
**ASSESSING THE WORK ENVIRONMENT
FOR RESEARCH-TRACK FACULTY AT THE
UNIVERSITY OF MICHIGAN IN 2012:**

**GENDER AND RACE AS FACTORS IN
CLIMATE- AND CAREER-RELATED EXPERIENCES**

UM ADVANCE Program

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INTRODUCTION

This report is part of a series of reports derived from the fall 2012 study of the academic climate on the University of Michigan (UM) campus. This report focuses exclusively on research-track faculty at UM¹. The two main areas of focus for this report are: (1) an examination of potential gender and race-ethnicity differences in experiences of the work climate, and (2) an examination of potential gender and race-ethnicity differences in career experiences generally thought to be related to faculty career satisfaction and retention (e.g., opportunities for leadership and influence, service experiences, the allocation of resources, recognition for work, family responsibilities, etc.). In a final section, relationships between overall job satisfaction and the climate- and career-related variables are explored.

For detailed information about the larger study and the data collection procedures, please refer to the first two reports that stemmed from the fall 2012 study of the academic climate at UM².

SAMPLE CHARACTERISTICS

Although the research-track faculty were surveyed at two earlier time points (2001 and 2006), the focus of this report is on 2012 data only³. Below we include information about the response rates to the survey and the resulting sample.

POPULATION SURVEYED FOR CURRENT REPORT

In 2012, the following faculty were surveyed:

- All female research-track faculty in the social sciences and the natural sciences and engineering at or above the rank of assistant professor in 2012 (N = 191).
- All male research-track faculty in the social sciences and the natural sciences and engineering at or above the rank of assistant professor in 2012 (N = 334).
- All research-track faculty of color in the social sciences and the natural sciences and engineering at or above the rank of assistant professor in 2012 (N = 169⁴; this included people identifying as African American, Latino, Native American, and Asian/Asian-American).

RESPONSE RATES AND FINAL SAMPLE

Research faculty were asked to report on their gender and race-ethnicity, and the vast majority did so. However, one respondent provided information about race-ethnicity but not gender. The sample sizes varied slightly for the analyses presented in this report due to this missing gender information and also, in many cases, due to specific questions being skipped by some respondents.

¹ This report focuses on research-track faculty because other reports from the 2012 faculty-wide survey focus on other groups on the UM campus, such as tenure-track and clinical-track faculty.

² <http://sitemaker.umich.edu/advance/faculty-climate>

³ The 2001 and 2006 data sets contained very small numbers of faculty of color (10 and 11, respectively), making analyses of race-ethnicity and its intersection with gender difficult.

⁴ Race-ethnicity information was not available for four survey recipients.

The final sample used for the analyses in this report included:

- 98 female research-track faculty (a 51% response rate)
- 156 male research-track faculty (a 47% response rate)
- 53 research-track faculty of color (a 31% response rate)

We also note that the final sample was comprised of research-track faculty from the social sciences ($n=84$) and the natural sciences and engineering ($n=156$). Information about divisional/school appointments was not provided by fifteen respondents.

The response rate of faculty of color was lower than the response rate for white faculty. To address this issue, all analyses reported below were conducted using appropriate weights. Weighting the data on the basis of race-ethnicity and gender prior to conducting analyses allowed us to adjust the sample survey data to make them more representative of the population from which they were drawn.

Compared to female respondents, the male respondents were older, had received their highest degrees longer ago, and were less likely to be at the rank of assistant professor. The same differences were found when comparing faculty of color to white faculty. Given these gender and race-ethnicity differences, a composite variable was created that captured respondents' age, years at UM, year of degree, and rank. This measure-of-experience variable was used as a control variable in all analyses. This approach to controlling for experience means that any significant gender- and race-ethnicity-related findings reported below cannot be explained by differences in age, years at UM, year of degree, or rank.

OTHER CONSIDERATIONS

We note that majority group members (e.g., whites vis a vis race) tend to view certain aspects of the work setting -- e.g., the workplace climate -- as more positive than do minority group members. The sample used in the analyses below includes relatively small numbers of racial-ethnic minority faculty. In the absence of many racial-ethnic minorities, analyses of differences between race-ethnicity groups do not always have appropriate statistical power⁵. In this type of situation, some noticeable group differences may not reach statistical significance (see the section below for more about statistical significance).

DATA ANALYSIS STRATEGY

GROUP COMPARISONS

In various areas of this report we report on comparisons across certain groups of research faculty on the basis of race-ethnicity and gender. For most of the variables we analyzed, six types of comparisons were made. These are listed below:

- Female research faculty (pooled across race-ethnicity groups) were compared to male research faculty (pooled across race-ethnicity groups)

⁵ Statistical power is the likelihood that a test will detect an effect or difference when there is an effect or difference present.

- Research faculty of color⁶ (pooled across gender groups) were compared to white research faculty (pooled across gender groups)
- Female research faculty of color were compared to male research faculty of color
- White female research faculty were compared to white male research faculty
- Male research faculty of color were compared to white male research faculty
- Female research faculty of color were compared to white female research faculty

ANALYSES OF CONTINUOUS VARIABLES

When assessing scores on scales as a function of gender and race-ethnicity, we used analysis of variance (ANOVAs). These analyses compared the mean scores of the gender and race-ethnicity groups. Analysis of variance is a statistical procedure that apportions variation in people's scores on a variable to different factors—in this case, their membership in one of the two gender groups (female; male) and their membership in one of the two race-ethnicity groups (faculty of color; white faculty).

ANALYSES OF FREQUENCY DATA

When assessing frequency data (numbers of people, rather than scores), we used logistic regression. The use of logistic regression is appropriate when the dependent variable is dichotomous but there are continuous control variables (such as the variable controlling for faculty experience). In several instances the frequency of “presence” on a dichotomous variable was rare for some groups, which was expected given the kinds of faculty experiences the climate study assesses (e.g., reports of unwanted sexual attention). Even in such instances of rare occurrences, planned comparisons were pursued as it was important to understand how these experiences may differ by gender and by race-ethnicity. However, statistical comparisons cannot be made when instances are non-existent or fully present in all groups (i.e., 0% or 100%).

ANALYSES PREDICTING JOB SATISFACTION

Predictors of job satisfaction were explored. In these analyses, regression and correlation analyses were used. These analyses are useful for testing associations between variables.

STATISTICAL SIGNIFICANCE

In the results reported below, references to group differences and associations between variables refer to findings found to be statistically significant (i.e., $p \leq .05$). This involves differences or effects that would have emerged simply by chance (when there really was no difference or effect) at or less than 5 percent of the time. This is a generally accepted standard of statistical significance in social science research. In some cases, trends that approached statistical significance are also mentioned, and these are always described as trends (trends involved p -values $>.05$ and $\leq .10$). Trends are included in this report because, at times, the numbers in certain groups (e.g., male research faculty of color) were relatively low, which makes detecting significant differences more difficult.

⁶ Given the small number of faculty of color in the sample, we combined Asian and Asian-American faculty with underrepresented minority faculty in the analyses reported here.

Data tables follow the report. Tables were produced for each set of analyses to display differences among the four gender/race-ethnicity groups. Each table reports means or frequencies by group.

STRUCTURE OF THE REPORT

In the first Findings section (Findings I) we report on how the work climate is perceived by research-track faculty members, and ways in which these perceptions differed as a function of respondent gender/race-ethnicity.

In the second Findings section (Findings II) we examine qualities and characteristics of work life, beyond the climate, that are often important to research faculty members' ability to be productive and have satisfying careers. Variables of interest here include access to adequate resources, opportunities for leadership, demands for university service, and experiences with mentoring relationships. Here again we consider whether or not these aspects of work life vary systematically by race-ethnicity and/or gender.

In the third Findings section (Findings III) we report on family- and household-related variables, such as level of household responsibility, level of childcare responsibility, household composition, and impacts of caring for others on one's professional life. For each of the variables in this section we tested for group differences as a function of gender and race-ethnicity.

In the last Findings section (Findings IV) we examine predictors of overall career satisfaction. Predictors of career satisfaction were examined via the use of multiple regression and correlation analyses. Predictor variables examined here included both climate-related variables, variables that capture qualities and characteristics of research faculty work life, and variables indexing various aspects of home life. Predictors of career satisfaction may differ for men and women, and for faculty of color and white faculty. Thus, group membership was considered in this series of analyses.

FINDINGS I: SCHOOL CLIMATE

ASSESSMENTS RELATED TO GENDER (TABLE 1)

The survey asked gender-related questions about issues that research faculty may encounter at work: overheard disparaging comments about women and men, gender discrimination, and unwanted and uninvited sexual attention.

DISPARAGING COMMENTS ABOUT WOMEN AND MEN

Research faculty were asked about the frequency with which they overheard insensitive or disparaging comments about women and men at UM within the last five years. Responses were provided on a scale ranging from 1 (never) to 5 (weekly). Respondents were asked about disparaging comments made by both other faculty and by students; these two questions were averaged to form summary variables capturing the frequency with which disparaging gender-related comments were overheard (one variable for comments about women, the other for comments about men).

In general, research faculty indicated that it was rather rare to overhear insensitive or disparaging comments about women; mean responses for all four gender/race-ethnicity groups fell between 'never' and 'once or twice per year.' However, female faculty reported hearing more frequent disparaging comments about women than male faculty did.

Very similar responses were given to the question about overhearing insensitive or disparaging comments about men; the mean responses for all four gender/race-ethnicity groups again fell in the 'never' to 'once or twice per year' range. Male faculty of color reported hearing disparaging comments about men less frequently than white male faculty, and there was a trend for them to report hearing disparaging comments about men less frequently than female faculty of color.

GENDER DISCRIMINATION

Research faculty were asked about their experiences of gender discrimination in six specific areas (hiring, promotion, salary, space/equipment and other resources, access to administrative staff, and graduate student or resident/fellow assignments). We first examined each of these areas individually; however, in most instances frequencies were too low to compare the four groups statistically. Therefore, a variable was created that captured whether a respondent had experienced any of the forms of discrimination. Rates were 0% for men of color and white men, 9% for women of color, and 24% for white women. Women were more likely to have experienced gender discrimination than were men.

UNWANTED SEXUAL ATTENTION

Research faculty were asked if they had, within the past 5 years, experienced any unwanted/uninvited sexual attention (e.g., sexual remarks, pressure for dates, e-mails, touching, sexual pressure, stalking, assault, etc.). Rates were: 0% for men and women of color, 0% for white men, and 12% for white women. There were no significant differences between the four gender/race-ethnicity groups.

Faculty were also asked if, within the past five years, individuals from UM had come to them feeling concerned about behavior they had experienced that fell into the realm of unwanted/uninvited sexual attention. Here, rates were slightly higher than they were for direct experiences with this type of behavior: 0% for women of color, 6% for white men, 7% for men of color, and 17% for white women. White women were more likely than white men to report that they had others come to them with these concerns.

ASSESSMENTS RELATED TO RACE-ETHNICITY (TABLE 2)

The survey asked about two race-ethnicity-related issues that research faculty may experience at work: overhearing disparaging comments about racial-ethnic minorities and/or religious groups and the experience of racial-ethnic discrimination.

DISPARAGING COMMENTS ABOUT RACIAL-ETHNIC MINORITIES AND/OR RELIGIOUS GROUPS

Faculty were asked about the frequency with which they overheard insensitive or disparaging comments about racial-ethnic minorities and/or religious groups within the last five years at UM. Responses were

provided on a scale ranging from 1 (never) to 5 (weekly). Respondents were asked about disparaging comments made by both other faculty and by students; these were averaged to form a summary variable.

In general, research faculty indicated that it was rare to overhear insensitive or disparaging comments about racial-ethnic minorities and/or religious groups; mean responses for all four gender/race-ethnicity groups fell in the 'never' to 'once or twice per year' range. On average, women reported hearing more frequent disparaging remarks about ethnic minorities and/or religious groups than men did; there were no differences by race-ethnicity.

RACIAL-ETHNIC DISCRIMINATION

As with gender discrimination, survey respondents were asked about their experiences of racial-ethnic discrimination in the same six specific areas (hiring, promotion, salary, space/equipment and other resources, access to administrative staff, and graduate student or resident/fellow assignments). Again, frequencies on the individual items were often too low to make statistical comparisons among the four groups. Thus, similar to our measure of gender discrimination, we created a measure that captured respondents' experiences with any of the forms of racial-ethnic discrimination.

Rates of experiencing racial-ethnic discrimination were low: 0% for white men, 4% for white women, 7% for men of color, and 9% for women of color. Faculty of color were significantly more likely to have experienced some form of racial-ethnic discrimination than were white faculty.

DEPARTMENT/UNIT CLIMATE (TABLE 3)

GENERAL DEPARTMENT/UNIT CLIMATE

The general department/unit climate was assessed with five scales (all scale ranges were 1-5). Each scale is described briefly below, with analyses of that scale following the description.

Positive environment was assessed as the mean of six items measuring the extent to which the department/unit climate is perceived as: friendly, respectful, collegial, collaborative, cooperative, and supportive (internal consistency for this scale was high⁷; $\alpha = .89$).

Mean scores on the positive climate scale were in the moderately-positive range for all gender/race-ethnicity groups, ranging from a low of 3.61 for white women to a high of 3.98 for white men. On average, male faculty perceived the department/unit climate to be more positive than female faculty did.

Scholarly isolation was assessed as the mean of six items measuring one's level of isolation in areas such as comfort asking questions about performance and pressure to change one's research agenda (internal consistency for this scale was good; $\alpha = .75$).

⁷ Cronbach's alpha is a measure of how closely interrelated a set of items are, with alphas closer to 1.00 indicating that items are highly interrelated and can justifiably be combined to create a composite variable.

Mean scores on the scholarly isolation scale were in the moderately-low range, with a low of 2.10 for white men and a high of 2.56 for men of color. Men of color felt significantly more isolated than white men did.

Felt surveillance was assessed as the mean of four items measuring experiences of perceived scrutiny, such as reluctance to raise concerns out of fear of career consequences and the perception of needing to work harder than others in order to be perceived as a legitimate scholar (internal consistency for this scale was good; $\alpha = .78$).

Mean scores on the five-point felt surveillance scale ranged from a low of 2.23 for white men to a high of 3.00 for men of color. Men of color and white women reported significantly more felt surveillance compared to white men.

Fairness of department/unit leader was assessed as the mean of 3 items including the extent to which the leader honors agreements and treats faculty in an even-handed way (internal consistency for this scale was high; $\alpha = .87$).

Mean scores on this scale were in the moderately-positive range, with a low of 3.40 for white women and a high of 3.98 for white men. Here again, white men differed from men of color and white women. Specifically, men of color and white women perceived the department/unit head as less fair than white men did.

Department/unit leader's creation of positive environment was assessed as the mean of 3 items measuring the department/unit leader's perceived record of creating a cooperative and supportive environment, empowering faculty, and serving as an effective administrator (internal consistency for this scale was high; $\alpha = .90$).

Mean scores on this scale were in the moderately-positive range, with a low of 3.44 for white women and a high of 3.89 for white men. White men scored higher on this scale than white women did, but did not significantly differ from men of color.

DEPARTMENT/UNIT CLIMATE RELATED TO DIVERSITY

The department/unit climate related to issues of diversity was assessed with four measures (three scales and one single item; all scale and item ranges were 1-5). Each scale is described briefly below, with analyses of that scale following directly after the description.

Tolerant climate was assessed as the mean of four items measuring the extent to which the department/unit climate is perceived as: non-racist, non-homophobic, diverse, and non-sexist (internal consistency for this scale was adequate; $\alpha = .69$).

Mean scores on the tolerant environment scale were in the moderately-positive range for all gender/race-ethnicity groups, ranging from a low of 3.84 for white women to a high of 4.25 for white men. Although all groups had mean ratings in the same general area of the scale, white male faculty provided significantly higher ratings compared to male faculty of color and white women. Female

faculty of color did not significantly differ from male faculty of color or white women in terms of their perceptions of the department/unit as tolerant.

Gender egalitarian atmosphere was assessed as the mean of 9 items measuring issues such as gender-based preferential treatment, the presence of sex discrimination, equal access to lab/research space, and the appropriate representation of women in senior positions (internal consistency for this scale was high; $\alpha = .87$).

Mean scores on this scale were moderately-high, with a low of 3.49 for white women to a high of 4.19 for both white men and men of color. Compared to male faculty, female faculty provided significantly lower ratings of the department/unit as gender egalitarian. Faculty did not differ on this scale based on their race-ethnicity.

Tokenism was assessed as the mean of two items measuring the extent to which faculty expect colleagues to represent the point of view of their gender and race/ethnicity (internal consistency for this scale was high; $\alpha = .87$).

Mean scores on the tokenism scale were in the moderately-low range, with a low of 1.43 for white men and a high of 2.59 for women of color. Faculty of color reported significantly more tokenism compared to white faculty, and women reported significantly more tokenism compared to men.

Executive leader's commitment to racial-ethnic diversity was measured by a single item assessing perceptions of the department/unit leader's commitment to racial/ethnic diversity.

Mean ratings of the department/unit leader's commitment to racial-ethnic diversity were all in the moderately-positive range, with a low of 3.70 for women of color and a high of 4.12 for men of color. White men rated their leader as more committed to racial-ethnic diversity than men of color or white women did.

SUMMARY OF CLIMATE-RELATED FINDINGS

Research faculty reported that it was rather rare to overhear disparaging or insensitive comments about specific groups (e.g., women, racial-ethnic minorities); however, female faculty reported hearing more frequent disparaging comments about women and experiencing more gender discrimination than male faculty did. Men and women of color were more likely than white faculty to have experienced some form of racial-ethnic discrimination.

The overall climate in departments/units was rated as moderately-positive, and endorsement of items asking about negative aspects of climate (e.g., felt surveillance, scholarly isolation) was mid-range to low. Ratings of department/unit leadership with regard to fairness and the creation of a positive environment were moderately-positive. Compared to men of color and white women, white men reported feeling less isolation and surveillance in their departments/units.

When asked about the extent to which department/unit climates were tolerant and gender-egalitarian, overall ratings ranged from moderate to positive. Ratings of department/unit leadership's commitment to

racial-ethnic diversity were in the moderately-positive range. Nonetheless, some group differences emerged. Compared to white men, white women and men of color rated their units as less tolerant. Further, female faculty perceived their departments/units as less gender egalitarian than male faculty. Faculty of color reported significantly more tokenism compared to white faculty, and female faculty reported significantly more tokenism compared to male faculty. Lastly, men of color and white women described their leaders as less committed to racial-ethnic diversity compared to their white male colleagues.

FINDINGS II: CAREER-RELATED EXPERIENCES

RESOURCES & SUPPORT (TABLE 4)

Research-track faculty members were queried about their satisfaction with both office and research space as well as satisfaction with computer equipment, lab equipment, and vendor service (e.g., repairs, supplies, upgrades). They were also asked if their department chair helps them obtain the resources they need. Questions were also asked about satisfaction with other aspects of their research space and equipment: location, computing, safety, and maintenance. There was one question each about level of satisfaction with external and University funding. In addition to these questions, faculty were asked if they sought help from the University to find appropriate employment for their partner; those who had done so were also asked about their satisfaction with help they received. Faculty also reported on if they had ever considered leaving UM to improve their partner's career opportunities.

SATISFACTION WITH RESOURCES

A summary scale ranging from 1-5 was created to capture research faculty members' overall satisfaction with resources. The scale was computed as the mean of five items measuring satisfaction with: amount of office space, amount of research space, computer equipment, lab equipment, and vendor services (internal consistency for this scale was good; $\alpha = .84$). Mean ratings were positive for all groups, with a low of 3.96 for female faculty of color and a high of 4.11 for white male faculty. There were no significant differences on this scale among the four gender/race-ethnicity groups.

Research faculty members were also asked to rate the effectiveness with which their unit directors/chairs help them obtain needed resources (responses were provided on a 1-5 scale). Mean ratings were in the moderate range across the four gender/race-ethnicity groups, ranging from 3.07 for men of color to 3.83 for women of color. Men of color reported having less help from their director/chair with acquiring resources than did women of color and white men.

OVERALL SATISFACTION WITH WORK SPACE

A summary scale ranging from 1-5 was created to capture faculty members' overall satisfaction with the research and office spaces they had been allocated. The summary scale was created as the mean of five items measuring satisfaction with: research space location, amount of research space, contiguity of research space, amount of office space, and location of office space (internal consistency for this scale was

high; $\alpha = .86$). Mean ratings on this scale were positive for all groups, with a low of 3.97 for men of color and a high of 4.17 for white men; there were no significant group differences.

SATISFACTION WITH SAFETY AND BUILDING MAINTENANCE

In a single question with a response scale of 1-5, research faculty members were asked about their satisfaction with the safety of their research space. Mean ratings on this item indicated a great deal of satisfaction with safety, with a low of 4.00 for women of color and a high of 4.56 for white men. Women, on average, reported less satisfaction with the safety of their research space than men did.

Faculty members were also asked, using a 1-5 scale, to rate their satisfaction with maintenance of building problems (the types of building problems addressed by UM Plant Operations). Mean responses among the four gender/race-ethnicity groups ranged from moderate to positive, with a low of 3.33 for women of color to a high of 4.20 for men of color. Men of color were significantly more satisfied with building maintenance than were women of color or white men.

SATISFACTION WITH FUNDING

Using a scale ranging from 1 (very dissatisfied) to 5 (very satisfied), research faculty members were asked about their levels of satisfaction with both university and external funding. Mean ratings of satisfaction with university funding ranged from a low of 3.26 for men of color to a high of 3.95 for women of color; men of color were significantly less satisfied with university funding compared to white men and women of color. Mean ratings of satisfaction with external funding ranged from a low of 3.65 for women of color to a high of 3.79 for white men. There were no differences in satisfaction with external funding as a function of gender/race-ethnicity group.

QUESTIONS ABOUT RESEARCH FACULTY MEMBERS' SPOUSES AND PARTNERS

Rates for seeking UM assistance with partner employment varied across the four gender/race-ethnicity groups, ranging from a low of 22% for white women to a high of 47% for women of color. Women of color were significantly more likely to report seeking assistance to find employment for a partner than were white women. Satisfaction with this type of assistance from UM was rated on a 1-5 scale. Mean ratings of satisfaction with UM's assistance were low to moderate, with a low of 2.50 for women of color to a high of 3.14 for men of color; there were no group differences with regard to level of satisfaction with this service.

Faculty members were also asked if they had ever considered leaving UM to improve career opportunities for their partners. Reported rates of this were in the moderate range: 37% for white men, 39% for men of color, 50% for women of color, and 54% for white women. Women were more likely than men to have considered leaving UM to improve opportunities for their partners.

MENTORING AND FEEDBACK

Research faculty at the assistant professor level were asked if they had a mentor and, if so, what kinds of support their mentor(s) provided (e.g., serves as role model, advises about getting work published,

advocates for me). Research faculty at the associate and full professor levels were asked if they served as a mentor to other faculty and, if so, what kind of support they provide to their mentees. In addition to these questions about mentoring, faculty were asked to rate the extent to which chairs provided useful feedback about performance and articulated clear criteria for promotion and tenure.

ASSISTANT PROFESSORS - RECEIVED MENTORING (TABLE 5)

More than half of assistant professors reported that they had a mentor: 93% of women of color, 75% of white men, 70% of men of color, and 67% of white women. There was a trend for female assistant professors of color to be more likely to have a mentor compared to male assistant professors of color and white female assistant professors.

Assistant professors were asked about the amount of mentoring they received in eight areas using the following response scale: 1 = none; 2 = some; 3 = a lot; 4 = too much. We report mean responses in Table 5. Below, for each mentoring question we analyzed the percentages of assistant professors with mentors who indicated that they receive none vs. some amount of that type of mentoring⁸. Further, for some of the analyses, comparisons as a function of gender and race-ethnicity were not possible when there was virtually no variation in responding.

When asked if their mentors *serve as role models*, most responding assistant professors indicated that they received some amount of this type of mentoring, ranging from a low of 77% for women of color to a high of 100% for men of color. There was a trend for white women to report more of this type of mentoring than women of color.

When asked about the extent to which their mentors *promote their careers via networking*, there was a broad range of assistant professors with mentors who receive some amount of this type of help, with percentages ranging from a low of 46% for women of color to a high of 88% for men of color. Men were more likely to have mentors who promote their careers via networking than were women. Further, women of color were significantly less likely than white women and men of color to receive this type of mentoring.

Most respondents indicated that they receive *advice about career advancement* (e.g., promotions, leadership positions), with percentages ranging from a low of 89% for white women to a high of 100% for men of color. There were no significant differences in this area of mentoring among the four gender/race-ethnicity groups.

Assistant professors were asked about receiving *advice about department politics* from their mentors. The majority of respondents indicated that they did receive this type of guidance, with rates ranging from 69% for women of color to 89% for white women. There were no gender/race-ethnicity group differences in this area of received mentoring.

⁸ Very few respondents chose the 'too much' response. Across the mentoring items reported here, the number of respondents choosing the 'too much' response ranged from zero to four.

Assistant professors with mentors were asked about the extent to which their mentors provide *advice about obtaining needed resources*. Most assistant professors received this type of guidance, with rates ranging from a low of 77% for women of color to a high of 89% for white women. Here again, there were no significant differences in this area of mentoring among the four gender/race-ethnicity groups.

When asked about the extent to which their mentors *advise about publishing*, there was a slightly broader range of assistant professors with mentors who receive some amount of this mentorship, with rates ranging from 62% for women of color to 100% for men of color. There was a trend for men to receive more of this type of mentorship than female faculty, and women of color were significantly less likely than white women to receive this type of mentoring.

Most assistant professors reported that their mentors *provide advocacy* for them, with rates ranging from a low of 77% for women of color to a high of 100% for men of color. Male faculty were significantly more likely to have their mentors advocate for them than were female faculty.

Relatively fewer assistant professors indicated that their mentors provide *advice about work/family balance*. Rates of receiving some of this type of mentoring ranged from a low of 41% for white men to a high of 60% for men of color.

ASSOCIATE AND FULL PROFESSORS - PROVIDING MENTORING (TABLE 6)

Research faculty at the associate and full professor level were asked if they serve as mentors/advisors to other faculty. Those who answered in the affirmative were then asked about the amount of mentoring they provided to mentees in eight areas using the following response scale: 1 = none; 2 = some; 3 = a lot; 4 = too much⁹.

Rates of mentoring/advising another faculty member were similar among the four gender/race-ethnicity groups at the associate and full professor level; 33% of men of color, 39% of white men, 42% of white women, and 44% of women of color reported that they served as mentors to junior colleagues.

Mean ratings from associate and full professors with mentees indicated that these faculty engaged in *role modeling*: ratings ranged from a low of 2.41 for white men to a high of 3.00 for men and women of color. Faculty of color were more likely to serve as role models to their mentees than were white faculty.

Mentors also reported *promoting mentees' careers via networking*, with a low of 1.50 for men of color and a high of 2.36 for white men. There was a trend for white faculty, overall, to provide more of this type of mentorship than faculty of color; specifically, white male faculty provided more networking assistance than male faculty of color.

⁹ The overwhelming majority of associate and full professors with mentees did not feel as though they were giving too much advice or support in any of the eight areas reported on above; only one faculty member provided the 'too much' response.

Mean ratings for the degree to which mentors advised mentees about *preparation for career advancement* ranged from a low of 2.00 for men of color to a high of 2.79 for white women. Men of color reported providing significantly less of this type of mentorship than did women of color and white men.

Faculty mentors reported similar rates of giving advice to mentees about *getting work published*, with rates ranging from 2.50 for white women and men of color to 2.75 for women of color. There were no differences among the four gender/race-ethnicity groups with regard to providing this type of mentorship.

Mean ratings for the degree to which mentors advised mentees about *department politics* ranged from a low of 1.50 for men of color to a high of 2.75 for women of color. A significant gender difference emerged, such that female faculty reported providing more information about department politics to their mentees than did male faculty.

Associate and full professors who serve as mentors also indicated the extent to which they give advice to mentees about *obtaining needed resources*, with a low of 2.25 for women of color to a high of 3.00 for men of color. The four gender/race-ethnicity groups did not differ in how much they provide this type of advice to their mentees; however, there was a trend for men of color to provide more advice about obtaining resources than women of color.

Mentors indicated that they did a fair amount of *advocating* for their mentees, with mean ratings ranging from 2.25 for women of color to 2.79 for white women. There were no significant differences among the four gender/race-ethnicity groups on providing this type of mentorship, but there was a trend for women of color to provide less advocacy for their mentees than white women.

Lastly, mentors were asked about the extent to which they advised mentees about *balancing work life and family life*. Mean ratings indicate that this is a topic that mentors touch on to some degree, with a low of 1.50 for men of color to a high of 2.43 for white women. There was a trend for female mentors to be more likely than male mentors to offer advice to their mentees on this topic; in particular, white female faculty reported providing significantly more of this type of guidance than white male faculty.

FEEDBACK FROM UNIT LEADERS (TABLES 5 AND 6)

Research faculty members used a scale ranging from 1 (poor) to 5 (superior) to rate their department/unit leaders on two items: the usefulness of feedback about performance and their articulation of clear criteria for promotion/tenure.

Ratings of leaders' feedback about performance was in the 'average' range of the rating scale, ranging from a low of 3.06 for white women to a high of 3.41 for white men. White men provided significantly higher ratings on this question compared to white women. Similarly, ratings of leaders' articulation of criteria for promotion/tenure fell in the 'average' area of the rating scale, with a low of 3.21 for white women and a high of 3.57 for women of color. Compared to white women, white men provided significantly higher ratings on this aspect of department/unit leader communication.

TEACHING, SERVICE, AND RECOGNITION

TEACHING (TABLE 7)

Research faculty were asked about their satisfaction with their teaching loads on a scale ranging from a low of 1 for 'very dissatisfied' to a high of 5 for 'very satisfied,' and were also asked about the number of formal courses they typically teach each academic year. Five questions assessed the extent to which faculty viewed the following as part of their main teaching responsibilities: one-on-one instruction, formal seminar courses, formal lecture courses, occasional lectures, and modeling correct professional behavior. The response scale was comprised of the following four points: (1) none; (2) some; (3) most; and (4) all. Finally, faculty were asked about the number of undergraduate and graduate students for whom they serve as primary advisor.

Mean ratings indicated that all four gender/race-ethnicity groups were roughly 'somewhat satisfied' with their teaching loads; responses ranged from a low of 3.67 for men of color to a high of 3.87 for white men. There were no group differences with regard to satisfaction in this area. The mean number of formal courses taught per academic year was roughly between 2 and 3 for all groups, ranging from 2.25 for white men to 3.09 for women of color. On average, women reported teaching more courses each year (2.76) compared to men (2.32).

Using the frequency rating scale described above, all groups reported engaging in some amount of *one-on-one instruction*; ratings ranged from 2.22 for women of color to 2.52 for white men. There were no gender or race-ethnicity group differences.

Mean ratings of the extent to which *seminar courses* comprise part of research faculty members' teaching responsibilities fell between the 'none' and 'some' points on the rating scale, with a low of 1.57 for women of color to a high of 1.70 for white women. There were no group differences on this question.

Mean ratings of the extent to which *formal lecture courses* comprise part of research faculty members' main teaching responsibilities centered around the 'some' point on the rating scale, with a low of 1.89 for white women and a high of 2.21 for men of color. There were no group differences on this question.

Mean ratings of the instructional time spent *giving occasional lectures in large courses* were low, ranging from 1.41 for women of color to 1.64 for both white women and men of color; there were no group differences.

Mean ratings of the extent to which *modeling correct professional behavior* comprise part of research faculty members' main teaching responsibilities centered near the 'some' point on the rating scale; mean ratings ranged from a low of 1.87 for women of color to a high of 2.19 for white women. There were no group differences on this question.

Research-track faculty members reported on the number of undergraduate advisees they have in a typical year; means ranged from a low of 1.52 for white men to a high of 2.08 for men of color. Faculty members were also asked about the number of graduate students they advised in a typical year; means ranged from a low of 1.74 for female faculty of color to a high of 2.41 for white female faculty. There were no group differences with regard to the number of undergraduate or graduate student advisees.

SERVICE (TABLE 8)

Respondents were asked how many committees they serve on in a typical year, the number they chair, and if they had ever felt excluded from serving on important decision-making committees. Finally, they reported whether they had ever been asked to serve as section/area/program chair, or center/lab/institute/program director, and if they had ever served in that capacity.

The mean number of committees served on in a typical year ranged from one to two, with a low of 1.07 for men of color and a high of 2.17 for white women. On average, women reported serving on significantly more committees in a typical year (2.15) compared to men (1.71). The mean number of committees chaired in a typical year was low, ranging from .08 for men of color to .45 for white men. There were no differences as a function of gender/race-ethnicity with regard to this question.

Rates of feeling excluded from important decision-making committees were in the moderate range: 17% of white men, 17% of women of color, 23% of men of color, and 36% of white women. Both white women and men of color were significantly more likely to experience such feelings of exclusion compared to white men.

Rates of having ever been asked to serve as some type of unit director were 17% for men of color, 22% for women of color, 32% for white men, and 34% for white women; these rates did not differ significantly by gender/race-ethnicity group. Rates of having ever served in this capacity were almost identical – 17% for men of color, 22% for women of color, 32% for white men, and 32% for white women – and did not differ by gender/race-ethnicity.

RECOGNITION (TABLE 9)

To assess experiences of recognition, research faculty were asked if their primary department/unit had ever nominated them for an award in the areas of research, service, and teaching. A fourth item asked whether or not their primary department/unit had failed to nominate them for an award for which they felt qualified.

Rates of having ever received a nomination for a *research award* were 7% for men of color, 9% for women of color, 18% for white women, and 30% for white men. White faculty were significantly more likely than faculty of color to have been nominated for a research award.

Rates of having ever received a nomination for a *service award* were rather low: 4% for men of color, 6% for white women and men, and 9% for women of color. There were no group differences.

Rates of having ever received a nomination for a *teaching award* were 0% for women of color, 6% for white women, 8% for men of color, and 12% for white men. There were no group differences.

Finally, research faculty reported on whether they were passed over for an award nomination for which they felt deserving. Rates of affirmative responses ranged from a low of 3% for women of color to a high of 9% for men of color; there were no significant differences on this question as a function of gender/race-ethnicity.

INFLUENCE AND SELF-DETERMINATION

INFLUENCE (TABLE 10)

The survey identified nine areas of influence in department activities; respondents were asked to rate their level of felt influence in each of the areas using a scale ranging from 1 (no influence) to 5 (tremendous influence).

- Two areas addressed influence in the domain of education (curriculum decisions and selecting new graduate students and residents/fellows); these were combined to create a *felt influence over educational matters* scale.
- Three variables addressed influence in faculty matters (selecting new faculty members, determining who gets tenure, and selecting the next unit head) and were combined to create a *felt influence over faculty matters* scale.
- Three different items addressed influence concerning departmental resources (size of salary increase, obtaining money for travel, and securing facilities or equipment for research); these items were combined to create a *felt influence over resource allocations* scale.
- The ninth area, *influence over the overall unit's climate/culture*, remained a separate item.

Three items assessing research-track faculty members' sense of impact were included in the survey: (a) I have significant influence over what happens in my department/unit; (b) I have a great deal of control over what happens in my department/unit; and (c) my impact on what happens in my department/unit is large. The response scale for these items ranged from 1 (strongly disagree) to 5 (strongly agree). These items were averaged to create a summary impact scale ($\alpha = .94$).

Mean levels of *felt influence over education matters* fell in the 'minor influence' to 'some influence' range, with a low of 2.07 for women of color and a high of 2.65 for white women. On average, white faculty members felt more influence over education matters than did faculty members of color.

Mean levels of *felt influence over faculty matters* for the four gender/race-ethnicity groups were all close to the 'minor influence' point on the response scale, with a low of 1.76 for men of color and a high of 2.16 for white men; there were no significant mean differences as a function of gender/race-ethnicity.

Mean levels of *felt influence over resource allocations* also fell around the ‘minor influence’ point on the response scale, with a low of 1.90 for men of color and a high of 2.33 for white men. There were no significant mean differences as a function of gender/race-ethnicity.

Mean levels of *felt influence over the overall unit’s climate/culture* fell in the ‘minor influence’ to ‘some influence’ range, with a low of 1.59 for men of color and a high of 2.40 for white men. White faculty members felt significantly more influence over unit climate/culture than did faculty members of color.

Finally, mean scores on the impact scale were in the low-moderate range, with a low of 2.21 for men of color to a high of 2.58 for white men. There were no group differences on this measure.

SELF-DETERMINATION, GROWTH, AND BOUNDARIES (TABLE 10)

Several questions were asked with the goal of assessing research faculty members’ felt experience of self-determination, the firmness of boundaries between work and non-work aspects of life, and experiences of growth in their positions.

Three items assessed on a 1 (strongly disagree) to 5 (strongly agree) scale were combined to create a *self-determination scale*¹⁰: (a) I can decide on my own how to go about doing my work; (b) I have significant autonomy in determining how I do my job; and (c) I have considerable opportunity for independence and freedom in how I do my job.

Four items assessed on a 1 (strongly disagree) to 5 (strongly agree) scale were combined to create a *boundary management scale*¹¹: (a) I allow work to interrupt me when I spend time with my family and friends; (b) I regularly bring work home; (c) I respond to work-related communications during my personal time away from work; and (d) I work during my vacations. Note: Boundary management items were reverse-scored prior to scale creation, meaning that higher scores on this scale indicate firmer boundaries between work life and personal life.

Finally, three items assessed on a 1 (strongly disagree) to 5 (strongly agree) scale were combined to create a *growth and learning scale*¹²: (a) I find myself learning often; (b) I continue to learn more and more as time goes by; and (c) I have developed a lot as a person.

Mean ratings on the *self-determination* scale fairly high, with a low of 3.92 for men of color and a high of 4.48 for white men. White faculty members reported significantly higher mean levels of self-determination compared to faculty members of color.

Rather low mean ratings on the *boundary management* scale indicated a fair amount of leakage of work life into personal life, with scores ranging from a low of 1.57 for women of color to a high of 1.89 for white

¹⁰ See Spreitzer (1995); internal consistency (Cronbach’s alpha) was high at .95

¹¹ See Kossek et al. (2012); internal consistency was good at .77

¹² See Spreitzer et al. (2005) and Porath et al. (2001); internal consistency was high at .87

men. (Recall that higher scores on this measure indicate more solid boundaries between work life and home life.) White faculty members had significantly higher mean boundary scores (1.83) compared to faculty members of color (1.62).

Mean scores on the *growth and learning* scale were high, ranging from 4.35 for white women to 4.42 for women of color. There were no differences on this measure as a function of gender/race-ethnicity.

SUMMARY OF CAREER EXPERIENCE-RELATED FINDINGS

Research faculty members provided positive ratings with regard to their overall satisfaction with resources and work space. There was a great deal of satisfaction with the safety of work spaces and satisfaction with building maintenance ranged from moderate to positive. Female faculty expressed less satisfaction with the safety of their work spaces compared to male faculty.

Ratings of satisfaction with university funding and external funding were modestly-positive. Although research faculty did not differ in their satisfaction with external funding, men of color were significantly less satisfied with university funding compared to white men and women of color.

Women of color were significantly more likely to report seeking UM assistance to find employment for a partner than were white women. Of the faculty who sought UM help with partner employment, ratings of satisfaction with this service were low to moderate. Women were more likely than men to have considered leaving UM to improve opportunities for their partners.

More than half of assistant professors reported that they had a mentor/career advisor (rates ranged from 93% for women of color to 67% for white women). There was a trend for female assistant professors of color to be more likely to have a mentor compared to white female assistant professors and male assistant professors of color. Research faculty members' responses about the types of mentorship they receive differed as a function of gender and race-ethnicity in several ways. Male faculty were more likely to have mentors who promote their careers via networking and advocate for them than were female faculty. There was a trend for men to receive more advice about publishing than female faculty, and white women were significantly more likely than women of color to have a mentor who provides this kind of advice.

Among associate and full professors, 33% of men of color, 39% of white men, 42% of white women, and 44% of women of color reported that they served as mentors to junior colleagues. Faculty of color were more likely to serve as role models to their mentees than white faculty, and white male faculty provided more networking assistance than male faculty of color. Female faculty reported providing more information about department politics to their mentees than did male faculty. Further, there was a trend for female faculty to be more likely to advise their mentees about work/family balance; in particular, white female faculty reported providing significantly more of this type of guidance than white male faculty.

Across all levels of faculty, white men provided greater ratings of the quality of their leaders' feedback and articulation of promotion/tenure criteria than did white women.

All four gender/race-ethnicity groups reported being somewhat satisfied with their teaching loads. On average, women reported teaching more courses per year than men did. The mean number of committees served on in a typical year roughly ranged from one to two; there were no significant gender/race-ethnicity group differences with regard to serving on or chairing committees. White women and men of color were significantly more likely to have felt excluded from important decision-making committees compared to white men.

Rates of having ever received a nomination for a research award ranged from 7% for men of color to 30% for white men. White faculty were significantly more likely than faculty of color to have been nominated for a research award.

When faculty were asked about the level of influence they experienced in areas such as educational matters, faculty matters, and resource allocation, responses generally ranged from having a minor influence to having some influence. On average, white faculty members felt more influence over education matters and their unit's climate/culture than did faculty members of color.

Overall, research faculty provided high ratings when asked about their feelings of self-determination and their experiences of learning and growth on the job. In contrast, faculty indicated fairly low levels of boundary management. White faculty reported significantly higher levels of self-determination and boundary management than faculty of color.

FINDINGS III: FAMILY & HOUSEHOLD VARIABLES

HOUSEHOLD (TABLE 11)

Research faculty provided information on family composition and, when relevant, information on partner employment status, their level of childcare responsibilities, and the age of their youngest child. Faculty were also asked about their level of household responsibilities, and whether aspects of their work lives were affected by caring for others, or by their own health issues.

For the purposes of the analyses below, we consider faculty as having parenting responsibilities if their youngest children were reported as being under the age of 18 in 2012. Some faculty did not supply any response when asked if they had a spouse or partner; thus, analyses of some variables below (e.g., % of faculty with partners and children under 18) did not include all respondents.

FAMILY DEMOGRAPHICS

The percentages of single-parent faculty (with children under age 18) were low: 0% for men of color, 2% for white men, 3% for white women, and 14% for women of color. In a trend that approached significance, women of color were more likely to be single parents than were white women. The rates of faculty who reported being single with no children under age 18 were low to moderate: 5% for white men, 7% for white

women, 18% for men of color, and 27% for women of color. Faculty of color were more likely than white faculty to report being single with no children.

The rates of research faculty who reported having a spouse/partner but no children under age 18 were 18% for women of color, 25% for men of color, 45% for white women, and 51% for white men. Women of color were less likely to have a spouse/partner and no children under age 18 than were men of color and white women. The rates of faculty who reported having both a spouse/partner and at least one child aged 18 or younger were all rather similar: 41% for women of color, 43% for white men, 46% for white women, and 57% for men of color.

PARTNER EMPLOYMENT

The rates of faculty reporting that their partners were employed full time were: 39% for women of color, 44% for white men, 48% for men of color, and 65% for white women. White women were more likely to have a partner employed full time than were white men. Women of color were less likely than men of color to have a partner who was employed full time.

Among only those faculty who reported that their partners worked at UM, the rates of those partners who worked as UM faculty were: 30% for men of color, 45% for white men, 79% for white women, and 83% for women of color. Female faculty were significantly more likely than male faculty to have a partner who worked as faculty at UM.

FAMILY RESPONSIBILITIES

Research faculty with children and partners responded to a question about their own level of childcare responsibility using a 1-5 scale, with values higher than 3 indicating that the respondent handled more of the childcare responsibilities than their partner (a value of 3 indicated equally-shared responsibilities). Mean scores ranged from a low of 2.60 for white men to a high of 3.69 for women of color. Female faculty with partners and children indicated having significantly more childcare responsibilities compared to male faculty.

A summary household responsibility variable was constructed based on: (a) family situation (e.g., having a partner and/or children), (b) partner employment status for those with partners, and (c) age of youngest child for those with children. Those with more family responsibilities (e.g., single parent, partnered employed full time, with young child) received a higher household responsibility score compared to those with fewer family demands (e.g., no partner and no young children). Mean scores on the measure ranged from a low of 2.06 for white men to a high of 2.61 for women of color. Women of color had significantly higher levels of household responsibility compared to all other groups.

Research faculty were also asked if six areas of their professional lives had been affected by (a) caring for an adult who is ill, disabled, or aging, (b) caring for children, and/or (c) one's own health issues. Responses to these questions were scored with regard to the number of areas of professional life affected (0 - 6). Examples of the areas of professional life that were included in the survey include: professional travel

curtailed, disruptions of work during the day, unexpected time away from work, and opportunities not offered.

Mean scores were rather low with regard to the number of work life areas affected by caring for another adult and ranged from a low of 0 for women of color to .57 for white women. Women of color reported significantly fewer areas of work life affected by caring for another adult compared to white women and men of color.

Mean scores for the number of work life areas affected by caring for children ranged from a low of .93 for male faculty of color to a high of 2.96 for female faculty of color. Compared to male faculty of color, female faculty of color and white male faculty reported more areas of work life affected by caring for children. Further, white women reported more childcare-affected areas of work life compared to white men.

Mean scores for the number of work life areas affected by one's own health issues ranged from a low of .41 for white men to a high of .57 for women of color; there were no significant gender/race-ethnicity group differences.

SUMMARY OF FAMILY & HOUSEHOLD-RELATED FINDINGS

White women were more likely to have a partner employed full time than were white men, and women of color were less likely than men of color to have a partner who was employed full time. Among faculty who indicated that their partners worked at UM, female faculty were significantly more likely than male faculty to have a partner who worked as a UM faculty member.

Female faculty indicated having more childcare responsibilities compared to male faculty, and white women reported more childcare-affected areas of work life than did white men. Women of color had significantly higher levels of household responsibility compared to all other groups but reported significantly fewer areas of work life affected by caring for another adult compared to white women and men of color.

FINDINGS IV: VARIABLES ASSOCIATED WITH JOB SATISFACTION

ANALYTIC APPROACH

ABOUT REGRESSION ANALYSIS AND CORRELATION COEFFICIENTS

In a final series of analyses, we examined relationships between research-track faculty members' overall job satisfaction and many of the variables considered above. Most predictors of job satisfaction were explored via the use of multiple regression. Multiple regression analysis allows for the simultaneous examination of multiple potential predictors of an outcome variable of interest (in this case, job satisfaction). Those predictors that emerge as significant in such an analysis are those that predict substantial variance in job satisfaction above and beyond any variance predicted by the other variables in the model.

We also report on a small number of correlational analyses below. Correlation statistics describe the associations between two variables, in terms of magnitude and direction, but do not allow for the statistical control of a large number of other predictor variables.

When a significant, positive relationship emerges between two variables in a regression or correlation analysis, it means that increases in the predictor variable (e.g., satisfaction with funding) are associated with increases in the outcome variable (e.g., job satisfaction), on average¹³. Conversely, when a significant, negative relationship between two variables emerges in a regression or correlation analysis, it means that increases in the predictor variable (e.g., number of committees served on) are associated with decreases in the outcome variable (e.g., job satisfaction), on average¹⁴. We note that significant associations in this type of study cannot and should not be interpreted in causal terms, but are often quite informative nonetheless.

Because only a fraction of the faculty sample had sought UM help with finding employment for a partner/spouse, this variable was not explored as a predictor of job satisfaction in the regression analyses. Including this variable in the regression models, in which cases with missing values were omitted, would have drastically decreased the numbers of respondents included in these analyses, thereby reducing statistical power. Instead, satisfaction with UM help in securing employment for partners was assessed in relation to job satisfaction in stand-alone correlation analyses for each gender/race-ethnicity group.

JOB SATISFACTION VARIABLE

The outcome variable of interest, overall job satisfaction, was measured with a summary variable that was constructed as the mean of three items¹⁵ that were each assessed on a 5-point scale: (1) How satisfied are you with your current position at UM?; (2) How much you would like to stay at UM for your entire career?; and (3) How often do you think about leaving UM? Prior to computing the job satisfaction variable, responses to the third item used in the scale were reverse-scored so that more positive values indicated fewer thoughts about leaving.

DEMOGRAPHIC VARIABLES INCLUDED IN ALL REGRESSION ANALYSES

In the sections below, the predictor variables used in each set of regression analyses are listed. However, we note that the following demographic variables were included in all of the regression models:

Demographic Variables	Description
Experience in Academia	Composite of age, years at UM, year of highest degree, and rank
Gender	Single item (coded as: 0 = male, 1 = female)
Race-ethnicity	Single item (coded as: 0 = white, 1 = faculty of color)

¹³ Further, in a positive association, decreases in the predictor variable are associated with decreases in the outcome variable, on average.

¹⁴ Further, in a negative association, decreases in the predictor variable are associated with increases in the outcome variable, on average.

¹⁵ Cronbach’s alpha – a measure of internal consistency – was good at .73. This alpha was high enough (i.e., > .70) to justify combining these three items into a summary scale measuring job satisfaction. All other summary scales created for the regression analyses were also checked for adequate internal consistency (alphas > .70) prior to use in the analyses reported below.

Gender and race-ethnicity were entered as predictor variables in all regression models. These variables allowed us to compare experiences of female faculty to male faculty, and faculty of color to white faculty. The interaction between gender and race was also tested for significance in each model. This test had the potential to reveal patterns of job satisfaction that may vary within a particular gender group (e.g., women) as a function of race, or within a particular race-ethnicity group (e.g., faculty of color) as a function of gender. However, in these analyses the gender \times race-ethnicity interaction term never emerged as a significant predictor of job satisfaction.

In each model presented below, we also tested two-way interactions between gender and other predictor variables, and between race-ethnicity and other predictor variables.

RELATIONSHIPS BETWEEN CLIMATE-RELATED VARIABLES AND JOB SATISFACTION

The first regression model explored the relationships between key climate-related variables and faculty members' overall job satisfaction. In addition to the demographic variables listed above, the following climate-related variables were included in the regression model:

Climate-Related Variables	Description
Summary Climate Scale	Mean of items assessing positivity of environment, level of scholarly isolation, felt surveillance, and ratings of unit leader
Tolerant Climate Scale	Mean of 4 items assessing prejudice/discrimination in department/unit for vulnerable groups
Gender Egalitarian Atmosphere	Mean of 9 items assessing gender egalitarianism
Disparaging Comments about Women	Mean of 2 items assessing presence of disparaging comments about women in unit
Disparaging Comments about Racial-Ethnic and/or Religious Minorities	Mean of 4 items assessing presence of disparaging comments about racial-ethnic and/or religious minorities
Experienced Gender Discrimination (in past 5 years)	Presence of observed discrimination in any of 6 areas; e.g., hiring, salary (coded as 0 = absent, 1 = present)
Experienced Racial-Ethnic Discrimination (in past 5 years)	Presence of observed discrimination in any of 6 areas; e.g., hiring, salary (coded as 0 = absent, 1 = present)

Taken all together, the demographic and climate-related variables in this model accounted for 36% of the variance in job satisfaction¹⁶. The following variables emerged as statistically significant predictors of job satisfaction after controlling for all other variables in the model:

- The summary climate scale was a relatively strong, positive predictor of job satisfaction. More positive ratings of the work climate – e.g., more collegiality, less scholarly isolation, less felt

¹⁶ Note that across the three models presented here, the percentage of variance accounted for is not expected to sum to 100% or any other specific value. This is because the various predictor variables are not completely uncorrelated, some relevant predictor variables were not measured in the survey, and some of the same demographic variables were included in each model.

surveillance, higher ratings of the unit leader, etc. – were associated with greater job satisfaction, on average.

- The tolerant climate × race-ethnicity interaction term also emerged as a significant predictor of job satisfaction. For faculty of color in particular, more positive ratings of the climate with regard to levels of prejudice/discrimination – e.g., less perceived racism, sexism, and homophobia – were associated with greater job satisfaction.

RELATIONSHIPS BETWEEN CAREER-RELATED VARIABLES AND JOB SATISFACTION

The next regression model explored the relationships between several career-related variables and faculty members' overall job satisfaction. In this analysis, summary scales were created to measure a number of predictors of job satisfaction that were originally measured using multiple items. We note in the list of predictor variables below any variables that were constructed as composites of multiple items. For some predictor variables, the creation of summary scales was not possible; these variables were included in the regression analyses as single items.

Career-Related Variables	Description
Satisfaction with Office Space and Location	Mean of satisfaction with amount of space, computer and lab equipment, vendor service, location and contiguity, maintenance, and safety
Number of Committees Served on in Typical Year	Single item
Quality of Feedback from Department/Unit Chair/Director	Mean of 2 items measuring quality of feedback from superior on job performance and quality of information offered about promotion/tenure
Have Mentor or Career Advisor	Single item (coded as: 1 = no, 2 = yes)
Failure to be Nominated for Award by Department/Unit	Single item (coded as: 1 = no, 2 = yes)
Self Determination/Impact	Mean of 6 items measuring the extent to which respondent can make autonomous decisions about work activities and has influence over work activities
Boundary Management	Mean of 4 items measuring the extent to which work spills into vacation time, family time, and time at home
Learning/Growth on the Job	Mean of 3 items measuring growth and learning on the job; e.g., "I find myself learning often"
Satisfaction with Teaching Load	Single item
Satisfaction with University Funding	Single item

Taken all together, the demographic and career-related variables in this model accounted for 47% of the variance in job satisfaction. The following two variables emerged as statistically significant predictors of job satisfaction after controlling for all other variables in the model:

- The variable measuring overall satisfaction with office space and office-related issues (office location, equipment, etc.) was a significant, positive predictor of job satisfaction. More positive ratings of office space/resources were associated with greater job satisfaction, on average.
- A relatively strong, significant, and positive predictor of job satisfaction was the extent to which faculty felt a sense of self-determination and impact. Greater levels of self-determination and impact were, on average, associated with higher levels of job satisfaction.

As noted above, correlation analyses were used to explore potential associations between satisfaction with UM assistance with partner employment and job satisfaction (for those faculty who had sought such assistance). There were 59 respondents who indicated that they had sought such assistance (22 women, 36 men, and one person who did not report their gender). In this group there was no significant association between overall job satisfaction and satisfaction with UM assistance with partner employment.

RELATIONSHIPS BETWEEN FAMILY & HOUSEHOLD VARIABLES AND JOB SATISFACTION

The final regression model explored relationships between family and household variables and faculty members' level of job satisfaction. The following variables, in addition to the demographic factors included in all models, were assessed here:

Family/Household Variables	Description
Number of Areas of Work Life Affected by Caring for Children	Computed as sum of 6 areas of work like potentially affected by caring for children (e.g., professional travel curtailed)
Number of Areas of Work Life Affected by Caring for Adult	Computed as sum of 6 areas of work like potentially affected by caring for an adult (e.g., opportunities not taken)
Number of Areas of Work Life Affected by Own Health	Computed as sum of 6 areas of work like potentially affected by own health issues (e.g., time away from work)
Level of household responsibility	Those with more family responsibilities (e.g., single parent; partner employed full time; young child in home) received a higher household responsibility score compared to those with fewer family demands (e.g., no partner and no young children).

Taken all together, the demographic and family/household-related variables in this model accounted for 9% of the variance in job satisfaction. The following variables emerged as predictors of job satisfaction after controlling for all other variables in the model:

- The variable measuring the number of work areas affected by one's own health issues was a significant and negative predictor of job satisfaction. More health-related impacts on work life were, on average, associated with lower levels of job satisfaction.
- There was a near-significant trend for women to have lower levels of job satisfaction, on average, compared to men.

SUMMARY OF FINDINGS FROM REGRESSION ANALYSES

The first regression model explored associations between climate-related variables and job satisfaction. More favorable evaluations of the overall work climate were associated with greater job satisfaction, on

average. Further, for faculty of color in particular, more positive views of the work climate as diverse and tolerant were associated with greater job satisfaction, on average.

The second regression model examined relationships between career-related variables and job satisfaction. In this model, overall satisfaction with office space and office-related issues (office location, equipment, etc.) was a significant, positive predictor of job satisfaction. In addition, greater levels of self-determination and impact were, on average, associated with higher levels of job satisfaction.

In the final regression model, household and family variables were examined in relation to job satisfaction. There was a trend for gender, which was included in all of the above regression models, to predict job satisfaction; women were, on average, marginally less satisfied with their jobs compared to men. Second, a significant, negative predictor of job satisfaction was the extent to which one's own health issues were affecting work life. More health-related impacts on work life were, on average, associated with lower levels of job satisfaction. We note that family and household responsibilities were not significant predictors of job satisfaction after controlling for the other variables in the model.

CONCLUSIONS

CLIMATE

In general, research-track faculty members' ratings of department/unit climate were in the moderately-positive range, and reports of explicitly discriminatory behaviors, harassing behaviors, and disparaging comments were rare. Reports on felt surveillance and isolation in faculty's departments/unit were mid-range to low. When asked about the extent to which the department/unit climate was tolerant and gender-egalitarian, overall ratings ranged from moderate to positive.

However, some differing views on the climate as a function of gender and/or race were found, and these deserve attention. Compared to male faculty, female faculty were more likely to report having experienced gender discrimination, and men and women of color were more likely than white faculty to have experienced some form of racial-ethnic discrimination. White men reported feeling less isolation, experiencing less surveillance, perceiving greater tolerance in their departments/units, and viewed their leader as more committed to racial-ethnic diversity than men of color and white women did. Further, female faculty experienced their department/unit as less gender egalitarian than male faculty. Moreover, faculty of color reported significantly more tokenism compared to white faculty, and female faculty reported significantly more tokenism compared to male faculty.

Do experiences of the workplace climate have implications for job satisfaction? For research-track faculty, the answer appears to be yes. More favorable evaluations of the overall work climate – which included ratings of aspects of faculty life like collegiality, cooperation, friendliness, scholarly isolation, felt surveillance, and views of the unit leader – were associated with greater job satisfaction, on average. Further, more positive views of the work climate as tolerant were associated with greater job satisfaction

for faculty of color. I.e., for research faculty of color, more positive ratings of the climate with regard to levels of prejudice/discrimination (e.g., less perceived racism, sexism, and homophobia) were associated with greater job satisfaction. While strong conclusions about causality cannot be drawn based on these findings, these results do suggest that continued efforts to improve experiences of the workplace climate could lead to greater job satisfaction for research faculty.

CAREER-RELATED EXPERIENCES

Research faculty provided positive ratings with regard to satisfaction with resources, work space, safety of work spaces, building maintenance, and university and external funding. Female faculty expressed less satisfaction with the safety of their work spaces compared to male faculty.

Ratings of satisfaction regarding UM assistance with partner employment were low to moderate, and women were more likely than men to have considered leaving UM to improve opportunities for their partners.

More than half of assistant professors reported that they had a mentor/career advisor. Male assistant professors were more likely to have mentors who promote their careers via networking and advocate for them than were female assistant professors. Women of color were significantly less likely than white women to have a mentor who advises about publishing. When asked about the quality of their unit leaders' feedback and articulation of promotion/tenure criteria, the ratings provided by white men were higher than those provided by white women. When asked about recognition received for their work, white faculty reported being significantly more likely than faculty of color to have been nominated for a research award.

Research faculty were asked about the level of influence they experienced in areas such as educational matters, faculty matters, and resource allocation; responses generally ranged from having a minor influence to some influence. On average, white faculty felt more influence over education matters and their unit's climate/culture than did faculty of color. White women and men of color were significantly more likely to have felt excluded from important decision-making committees compared to white men.

Faculty provided high ratings when asked about their feelings of self-determination and their experiences of learning and growth on the job. However, faculty reported a fair amount of leakage across the boundary of work life and non-work life. Compared to faculty of color, white faculty reported significantly higher levels of self-determination and significantly less porousness across the boundary of work and non-work life.

Do the types of experiences described here have implications for overall satisfaction with work? In the sample we surveyed, a greater sense of work-related self-determination and impact was associated with greater job satisfaction. Although it is not possible to make causal claims about these relationships, these results suggest that efforts to help faculty to feel that more of their work is self-motivated and self-determined could have a positive influence on job satisfaction for some faculty. Further, more positive ratings of office space/resources were associated with greater job satisfaction, on average.

FAMILY AND HOUSEHOLD EXPERIENCES

Lastly, research faculty members were asked a variety of questions about family and household issues. Among faculty who indicated that their partners worked at UM, female faculty were significantly more likely than male faculty to have a partner who worked as faculty. Female faculty had more childcare responsibilities than did male faculty, and white women identified more areas of their professional lives as being impacted by childcare responsibilities than did white men. Additionally, women of color had significantly higher levels of household responsibility compared to all other groups.

One variable in this general category was significantly associated with job satisfaction: the number of aspects of work life affected by one's own health issues. In this case, greater numbers of impacts were associated with less job satisfaction. Although causal links cannot be established here, these findings suggest that extra support for research faculty facing health issues might increase job satisfaction for some faculty.

Table 1 - Gender Related Climate Indicators: Means and Percentages for Research-Track Faculty in 2012								
	Men of Color n=54		White Men n=123		Women of Color n=22		White Women n=73	
	mean	sd	mean	sd	mean	sd	mean	sd
Disparaging comments about women	1.23	0.09	1.31	0.06	1.41	0.13	1.66	0.07
Disparaging comments about men	1.17	0.34	1.40	0.66	1.43	0.78	1.43	0.61
	percentage		percentage		percentage		percentage	
Gender discrimination	0%		0%		9%		24%	
Unwanted sexual attention	0%		0%		0%		12%	
Individuals reporting others reported unwanted sexual attention	7%		6%		0%		17%	

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 2 - Race-Ethnicity Related Climate Indicators: Means and Percentages for Research-Track Faculty in 2012								
	Men of Color n=54		White Men n=123		Women of Color n=22		White Women n=74	
	mean	sd	mean	sd	mean	sd	mean	sd
Disparaging comments about racial/ethnic minorities and/or religious groups	1.18	0.32	1.20	0.40	1.42	0.61	1.30	0.44
	percentage		percentage		percentage		percentage	
Racial-ethnic discrimination	7%		0%		9%		4%	

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 3 - School Climate: Means for Research-Track Faculty in 2012

	Men of Color n=58		White Men n=127		Women of Color n=23		White Women n=74	
	mean	sd	mean	sd	mean	sd	mean	sd
Positive Environment (scale)	3.79	0.72	3.98	0.80	3.67	0.91	3.61	0.94
Scholarly Isolation (scale)	2.56	0.75	2.10	0.73	2.26	0.69	2.29	0.78
Felt Surveillance (scale)	3.00	1.00	2.23	0.88	2.61	0.99	2.70	1.02
Executive Leader as Fair (scale)	3.62	0.98	3.98	0.88	3.75	1.00	3.40	1.05
Executive Leader Creates Positive Environment (scale)	3.70	0.92	3.89	0.94	3.45	1.07	3.71	1.16
Tolerant Environment (scale)	3.98	0.83	4.25	0.60	3.99	0.75	3.84	0.85
Gender Egalitarian Atmosphere (scale)	4.19	0.57	4.19	0.62	3.78	0.73	3.49	0.92
Tokenism (scale)	2.10	1.05	1.43	0.83	2.59	1.34	2.06	1.04
Commitment of Executive Leader to Racial-Ethnic Diversity (single item)	3.77	1.02	4.12	0.84	3.70	1.06	3.74	1.15

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

	Men of Color n=58		White Men n=127		Women of Color n=23		White Women n=75	
	mean	sd	mean	sd	mean	sd	mean	sd
Overall satisfaction with resources	3.99	0.71	4.11	0.92	3.96	1.10	4.00	1.00
Leader helps obtain needed resources	3.07	1.32	3.62	1.14	3.83	1.03	3.39	1.09
Overall satisfaction with work space	3.97	0.87	4.17	1.01	4.13	1.11	4.09	1.00
Satisfaction with safety of research space	4.50	0.77	4.56	0.77	4.00	0.94	4.38	0.98
Satisfaction with building maintenance	4.20	1.07	3.75	1.22	3.33	1.19	3.69	1.23
Satisfaction with university funding	3.26	1.22	3.76	1.15	3.95	0.95	3.75	1.22
Satisfaction with external funding	3.71	1.07	3.79	1.08	3.65	1.14	3.76	1.17
	n=14		n=27		n=8		n=14	
Satisfaction with UM assistance with spouse/partner employment	3.14	1.70	2.74	1.53	2.50	1.51	2.93	1.44
	percentage		percentage		percentage		percentage	
Sought UM assistance with spouse/partner employment	32%		25%		47%		22%	
Considered leaving UM to improve spouse/partner's career opportunities	39%		37%		50%		54%	

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 5 - Received Mentoring and Feedback - Assistant Professors: Means and Percentages for Research-Track Faculty in 2012									
	Men of Color n=23		White Men n=52		Women of Color n=14		White Women n=42		
	percentage		percentage		percentage		percentage		
I have at least one mentor/career advisor	70%		75%		93%		67%		
	n=32		n=39		n=13		n=28		
My mentor/career advisor...	mean	sd	mean	sd	mean	sd	mean	sd	
serves as a role model	2.69	0.69	2.54	0.68	2.23	0.83	2.52	0.58	
promotes my career through networking	2.25	0.76	2.21	0.70	1.69	0.86	2.18	0.77	
advises about preparation for advancement (e.g., promotion, leadership positions)	2.56	0.62	2.28	0.61	2.31	0.63	2.21	0.63	
advises about getting my work published	2.62	0.61	2.37	0.75	1.92	0.86	2.36	0.62	
advises about department politics	1.94	0.67	2.10	0.68	1.85	0.69	2.18	0.61	
advises about obtaining the resources I need	2.25	0.84	2.21	0.66	2.08	0.76	2.11	0.58	
advocates for me	2.26	0.62	2.62	0.54	2.08	0.76	2.33	0.62	
advises about balancing work and family	1.80	0.76	1.49	0.64	1.54	0.66	1.52	0.58	
	n=42		n=50		n=14		n=38		
My chair/executive leader...	mean	sd	mean	sd	mean	sd	mean	sd	
gives me useful feedback about my performance	3.48	1.07	3.54	0.99	3.21	1.19	2.79	1.30	
articulates clear criteria for promotion and tenure	3.60	1.13	3.60	1.11	3.11	1.27	3.29	0.99	

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 6 - Provided Mentoring and Feedback - Associate and Full Professors: Means and Percentages for Research-Track Faculty in 2012								
	Men of Color n=6		White Men n=75		Women of Color n=9		White Women n=33	
	percentage		percentage		percentage		percentage	
I serve as mentor/career advisor to at least one faculty member	33%		39%		44%		42%	
As a mentor I...	n=4		n=29		n=4		n=14	
	mean	sd	mean	sd	mean	sd	mean	sd
serve as a role model for my mentees	3.00	0.00	2.41	0.50	3.00	0.00	2.50	0.76
promote my mentees' careers through networking	1.50	0.58	2.36	0.68	2.00	1.16	2.29	0.73
advise about preparation for advancement (e.g. promotion/tenure, leadership)	2.00	0.00	2.61	0.50	2.75	0.50	2.79	0.43
advise about getting my mentees' work published	2.50	0.58	2.55	0.63	2.75	0.50	2.50	0.86
advise about department/unit politics	1.50	0.58	2.18	0.72	2.75	0.50	2.57	0.65
advise about obtaining the resources my mentees need	3.00	0.00	2.48	0.63	2.25	0.96	2.50	0.52
advocate for my mentees	2.50	0.58	2.54	0.51	2.25	0.50	2.79	0.43
advise about balancing work and family	1.50	0.58	1.93	0.72	2.00	1.16	2.43	0.65
My chair/executive leader...	n=10		n=70		n=9		n=32	
	mean	sd	mean	sd	mean	sd	mean	sd
gives me useful feedback about my performance	2.80	1.40	3.31	1.16	3.22	1.30	3.38	0.94
articulates clear criteria for promotion and tenure	2.80	1.93	3.54	1.19	4.00	1.32	3.34	1.04

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 7 - Teaching: Means for Research-Track Faculty in 2012								
	Men of Color n=54		White Men n=122		Women of Color n=23		White Women n=75	
	mean	sd	mean	sd	mean	sd	mean	sd
Satisfaction with teaching load	3.67	1.07	3.87	1.07	3.68	1.34	3.72	1.25
Number of formal courses taught in typical academic year	2.50	1.41	2.25	1.37	3.09	1.51	2.67	1.61
Extent to Which Following are Part of Teaching Responsibilities								
One-on-one instruction	2.48	0.84	2.52	0.87	2.22	0.85	2.38	0.88
Seminar courses	1.64	0.75	1.58	0.67	1.57	0.79	1.70	0.78
Formal lecture courses	2.21	0.97	1.98	0.92	2.04	0.93	1.89	0.91
Occasional lectures in large courses	1.64	0.63	1.59	0.61	1.41	0.59	1.64	0.62
Modeling correct professional behavior	1.84	0.98	2.03	0.97	1.87	0.76	2.19	0.68
Advising								
Number of undergraduate advisees	2.08	2.80	1.52	2.75	1.61	1.46	1.71	2.73
Number of graduate student advisees	2.00	2.95	2.23	2.87	1.74	2.47	2.41	3.02
Notes: Ns vary slightly by item; N=max number of responses by group for items in table.								

Table 8 - Service: Means and Percentages for Research-Track Faculty in 2012								
	Men of Color n=54		White Men n=123		Women of Color n=22		White Women n=72	
	mean	sd	mean	sd	mean	sd	mean	sd
Number of committees served on in typical year	1.07	1.55	1.99	2.05	2.09	2.22	2.17	1.72
Number of committees chaired in typical year	0.08	0.27	0.45	0.78	0.29	0.56	0.30	0.55
	percentage		percentage		percentage		percentage	
Ever asked to serve as department chair	17%		32%		22%		34%	
Ever served as department chair	17%		32%		22%		32%	
Felt excluded from decision-making committees	23%		17%		17%		36%	

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 9 - Recognition: Percentages for Research-Track Faculty in 2012				
	Men of Color n=29	White Men n=125	Women of Color n=23	White Women n=73
	percentage	percentage	percentage	percentage
Ever nominated for research award	7%	30%	9%	18%
Ever nominated for teaching award	8%	12%	0%	6%
Ever nominated for service award	4%	6%	9%	6%
Dept/Unit/School failed to noimiate for deserved award	3%	7%	9%	5%

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 10 - Influence and Self-Determination: Means for Research-Track Faculty in 2012

	Men of Color n=58		White Men n=127		Women of Color n=23		White Women n=75	
	mean	sd	mean	sd	mean	sd	mean	sd
Felt influence over educational matters	2.22	1.23	2.58	1.17	2.07	1.08	2.65	1.10
Felt influence over faculty matters	1.76	0.90	2.16	1.03	2.05	0.98	2.02	0.81
Felt influence over resource allocations	1.90	0.93	2.33	0.87	2.06	0.88	2.09	0.79
Felt influence over unit's climate/culture	1.59	1.00	2.40	0.99	2.10	0.97	2.35	0.94
Impact	2.21	1.22	2.58	1.05	2.28	1.04	2.25	1.05
Self-determination	3.92	1.02	4.48	0.76	4.23	0.95	4.35	0.85
Learning	4.41	0.60	4.37	0.67	4.42	0.52	4.35	0.73
Boundary management	1.65	0.61	1.89	0.81	1.57	0.69	1.73	0.70

Notes: Ns vary slightly by item; N=max number of responses by group for items in table.

Table 11 - Household-Related Variables - Means and Percentages for Research-Track Faculty in 2012									
	Men of Color n=28		White Men n=124		Women of Color n=22		White Women n=74		
	percentage		percentage		percentage		percentage		
Single with children under age 18	0%		2%		14%		3%		
Single, no children under age 18	18%		5%		27%		7%		
Spouse/Partner, no children under age 18	25%		51%		18%		45%		
Spouse/Partner and children under age 18	57%		43%		41%		46%		
	n=75		n=127		n=23		n=75		
	mean	sd	mean	sd	mean	sd	mean	sd	
Level of childcare responsibility	2.62	0.96	2.60	0.78	3.69	1.03	3.49	0.91	
Level of household responsibility	2.33	0.62	2.06	0.63	2.61	1.01	2.16	0.75	
Number of work life areas affected by caring for another adult (0 - 6 scale)	0.55	1.17	0.46	1.07	0.00	0.00	0.57	1.43	
Number of work life areas affected by caring for children (0 - 6 scale)	0.93	1.57	1.57	1.94	2.96	2.38	2.33	2.30	
Number of work life areas affected by own health issues (0 - 6 scale)	0.45	1.20	0.41	1.03	0.57	1.27	0.56	1.20	
	n=29		n=127		n=23		n=75		
	percentage		percentage		percentage		percentage		
Partner employed full-time	48%		44%		39%		65%		
	n=10		n=38		n=6		n=24		
	percentage		percentage		percentage		percentage		
Partner is UM faculty (vs.other employment at UM)	30%		45%		83%		79%		

Notes: Ns vary slightly by item; N=max number of responses by group for items in table. Percentages were rounded, and thus may not sum to 100%