.32	Your Financial Support			
	Moderately or very dissatisfied	25.3	25.3	25.3
	Intermediate satisfaction	27.5	25.0	26.3
	Moderately or very satisfied	47.2	49.7	48.4

^aData are weighted to represent a random sample of Rackham graduate students. Unweighted N = 1008.

^bItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code: * = prob. < .05; ** = prob. < .01; *** = prob. < .001.

^cThe original scale included six response options, ranging from very dissatisfied to very satisfied. For simplicity of presentation, the data shown have been collapsed from six options to three.

Table 4
Factors That Caused Delay or Difficulties

(All Respondents)^a

	<u>Ph.D. Students^b</u>			<u>Master's Students^c</u>		
	<u>Women</u> %	<u>Men</u> %	<u>Total^d</u> %	<u>Women</u> %	<u>Men</u> %	<u>Total^d</u> %
1) Difficulty of required courses	12.3	15.3	13.9	19.9	25.6	22.2
2) Cognate requirements	5.1	9.1	7.3*	9.1	6.2	7.9
3) Foreign language requirements	10.1	8.3	9.2	5.2	3.0	4.3
4) Lack of clarity regarding requirements	14.6	17.1	15.9	16.8	14.9	16.0
5) Qualifiers/qualifying exam	13.7	18.0	16.0	3.1	5.4	4.0
6) Research requirements prior to thesis	6.9	8.1	7.5	1.2	1.2	1.2
7) Preparation for preliminary exams/papers	16.7	12.8	14.6	5.0	2.7	4.1
8) Deciding on thesis topic	20.7	23.8	22.4	15.1	7.5	12.0*
9) Completing thesis research	7.9	11.5	9.9	3.6	1.7	2.8
10) Writing thesis	7.4	11.1	9.4	12.3	3.2	8.7**
11) Need/desire to complete publication before entering job market	10.5	6.4	8.3	2.8	3.9	3.2
12) Lack of mentorship or guidance	32.0	23.7	27.5*	37.3	20.5	30.6**
13) Uncertainties about goals or career plans	18.5	19.6	19.1	28.5	28.6	28.5
14) Time devoted to TA responsibilities	34.4	26.6	30.2*	10.7	9.0	10.0
15) Time devoted to RA responsibilities	8.2	8.6	8.4	8.0	5.1	6.9
16) Time devoted to other employment	24.0	11.3	17.2***	27.4	25.1	26.5
17) Financial pressures	33.9	29.3	31.5	40.1	34.9	38.0
18) Health problems	14.8	6.1	10.1***	13.4	2.7	9.1**
19) Delays or interruptions related to childbirth	6.1	4.6	5.3	3.7	1.5	2.8
20) Time required for child care or other parental responsibilities	13.2	9.5	11.2	10.8	10.4	10.7

Table 4 (continued)

	<u>Ph.D. Students^b</u>			<u>Master's Students^c</u>		
	<u>Women</u>	<u>Men</u>	<u>Total</u>	<u>Women</u>	<u>Men</u>	<u>Total</u>
	%	%	%	%	%	%
21) Family problems (e.g. health, finances, etc. of parents/children)	18.6	11.2	14.6**	13.5	11.6	12.8
22) Stress related to problems with spouse or partner's educational or career decisions	28.2	19.5	23.5**	26.9	15.1	22.2*
23) Delays related to spouse or partner's educational or career decisions	7.2	4.2	5.6	7.9	1.5	5.3*

^aData are weighted to represent a random sample of Rackham graduate students. Figures represent the percent who checked each item; respondents could check as many items as they wished.

^bN=683

^cN=321

^dItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code: *=prob <.05; **=prob. <.01; ***=prob. <.001.

Table 5
Most Important Sources of Delay or Difficulty^a

(All Respondents)^b

	<u>Ph.D. Students</u>			<u>Master's Students</u>		
	<u>Women</u>	<u>Men</u>	<u>Total^c</u>	<u>Women</u>	<u>Men</u>	<u>Total^c</u>
	%	%	%	%	%	%
Lack of mentorship or guidance	14.8	13.1	13.9	23.3	9.1	17.6***
Financial problems	13.8	14.0	13.9	29.6	24.2	27.5
Time devoted to TA responsibilities	15.4	11.8	13.5	5.7	5.1	5.5
Stress related to partner's educational or career decisions	10.0	10.6	10.3	14.6	5.6	11.0*
Deciding on thesis topic	8.8	9.1	9.0	2.9	.3	1.9
Time devoted to other employment	9.5	4.2	6.7**	13.0	20.3	15.9

^aFactors listed most frequently as one of three most important sources of delay or difficulty.

^bData are weighted to represent a random sample of Rackham graduate students. Unweighted N=1008.

^cItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code:
*=prob. <.05; **=prob. <.01; ***=prob. <.001.

Table 6

Adjective Descriptions of U-M(All Respondents)^a

Percent endorsing the adjective description:

	<u>Adjective</u>	<u>Women</u> %	<u>Men</u> %	<u>Total</u> ^b %
1.	Bureaucratic	74.4	68.6	71.5*
2.	Competitive	67.9	62.2	65.1
3.	Demanding	60.8	55.0	58.0
4.	Stressful	62.0	45.3	53.8***
5.	Intellectually rigorous	53.8	49.6	51.7
6.	Ambitious	53.2	49.2	51.2
7.	Intense	46.3	41.8	44.1
8.	Political	48.2	38.1	43.3**
9.	Impersonal	40.3	36.1	38.3
10.	Elitist	42.0	33.3	37.7**
11.	Stimulating	35.4	36.2	35.8
12.	Exciting	35.3	31.2	33.3
13.	Conservative	33.3	27.9	30.6
14.	Liberal	26.3	34.8	30.4**
15.	Cold	25.6	24.3	24.9
16.	Biased	29.0	20.6	24.8**
17.	Exclusive	22.1	24.6	23.3
18.	Creative	21.3	22.1	21.7
19.	Masculine	29.4	8.3	19.0***
20.	Lonely	19.5	18.6	19.0
21.	Friendly	19.7	17.7	18.7
22.	Inspiring	18.8	16.2	17.5
23.	Accepting	17.7	17.2	17.4
24.	Aware	18.2	16.5	17.4
25.	Empirical	21.8	12.6	17.2***
26.	Idealistic	15.7	14.6	15.2
27.	Cautious	13.3	16.0	14.6

Table 6 (continued)

	<u>Adjective</u>	<u>Women</u>	<u>Men</u>	<u>Total</u>
		%	%	%
28.	Tolerant	13.4	13.6	13.5
29.	Accommodating	11.0	15.3	13.1*
30.	Practical	12.6	12.9	12.7
31.	Integrated	12.6	12.3	12.4
32.	Adaptable	12.1	12.1	12.1
33.	Remote	13.0	10.3	11.6
34.	Ethical	9.7	12.9	11.3
35.	Conscientious	11.6	10.3	10.9
36.	Open	6.7	13.9	10.2***
37.	Supportive	9.9	9.2	9.6
38.	Realistic	5.7	12.8	9.2***
39.	Cooperative	7.9	9.8	8.8
40.	Welcoming	8.4	9.1	8.8
41.	Democratic	8.6	8.6	8.6
42.	Flexible	8.8	8.2	8.5
43.	Rejecting	9.8	3.8	6.8***
44.	Caring	7.2	3.4	5.4**
45.	Warm	4.0	4.3	4.1

^aData are weighted to represent a random sample of Rackham graduate students. Unweighted N=1008.

^bItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code:
 *=prob. <.05; **=prob. <.01; ***=prob. <.001.

Table 7

**Adjective Descriptions of
Respondent's Department or School**

(All Respondents)^a

Percent endorsing the adjective description:

	<u>Adjective</u>	<u>Women</u> %	<u>Men</u> %	<u>Total</u> ^b %
1.	Demanding	60.0	54.9	57.5
2.	Competitive	52.2	55.4	53.7
3.	Intellectually rigorous	52.0	54.7	53.3
4.	Stressful	52.3	44.3	48.4
5.	Ambitious	45.5	44.4	44.9
6.	Intense	43.3	39.8	41.6
7.	Friendly	41.1	39.3	40.2
8.	Stimulating	39.0	38.5	38.8
9.	Accommodating	37.8	36.4	37.1
10.	Supportive	40.3	30.7	35.6**
11.	Accepting	32.0	35.9	33.9
12.	Political	37.9	28.5	33.3**
13.	Bureaucratic	35.2	30.0	32.7
14.	Exciting	28.3	27.0	27.7
15.	Conservative	27.5	26.8	27.2
16.	Caring	29.7	23.4	26.6*
17.	Cooperative	25.1	27.3	26.2
18.	Welcoming	26.2	23.6	25.0
19.	Adaptable	26.8	20.8	23.8*
20.	Tolerant	24.6	21.9	23.3
21.	Creative	22.0	23.5	22.7
22.	Aware	24.4	20.1	22.3
23.	Liberal	23.5	20.6	22.1
24.	Masculine	24.5	18.1	21.4*
25.	Flexible	23.2	19.3	21.3
26.	Elitist	22.9	19.5	21.2
27.	Biased	25.0	16.4	20.8***

Table 7 (continued)

	<u>Adjective</u>	<u>Women</u>	<u>Men</u>	<u>Total</u>
		%	%	%
28.	Practical	18.2	23.3	20.7
29.	Conscientious	22.8	16.4	19.7*
30.	Impersonal	17.6	19.8	18.7
31.	Empirical	21.7	15.1	18.5
32.	Inspiring	19.7	16.9	18.4
33.	Ethical	20.0	15.9	18.0
34.	Warm	19.7	15.8	17.8
35.	Cautious	18.7	15.6	17.2
36.	Exclusive	15.3	18.4	16.8
37.	Idealistic	18.9	12.7	15.9**
38.	Open	16.5	13.3	14.9
39.	Cold	16.2	13.3	14.8
40.	Integrated	13.3	15.7	14.5
41.	Realistic	14.6	13.8	14.2
42.	Lonely	15.4	10.4	12.9*
43.	Democratic	12.3	10.6	11.5
44.	Remote	14.8	7.8	11.4
45.	Rejecting	10.4	6.7	8.6

^aData are weighted to represent a random sample of Rackham graduate students. Unweighted N=1008.

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Table 8
Unwanted Sexual Attentions^a
(All Respondents)^{b,c}

<u>Behaviors</u>	<u>From a U-M Faculty Member</u>		<u>From a U-M Staff Member</u>		<u>From a U-M Student</u>	
	<u>Women</u> %	<u>Men</u> %	<u>Women</u> %	<u>Men</u> %	<u>Women</u> %	<u>Men</u> %
Actual or attempted rape or sexual assault	0.0	0.0	0.0	0.0	2.4	0.3**
Pressure for sexual favors	1.5	0.6	0.0	0.3	6.4	3.4*
Deliberate touching, crowding, or pinching	5.7	0.4***	3.7	1.0**	11.9	8.2
Sexually suggestive looks or gestures	8.6	1.0***	6.5	2.3**	18.0	15.9
Notes, pictures, objects of a sexual nature	2.7	0.7*	2.3	1.8	8.5	7.2
Pressure for dates or a relationship	2.4	0.1**	2.9	1.3	16.9	11.9*
Sexual teasing, jokes, innuendoes	19.2	5.6***	8.4	4.6*	38.6	22.9***
A faculty member, staff member or U-M student discussing your body or sexuality	7.9	0.6***	4.8	1.2**	17.8	12.5*
A male faculty member, staff member, or student making offensive comments about the bodies or sexuality of women students, staff or faculty	19.5	13.3**	11.0	11.3	36.4	33.6

^aFigures represent the percentage of respondents who have experienced these behaviors at least once from U-M faculty members, staff members or students.

^bData are weighted to represent a random sample of Rackham graduate students. Unweighted N=1008.

^cItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code: *=prob. <.05; **=prob. <.01; ***=prob. <.001.

Table 9

Perceived Bases for Discriminatory Treatment

QUESTION: If you have experienced any discriminatory or derogatory treatment, do you think the behavior reflected primarily a reaction to your: (check all that apply)

<u>Category</u>	<u>Women</u> %	<u>Men</u> %	<u>Total</u> ^a %
Gender	30.3	3.6	17.1***
Race or ethnic group	11.7	14.0	12.8
Religion	1.8	4.5	3.1*
Sexual orientation	4.1	1.8	3.0*
Interests, values, or goals	22.3	14.9	18.6**
Age	12.3	4.7	8.6***
Parental status	2.5	0.4	1.4**
Ideological or theoretical views	14.2	12.6	13.4
No such treatment	32.8	45.1	38.9***

^aItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code: *=prob. <.05; **=prob. <.01; ***=prob. <.001.

Table 10

Most Valued Experiences at U-M(All Respondents)^a

<u>Response^b</u>	<u>Women</u> %	<u>Men</u> %	<u>Total^c</u> %
High quality of R's program - courses, professors, etc.	22.9	24.0	23.5
Sense of community in R's department; supportive relationships among students	20.8	13.0	16.9***
R's intellectual development; learning; education received	17.3	11.2	14.3**
Helpful professors or advisors	16.2	9.8	13.1
Good facilities at U-M (including general references and specific references to libraries, computer facilities, etc.)	11.2	13.7	12.4
Living in Ann Arbor, including cultural and athletic events	6.7	8.3	7.5
Ethnic/cultural diversity	5.5	6.4	5.9
Research training or experience	4.7	6.4	5.6
Specific reference to U-M libraries	6.0	3.6	4.8
Friendships	6.3	3.0	4.7
Interdisciplinary contacts or opportunities	5.0	3.7	4.4
Specific reference to computer facilities	3.7	5.2	4.4
Teaching experience (as TA, etc.)	4.3	3.2	3.8
Flexibility	4.4	2.7	3.6
Prestige/value of degree from U-M	3.1	3.8	3.4
Growth in self-confidence; sense that R belongs here	3.7	0.1	1.9

^aData are weighted to represent a random sample of Rackham graduate students. Unweighted N=1008.

^bUp to four responses were coded to the question, "What aspects of your experiences at the University of Michigan do you value the most?" Figures represent the percent of respondents who mentioned a given experience; percentages are based on the total number of women and men in the survey.

^cItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code: * = prob. <.05; ** = prob. <.01; *** = prob. <.001.

Table 11

Most Disappointing or Problematic Experiences at U-M(All Respondents)^a

<u>Response^b</u>	<u>Women</u> %	<u>Men</u> %	<u>Total^c</u> %
Ref. to financial problems--including specific policies that cause problems	22.8	22.7	22.7
Negative comments re mentoring or advising	25.9	16.2	21.1***
Poorly administered department; examples of administrative mistakes or foul-ups; department policies or procedures not clearly established or communicated; departmental politics	10.8	8.5	9.6
Poor quality classes, professors in R's program	11.1	5.8	8.5***
Lack of social contacts	7.3	7.0	7.2
Department atmosphere cold, uninviting, arrogant; no sense of community	9.0	3.9	6.5**
U-M too impersonal, bureaucratic, uncaring	7.6	5.0	6.3
Concerns regarding sexism	7.9	1.8	4.9***
Poor teaching at U-M; over-emphasis on research leads to lack of concern about quality of instruction	4.4	3.6	4.0
Department too narrow, bureaucratic, careerist	4.7	3.1	3.9
Problems of students who are parents	5.4	1.5	3.5***
Problems of commuters	5.1	1.7	3.4**
Negative reference to class size, poor teaching for undergrads at U-M	4.7	1.6	3.2**
PC (politically correct) concerns--pressures to be PC	0.7	5.0	2.8***

^aData are weighted to represent a random sample of Rackham graduate students. Unweighted N=1008.

^bUp to four responses were coded to the question, "What aspects of your experience at U-M have been most disturbing, disappointing or problematic?" Figures represent the percent of respondents who mentioned a given experience; percentages are based on the total number of women and men in the survey.

^cItems showing a significant difference between men's and women's responses, as tested by chi square, are marked with asterisks, according to the following code:

*=prob. <.05; **=prob. <.01; ***=prob. <.001.

Appendix B

SKEWNESS OF DISTRIBUTION IN ADJECTIVE FACTOR SCORES

Respondents, in general, did not endorse very many adjectives as descriptive of either the university as a whole, or of their own department or school. The factor scores were therefore strongly skewed, as shown in the following measures:

<u>Factor</u>	<u>Descriptions of U-M</u>	<u>Descriptions of School or Department</u>
PERSONAL	+2.47 (very strong skew)	+0.92 (strong skew)
ACCEPTING	+1.64 (strong skew)	+1.02 (strong skew)
EXCITING	+0.91 (strong skew)	+0.97 (strong skew)
DEMANDING	flat distribution	flat distribution
ALIENATING	+1.17 (strong skew)	+1.98 (very strong skew)

These descriptions of skewness indicate that respondents were unlikely to view either the U-M or their department or school as personally supportive, accepting, exciting, or alienating. Only on the demanding factor was there an even distribution across the possible range of scores. Respondents were even less likely to describe the U-M as personal, compared to their descriptions of their department or school. And they were less likely to view their department or school as alienating, compared to their U-M descriptions.

The skewness of the distributions on the factor scores made them unsuitable for use as outcome measures in regression analyses. Therefore, in order to explore the characteristics of students who perceived their environment in these different ways, the factor scores were collapsed to compare those students who checked none of the adjectives in a given scale with those who checked at least one adjective in that scale. These dichotomous measures were then used in logistic regression analyses to estimate the relationship between student characteristics and the likelihood of checking at least one adjective in a scale.

Appendix C

VIEWS EXPRESSED PRIMARILY BY WOMEN

In many of their comments on major issues--about mentoring, or financial problems, or the quality of their courses or instructors, for example--men and women expressed similar attitudes and reactions. Other comments, however, reflected reactions that appeared to be felt only by women. The following quotations express these views:

* * * * *

"I would be more interested in seeking a position at a university if I saw women who could have successful academic careers without sacrificing their families."

"...what I look for in a mentor is someone (most often women faculty) who not only has a healthy, dynamic and fresh attitude toward research, but also one who has been successful in both research and family life. I don't feel I have had any mentors in this light."

* * * * *

"...advised not to consider a Ph.D. because I could only be a part-time student. The School of Educ. has not been understanding about the practicalities of life re: working full time, mother of 2, and still trying to finish a degree."

"I have on a number of occasions received the impression that my decision to become pregnant twice during the course of my graduate studies (and to slow those studies accordingly) is somehow indicative of insufficient commitment to my work or of a less than professional attitude."

"The assumption that once I was pregnant (last year) I would automatically not finish the program.... Also the assumption that finishing my Ph.D. was relatively unimportant because my husband could support me."

"(My advisor) sees having children (by a professional woman--not by a man, of course) as an end to one's career."

* * * * *

"I have an underlying feeling that because I am a woman who is small, looks young, and has a soft voice and a "feminine" appearance, that I am not taken as seriously and that I am given less credit for my ability. I try to dress more formally than I used to, and I try to assert myself. Sometimes I get sick of it and

don't try to fit in. It bothers me that I am changing my appearance, my personality, myself, as a response to views that I think are wrong."

** * * * **

"I like my advisor and respect his expertise and help, but he doesn't want to know anything about me--and without understanding the personal me along with the academic me, I feel abandoned, frustrated, and alone in the department."

"The most disturbing, and really excruciating, experience at UM has been trying to figure out how my personal life fits into the academic world."

"Classes are exciting and well taught, but rarely engage all of me. I am never made to feel like a whole person when I enter ...Hall."

"The awareness that emotional issues of graduate school are unacknowledged for the most part. Sex is okay to talk about, but not feelings."

(re a good advisor) "I felt like she recognized me as an individual with a personal life and not just a grad student."

"My advisor is a wonderful person.... He is warm, welcoming, and cares about me as a person."

"My experience here has been that the only part of me that the University values is my brain. My personality, character, values, hopes and goals--which are more important to me than my intellectual abilities--have never been engaged by any faculty member."

