CHALLENGES FACING FEMALE DOCTORAL STUDENTS AND RECENT GRADUATES

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Although increasing the numbers of women and minority faculty in academia is a widely held goal, their numbers remain small. The presence of women and minorities decreases disproportionately at each ascending rung of the academic ladder. This investigation identified factors potentially contributing to attrition in White and non-White women at a critical stage in their careers: as doctoral candidates and recent graduates. Two-hundred and twenty-four women in the life sciences, social sciences, and the humanities described their most pressing professional and personal concerns and offered suggestions for changes in their fields and in academia more generally. Independent raters coded responses by thematic content. Differences in responses by field, educational status, and minority status were examined. The most frequently cited concerns involved practical issues such as finding employment, financial stability, and developing professional expertise, revealing wide-
spread concerns about a competitive academic climate. Suggestions included modifications in professional conduct, the employment and pay structure, and training.

Many educators have called for increasing the proportion of women and minority faculty members at colleges and universities (Olsen, Maple, & Stage, 1995). Despite this interest in diversity and some augmentation in overall numbers, the presence of women and minority faculty remains small, particularly at the senior ranks. Although 33% of the faculty at American universities are women, only 20% of female faculty are full professors, compared to 45% of male faculty (Bell, 1997). African American, Asian, Native American, and Latino scientists and social scientists make up 2%, 7%, <1%, and 2% of professors at 4-year colleges and universities, respectively (National Science Foundation, 1992). African American, Latino, and Native American faculty are underrepresented in comparison with their proportions in the undergraduate student body (Gainen & Boice, 1993) and in the U.S. population (Garza, 1993; Johnsrud, 1993). Asian Americans have a comparatively larger presence, but they are seen less often in higher level and leadership positions (Miller, 1996). Although there is a perception that minority candidates are being actively recruited for faculty positions at a cost to opportunities for White males, a recent report indicated that a similar proportion of White and minority men reported “good experiences” seeking employment (Smith, 1996). Underrepresentation of women and minorities is problematic because it represents a lack of opportunity for certain groups and because it limits the richness and variety of perspectives within the academic environment. Moreover, recent economic and political pressure against affirmative action in education and in science threatens programs aimed at increasing diversity (Barinaga, 1996; Gibbons, 1996).

One impediment to expanding the number of women and minorities in top positions in academia has been termed the “funneling effect” (Caplan, 1992). Funneling refers to the reduction of the proportion of women and minorities on the academic ladder as one ascends from the undergraduate level to the level of full professor (Berryman, 1983; Sandler & Hall, 1986; Wyche & Graves, 1992). At each transition point, this reduction is disproportionate for women and minorities, although the points in the sequence where loss occurs vary (Berryman, 1983). This phenomenon has also been compared to a leaky vessel or pipeline (Barinaga, 1992); simply encouraging more women and minorities to enter the pipeline is an inadequate solution to the problem (Etzkowitz, Kemelgor, Neuschatz, Uzzi, & Alonzo, 1994). Identifying the specific factors that impede progress toward gender balance and multicultural diversity is essential (Bronstein, Rothblum, & Solomon, 1993).

There are many barriers to women and minorities succeeding at various stages on the academic path (American Psychological Association Commission on Ethnic Minority Recruitment, Retention, and Training in Psychology, 1997; Johnsrud, 1993; Menges & Exum, 1983). Women are more likely than men to be part-time students, receive little financial support (Pyke, 1991), lack collegial networks (Clark & Corcoran, 1986), and have family responsibilities that compete with activities required to achieve tenure (Barinaga, 1992). For minorities, a notable barrier is “symbolic racism,” whereby overt forms of prejudice are condemned.
Women Entering Academia

while access to sources of support, information, and other resources are informally denied (Thomas & Alderfer, 1989). Similar subtle forms of sexism, such as stereotyping and women-unfriendly environments, are experienced by women (Amato, 1992). Feeling the need to prove their academic merit and intellectual competence is an added burden for women and minorities (Menges & Exum, 1983). A theory of cumulative disadvantage, whereby women's difficulties in entering academic careers, training, and obtaining positions compound, has also been offered to explain their attrition (Clark & Corcoran, 1986; Cole, 1979).

Notably, some commonly proposed explanations cannot account for the differential progress of women and minorities. One investigation demonstrated that female Ph.D.'s lower rates of faculty appointments, tenure status, and salaries could not be attributed to: (a) the greater proportions of women among recent Ph.D.'s, (b) the different distributions of women and men across fields of study, (c) the presumed constraints on career mobility faced by married women, or (d) the greater likelihood that women have interrupted their careers for child-bearing and child-rearing (Committee on the Education and Employment of Women in Science and Engineering, 1981). The findings of this study are particularly compelling because male and female doctorates were matched for year of degree, field of study, granting institution, and race. Similarly, women experience more career disruptions than men, and when women with career disruptions are compared to women with career continuity (controlling for number of publications and length of service) they are significantly less likely to achieve tenure (McElrath, 1992). For men, however, career disruption has no such effect on achieving tenure.

Factors that are unlikely contributors to the leaky pipeline are intellectual ability and credentials. In fact, female graduate students tend to score as well as or better than male graduate students on objective measures of achievement (Berg & Ferber, 1983; Girves & Wemmerus, 1988; Simeone, 1987). In striking contrast, women may lack confidence in their ability to handle the demands of graduate work, especially in the sciences (Berg & Ferber, 1983). It has often been suggested that women and minorities, with the encouragement of their academic institutions, are drawn to teaching and service at the expense of productivity, although this was not the case for a sample of women and minority faculty at top-tier research universities (Olsen et al., 1995). Women's lower levels of productivity are partially explained by their higher likelihood of being at less prestigious institutions, at lower ranks, and in less productive disciplines (Finkelstein, 1984). On the other hand, women are just as accomplished as men in the pool of applicants for university faculty positions in terms of quality of their doctoral programs, number of publications and presentations (controlling for years since receiving the doctorate), and level of praise received in letters of recommendation (Bronstein, Black, Pfennig, & White, 1989).

In this investigation, we examined factors that might contribute to the funnelling of White and minority women at the senior graduate student and early doctoral level. These factors represent difficulties that may prevent them from finishing a doctorate and finding and keeping an academic position. We chose individuals at this point in their careers for three reasons: (a) the early stages of professional socialization are considered particularly important for progress and success (Clark & Corcoran, 1986); (b) to identify obstacles to advancement that arise despite having already demonstrated competence and commitment; and (c) to complement the
findings of similar but retrospective studies of established, tenured faculty (who represent only successful academics).

Individuals who preside over and influence institutions of higher education are generally neither women nor minorities and are likely to lack awareness of how structures within academia may affect nontraditional graduate students and faculty (Bronstein, 1993; Gaines & Boice, 1993). Accordingly, we solicited participant suggestions for ways to improve their circumstances in order to provide constructive recommendations from the point of view of this early-career group. We used a qualitative approach because of the suggestion that the processes that impede women's progress may not be easily captured in quantitative analysis and because the goals of this study were descriptive and exploratory (Cole, 1979). Thus, we administered and analyzed an open-ended questionnaire to collect participants' professional and personal concerns and suggestions.

**METHOD**

**Respondents**

Participants were recruited from the 1993–94 Minority and Women Doctoral Directory (MWDD, 1993), a national listing of approximately 3,800 African American, Latino, American Indian, Asian American, and female doctoral candidates and recent Ph.D.s. In order to sample a broad range of fields, questionnaires were sent to 185 potential participants in the life sciences (biological sciences), 193 in the humanities (English and comparative literature), and 185 in the social sciences (psychology). Four individuals could not be contacted because of incorrect addresses. Of the remaining 565 questionnaires sent, 231 were returned, for a response rate of 41%. Of these, 7 incomplete questionnaires were excluded, yielding 224. Because only 11 of the respondents were male, the analyses presented here are confined to the 213 female respondents.

Respondents ranged in age from 21 to 57 years old with a mean of 34. Seventy percent were White, 8% were Latina, 8% were Asian American, 7% were African American, and 6% were of other or mixed ethnicity. Forty-nine percent were married, 31% were single, 9% were living with a partner, 8% were divorced, 2% were separated, and <1% were widowed. In terms of academic specialty, 38% were in the life sciences, 28% in the humanities, and 34% in the social sciences. There were no differences by academic specialty in likelihood of responding \[ \chi^2 (2, N = 211) = 5.46, p > .05 \]. Table 1 shows these specialties by ethnicity. Fifty percent of participants were doctoral students or had yet to earn their doctorates, and 50% had received their doctorates.

**Questionnaire**

Participants completed a brief, open-ended questionnaire with two items. The first item asked respondents to describe their most pressing professional and personal concerns. The second asked for suggestions regarding what, if anything, they would change about their field or academia more generally.
Table 1
Respondents in the Life Sciences, Humanities, and Social Sciences by Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Total (n = 213)</th>
<th>Life sciences (n = 80)</th>
<th>Humanities (n = 60)</th>
<th>Social sciences (n = 71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>70</td>
<td>68</td>
<td>80</td>
<td>66</td>
</tr>
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<td>Asian American</td>
<td>8</td>
<td>14</td>
<td>5</td>
<td>6</td>
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<tr>
<td>Latina</td>
<td>8</td>
<td>10</td>
<td>3</td>
<td>11</td>
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<tr>
<td>African American</td>
<td>7</td>
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<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>4</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: For two respondents, field could not be identified. Totals do not add up to 100% due to rounding.

Coding

Responses were first examined for thematic content and several categories of response were generated for each of the two items. Two independent raters coded a random set of 20% of the responses and then conferred to refine the coding categories. Their agreement on the remaining responses was 70%. Discrepancies in ratings were reconciled by discussion.

RESULTS

Professional and Personal Concerns

Table 2 shows the percentage of participants mentioning each category of concerns for the total sample, by field, by predoctorate versus postdoctorate status, and by minority versus nonminority status. Categories of response mentioned by less than 5% of respondents were excluded.

Concerns Surrounding Employment

The most frequent concern cited by participants was finding a job, mentioned by 54% of the sample. Students worried about preparing themselves to be qualified and successful job applicants in what they perceived to be a highly competitive job market. As they approached graduation, some respondents were plagued with uncertainty and anticipated bleak job prospects:

It is hard to come out of graduate school not knowing whether you’ll be able to find a job. The publish or perish pressure and the need to be able to get grant money prior to finding a job is tough on top of graduate studies, research, and teaching commitments.
<table>
<thead>
<tr>
<th>Type of concern</th>
<th>Total sample (n = 213)</th>
<th>Life sciences (n = 80)</th>
<th>Humanities (n = 60)</th>
<th>Social sciences (n = 71)</th>
<th>Predoctorates (n = 105)</th>
<th>Postdoctorates (n = 107)</th>
<th>Minority (n = 63)</th>
<th>Nonminority (n = 150)</th>
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<tr>
<td>Concerns surrounding employment</td>
<td>54</td>
<td>58</td>
<td>67</td>
<td>42</td>
<td>63</td>
<td>46</td>
<td>54</td>
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<td>Financial concerns</td>
<td>38</td>
<td>28</td>
<td>53</td>
<td>38</td>
<td>49</td>
<td>28</td>
<td>37</td>
<td>39</td>
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<tr>
<td>Concerns about academic and professional development and professional issues</td>
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<td>38</td>
<td>33</td>
<td>42</td>
<td>39</td>
<td>37</td>
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<tr>
<td>Concerns regarding balancing the personal and professional sides of one’s life</td>
<td>36</td>
<td>40</td>
<td>32</td>
<td>35</td>
<td>38</td>
<td>34</td>
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<td>30</td>
<td>35</td>
<td>23</td>
<td>33</td>
<td>28</td>
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<tr>
<td>Problems with faculty, supervisors, or administrators</td>
<td>21</td>
<td>20</td>
<td>22</td>
<td>21</td>
<td>22</td>
<td>21</td>
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<td>Concerns about a lack of a supportive</td>
<td>17</td>
<td>15</td>
<td>25</td>
<td>11</td>
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<td>Concerns about emotional and psycho-</td>
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<td>Concerns specific to being female</td>
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<td>7</td>
<td>16</td>
<td>13</td>
<td>17</td>
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<td>Concerns related to the academic or</td>
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<tr>
<td>Concerns about securing grant</td>
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<td>2</td>
<td>7</td>
<td>12</td>
<td>8</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

*Note: Categories of response are not mutually exclusive and do not add to 100%.

*For two respondents, field could not be identified.

*For one respondent, pre-versus postdoctorate status could not be identified.

*Of minority respondents.
Others had already experienced disappointment and strains while seeking academic employment:

I have been on the job market for the last two years and I have not even had a professional interview. I am very well qualified, with experience teaching at the university level, and yet I have very little hope of finding a position or funding of any kind for next year. I love teaching very much, and my research is important to me, but I may have to try to find some other way to support myself. This is a terrible blow to me, to have put so much time, effort, and money into my career only to find every door closed.

**Financial Concerns**

Another frequently mentioned worry was financial concerns, reported by 38% of the participants. Some students described receiving low stipends and existing from paycheck to paycheck. Others had difficulty acquiring funds at all because of the lack of availability of departmental financial support. Some compensated by taking out loans, working at other jobs, and running up high credit-card bills. For respondents with families, the situation was even more trying:

I have two kids, so my budget needs are greater than the average graduate student. I have to continually seek out [teaching assistant] and [research assistant] positions. At my university there is no consideration given to women with children [i.e., no priority for teaching assistantships].

Importantly, financial strains seemed to compound other stresses and impact other areas of life such as relationships, training, and scholarship:

I had to work three jobs and keep up my academic work... the pressure affected my relationship with my husband, and we are now separated.

I have had a difficult time making ends meet, finding it impossible to get a permanent job and sometimes very hard to get temporary work, often having to take part-time assignments. Even with assistance from my parents, these periods have led to high levels of debt as well as frustration and anxiety that inevitably interfered with my academic work.

**Concerns About Academic or Professional Development**

Concerns dealing with academic and professional accomplishments were cited by 38% of the sample. These included achieving the milestones to complete a graduate degree and the necessary skills to become a competent academic. Respondents were also concerned about such things as networking, honing communication skills, publishing, teaching, writing, and developing an original program of research. Also reported were worries about gaining respect from peers for one’s work, getting recognition in the form of scholarships and awards, and the importance of one’s work to society.

**Concerns Regarding Balancing the Personal and Professional Sides of One’s Life**

Difficulties balancing personal and professional responsibilities and activities were reported by 36% of respondents. Often these involved the struggle between academic work and personal relationships or family:
I was afraid of the length of time and the sacrifices I had to make to get through the process. I even feel I had to curtail friendships because I did not feel “free,” even on weekends, to lead a normal life to spend time with friends and loved ones.

The problem of trying to have a family and be successful in a career is a large one. Numerous male and female faculty/postdocs have told me how difficult mixing the two is. In fact, my current “boss” has told me outright that I’ll never be successful if I have kids.

In addition, some respondents expressed a desire for a more balanced life in general, and not to be so consumed by work:

Something that I’ve been wrestling with for a few years now is whether I’m even cut out for an academic career. It’s so soul-sapping at times; I crave other dimensions to my life, things that don’t always fit into the “academic lifestyle.”

For some respondents the balance had less to do with scarcity of time but more with logistical constraints: “Will [my husband and I] be able to find satisfying jobs in the same geographical area?”

**Concerns About Stress and Time Pressure**

Problems with stress and time pressure were cited by 30% of the sample. Strains mentioned were trying to finish the required work to graduate before a stipend runs out and trying to balance teaching and research responsibilities. One participant reported: “[The] workload was unmanageable, between course work, clinical practicum, and 20 hour/week research rotation, it averaged 85-90 hours per week.”

**Problems with Faculty or Administrators**

Problems with faculty, clinical supervisors, or administrators were cited by 21%. Some of these complaints were that faculty seemed to be resting on their laurels, did not give adequate feedback or guidance, or were too stressed by the demands on their time to give more than perfunctory advising. Another concern was that many faculty members appeared more concerned with furthering their own research than preparing students for postgraduate careers:

I have been bothered by the imbalance of power between students and their advisors. My advisor tries to control his students—to do thesis projects that benefit him, and he continuously wants students to do extra (nonthesis) research or lab work for him. He claims that we owe him something and holds his letter of recommendation as ransom.

Some students reported very intense conflicts with faculty members:

My most pressing personal concern was always my relationship with my advisor. Our personality differences and professional differences led to several clashes over my personal life. These clashes were centered around my decision to have a child in the last year of my graduate career. That decision was questioned by my advisor as was my desire not to work with radioactivity during my pregnancy.
Some faculty conflicts involved sexual harassment:

Sexual harassment created problems for me leading to my loss of an Associate Instructor position. When I rejected my professor “sutor,” I was suddenly not as capable or competent as an [Assistant Instructor], losing my position eventually.

Concerns Specific to Race or Ethnicity

Difficulties specific to race or ethnicity were mentioned by 19% of the minority participants. Problems encountered included tokenism, lowered expectations of performance, lack of minority peers and faculty, exclusion, being held as an example or spokesperson for a given ethnic group, pressure to do work related to their ethnicity, racial insensitivity, and racism:

As a Hispanic woman, [graduate school] was a heart-wrenching experience. I was the only one in the entire department, so I became very self-conscious. My ethnic identity became a huge issue in my mind. I hated it when professors held me up as the spokesperson for all Hispanics, or as the model of success, or of what Hispanics can/should do.

I am concerned about the constant struggle to become equal to White female graduate students. Most of the time I feel that I have to prove my worthiness, and it is not until I outdo them that I am considered a worthy student. I am also concerned about the preconceived notion that I need extra help and advice simply because I am Black.

Concerns About a Lack of a Supportive Environment

A lack of support was reported by 17% of participants. Primarily, the problems cited involved inadequate mentoring from an advisor. Other concerns had to do with a lack of understanding or sensitivity to the fact that graduate students undergo hardships and may have a particular need for support:

I worked full time during all of my graduate career, as a professional secretary and editor, in order to be able to afford to go to school half-time—I was told at one point . . . that I was not a serious student because I had a job.

Concerns About Emotional and Psychological Health

Similarly, concerns about emotional, psychological, and social well-being were reported by 17% of participants. Such concerns involved depression, lack of self-esteem, isolation, or strains on social relationships. Importantly, such psychological difficulties sometimes were thought to be related to physical health impairments such as migraine headaches.

Concerns Specific to Women

Difficulties specific to women, problems that respondents identified as being of particular importance to women or resulting from the fact that they were women, were reported by 15% of the female participants. Some found the lack of female role models or colleagues problematic:

My graduate school department (of 20 faculty members) had a total of one tenured female professor, and only three female faculty all totaled. My current department has several women faculty, but all are at a lower rank and make lower salaries than
the males in the department. It seems the "old boy" network is still very much alive
and well in the halls of academe, and as a young woman trying to make a career, it
is very frustrating.

Other responses focused on inequality between men and women in academe. For
example, one respondent reported that one of her most pressing concerns was
"professional parity with males (I'm paid 33% to 40% less now than male colleagues
doing same work)." Other feelings mentioned were: "I have a sense that women
were/are not taken as seriously as their male counterparts" and "Professorships
seem to be reserved for men—my perception is that women are not seen as being
as needy as their male counterparts."

Another group of responses classified as difficulties specific to being a woman
centered around the climate of academe. One respondent found it problematic
that there is such great importance put on self-promotion saying, "It seems unrelated
to quality of work" and "It is difficult for women who were raised to believe they
should never do it." Other participants noted:

As a woman, I found the academic climate very oppressive . . . to the needs of women;
how we work best and most effectively; and in the kind of emotional support offered
in feedback to my work . . . Women seem to need a different kind of support to meet
the challenges required at the Ph.D. level, e.g., breaking down taboos regarding
success as a woman, motivating oneself to continue in spite of the personal strain of
developing as a female in a male-dominated hierarchy.

Attrition of women grad students in my department was 50%, while it was about 12%
for men. Several department-wide discussions did little to relieve the tension and
anxiety surrounding this fact.

Concerns Related to the Academic or Scientific System
Problems with the academic or scientific system were cited by 15% of the respond-
dents. Some of these concerns were related to training, either the way graduate
students are trained or the numbers of students trained. For instance, some respond-
dents complained that few job skills were passed on in a formal manner. Others
felt that graduate students are exploited within the system as cheap research and
teaching labor. One respondent maintained, "too many people are being trained
without regard for future need. When 200-300 overqualified applicants respond
to each job offering, something is off-balance."

Other concerns focused on the standards by which faculty are evaluated or
criteria by which hiring and promotion decisions are made. Respondents felt that
the emphasis was far too heavily placed on research, publishing, and bringing in
research funding as opposed to teaching. Similarly, one respondent asserted that
female faculty tend to spend more of their time with students, so they are often
in a disadvantaged position when being considered for a job.

Finally, there were concerns about the lack of funding that universities now
receive:

I am concerned about the decreasing support for education—I know of several universi-
ties that have tenure track "positions" available, but no money to fund these vacancies.
This is also very true at the post-doc level in academe.
Concerns About Securing Grant Money

Finally, worries about obtaining research grant money or lack of funding were cited by 10%. There was concern about a lack of availability of funds, the stiffness of the competition for grants, and uneasiness seeing faculty spending a large portion of their time writing for funds.

Group Differences

Analyses were performed to detect differences in frequencies of concerns cited by field (life sciences, humanities, or social sciences), educational status (predoctorate or postdoctorate), or ethnicity (minority or nonminority status). Respondents in the humanities most frequently mentioned financial concerns, whereas respondents in the life sciences reported these least frequently \( \chi^2 (2, N = 211) = 9.68, p < .01 \). Respondents in the humanities also most frequently cited concerns about finding employment, whereas those in the social sciences cited them least frequently \( \chi^2 (2, N = 211) = 8.16, p < .05 \). Respondents in the life sciences most frequently mentioned concerns about securing grant money, but these were least mentioned by respondents in the humanities \( \chi^2 (2, N = 211) = 13.65, p < .001 \). Those in the life sciences most frequently mentioned concerns specific to being a woman, and those in the social sciences cited them least frequently \( \chi^2 (2, N = 211) = 10.23, p < .01 \). Predoctorates reported financial concerns and concerns about finding a job more frequently than postdoctorates \( \chi^2 (1, N = 212) = 9.47, p < .01 \) and \( \chi^2 (1, N = 212) = 6.22, p < .05 \), respectively.

Stratified by ethnic group, concerns specific to race or ethnicity were mentioned by 47% of African American respondents, 17% of Latina respondents, 17% of respondents of other races or ethnicities, and none of the Asian American respondents \( \chi^2 (3, N = 213) = 12.20, p < .01 \). The only difference in frequencies of cited concerns (excluding concerns specific to race or ethnicity) for minority women versus nonminority women was that nonminority women cited more concerns about balance between personal and professional life \( \chi^2 (1, N = 213) = 5.49, p < .05 \).

Suggestions for Changes in their Field or Academia

Table 3 shows the percentages of respondents suggesting particular changes in their field and/or academia more generally. Categories mentioned by less than 5% of respondents were excluded.

Improving the Profession or Professional Conduct

Changes regarding professional issues or professional conduct were suggested by 26% of participants. Several comments in this category concerned the intensity of academic life. Respondents criticized what they perceived to be the underlying presumption that one cannot be a good researcher unless one devotes all energy and time to work in a frantic and competitive atmosphere that squelches curiosity and balance. In addition, respondents felt that the pace of science breeds an extreme lifestyle that creates narrowness. They believed that attitudes must begin to change such that research cannot be the sole consuming interest, as is expected at many institutions.

Some responses concerned the type of research that is conducted. Some partici-
### Table 3
Changes in their Field or Academia Suggested: Total Sample by Field, Educational Status, and Minority vs. Nonminority Status

<table>
<thead>
<tr>
<th>Suggestion</th>
<th>Percentage of Respondents</th>
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<tbody>
<tr>
<td></td>
<td>Total Sample (N = 213)</td>
</tr>
<tr>
<td>Improvements having to do with the profession itself or professional conduct</td>
<td>26</td>
</tr>
<tr>
<td>Modify the job/pay structure</td>
<td>23</td>
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**Note.** Categories of response are not mutually exclusive and thus do not add to 100%.

¹For two respondents, field could not be identified.

²For one respondent, pre- versus post-doctorate status could not be identified.
pants believed that there should be more support for basic research and that the public should be educated about the importance of basic science. Conversely, others felt that there needed to be greater emphasis on applied issues and that research should have more real-world relevance. Others suggested that researchers should be held accountable for their work and that there should be clear guidelines regarding the ownership and sharing of data. In the same vein, some respondents criticized the practice of piecemeal publishing simply to increase the number of publications. It was also suggested that there should be a more open-minded exchange of ideas among colleagues and researchers, with less hostility and baseless criticism and more innovative approaches to teaching.

Modifying the Job or Pay Structure
Twenty-three percent of the respondents wanted to see adjustments in the employment or pay structure in their field or academia in general. Some recommended that graduate students have more solid sources of funding so that their teaching and research assistantship loads would be reduced, and they could finish in a more timely manner. Others recommended that in order to prevent conflict of interest on advisors' parts, students' financial support should not be tied to faculty research grants. Some felt that graduate students and part-time instructors are exploited and that the status and pay inequities between part-time and full-time faculty are too large, especially when part-time work is suitable for parents with small children.

Other responses dealt with the difficulty in finding employment and accommodating the demands of a job such as being expected to relocate anywhere. One suggestion for improving such difficulties was creating a matching program for graduate schools or a job-search process in which both universities and applicants might better address diversity, geographical location, and helping spouses stay together. In addition, it was suggested that all jobs should be advertised in one place.

A number of respondents wished to increase the respect for academic scientists in the community and government such that salaries were more competitive with comparable positions in other disciplines and with industry. One respondent suggested an increase in available funds for independently designed postdoctoral work in order to keep qualified, well-trained people from having to leave academia. Finally, some respondents suggested that there should be mandatory retirement for university professors.

Improving or Modifying the Training Process
Twenty-two percent of respondents made suggestions for changes concerning training. Many felt that training programs now take too long to complete and could use more structure so that there would be concrete and standard criteria for deciding when the qualifications for graduation have been completed. One respondent pointed out the destructiveness of arbitrary standards:

I would try to have a more independent assessment of the student's progress. The longer we are in the lab, the more productive we are, the more papers with our advisor's name on them are produced, and he/she is the one to decide when we leave—talk about conflict of interest!
Some suggestions concerned changing the content of training such that comprehensive exams were de-emphasized and practical considerations covered. Accordingly, skills such as teaching, grant-writing, article-writing, giving job talks, ethics, and mentoring would be formally taught. In addition, help in preparing to find a job was suggested:

Perhaps the job search would be a little less discouraging if there were more support systems in place to help students to understand the process and how they may better prepare themselves to deal with this process emotionally as well as professionally. The pressure is enormous and the process is often incomprehensible to those who have no “inside” access to the decision making.

Others suggested that training is the stage at which the competitiveness of the job market could be stemmed, by limiting the number of students or by creating and encouraging alternatives for Ph.D.s:

I would like to see graduate departments drastically reduce the number of students accepted into Ph.D. programs in the first place. But even if that were to happen—and most especially if it does not—entering students should be warned that getting a job is not only not a certainty, it is not even a high probability, and encouraged to pursue alternatives while in graduate school. I’d like to see graduate schools work with local businesses and departments and offices within the university to make available internships and part-time jobs that would help them prepare for other possible careers, such as publishing, business and technical writing, etc.

Nonacademic careers should be seen as a viable option. Most of my graduate professors get a little nervous when one of their students talks about not getting jobs at “peer institutions.” They need to realize that there are lots of definitions of success, and lots of paths to being successful.

Some respondents felt that not only should universities prepare students to find a job, but they should also actively help them find one.

Reducing Tension Between Research and Teaching and Increasing the Emphasis on Teaching

Twenty-one percent of respondents thought there was too much emphasis on research and publishing, often at the expense of teaching:

I wish there was more respect for Ph.Ds who are concerned with teaching and classroom effectiveness. Publish or perish hurts those of us who want to work with students rather than conduct research! It also produces some incredibly poor journal articles from people pressured to publish something rather than nothing.

It is important to strive for excellence in research, but it is equally important to serve those who follow us with the best quality of education and mentoring we have to offer.

Changes in the Psychological or Social Climate of Academia

Changes in the way academic life impacts people emotionally, psychologically, and socially were recommended by 13% of respondents. Some responses had to do
with the treatment of students. Some respondents felt that graduate students are often made to feel used or inadequate. Other comments focused on the prevailing modes of treating one another in graduate school and academia. These argued that the academic environment could be made more supportive, kind, and nurturing.

Increasing Opportunities or Conditions for Women
Changes in the opportunities for women in academia or the way women are treated were suggested by 13%. Many respondents believed that progress was still needed in terms of equal pay in academia for men and women and in terms of having women in top administrative and tenured positions as opposed to part-time and untenured positions. Furthermore, there was concern expressed that the structure of academia makes success for women particularly difficult:

The most intense phase of one’s academic career is graduate school and post doc, as well as the first 5–10 years as a professor when one is trying to establish oneself and get tenured. Unfortunately, this time frame overlaps completely with a woman’s child-bearing years, so many women face serious professional setbacks when starting a family. Some women even decide not to have kids, or decide to leave their profession to have them. I would like to see the academic structure change so that women have the opportunity to pursue an academic career without being penalized for having children.

Improving Mentoring
Changes that would make mentors more effective were suggested by 13% of the respondents. Some thought that having more female role models in itself would be beneficial. Others wished that faculty members could provide better quality and more positive feedback. To achieve this goal, several respondents suggested that faculty receive guidance to be better mentors. On the other hand, some respondents thought that it would be better to reduce the importance of the mentor–student relationship because it is too dependent on the characteristics of the mentor. One suggestion was to have graduate students rotate among the faculty with whom they work in order to receive a more complete education in their fields.

Increasing Ethnic or Gender Diversity
Nine percent of participants would like to see more diversity in academia. This meant seeing more women and minorities represented, not only among students but also in positions of authority and influence. To achieve this end, it was felt that there should be more support for women and minorities. In addition, some felt it would be beneficial to have a multicultural perspective in science and academia.

Increasing the Family-Friendliness of Academia
Nine percent of the respondents suggested that university environments could be made more family-friendly. Most of these responses centered on the theme that child-bearing and parenting should not be detrimental to progress and promotion:

I would like to see a shift from the former perspective in which men primarily dominated the professions while wives stayed home full time, to one more welcoming to nontraditional students like myself [single parent with 3 kids]. For example, seminars are required and are always held late afternoon–early evening, when children come
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... home from school and during the dinner hour. The same is often true of staff meetings... Since many of us have no significant other to take up the slack in family responsibilities, it seems a major shift in attitude is way overdue.

A way to ameliorate such difficulties was suggested by one respondent:

Allow jobs to be shared—so that people can raise children and have a job that is not too demanding.

Modifying the Structure of the Academic System
Eight percent of the sample would like to see changes in the structure of academia. Many respondents would like to see less of a firm hierarchy and encourage more collaborative and group-based work. One suggestion was to connect university work to community education so “high intellectual culture” is not so removed from local community concerns.

Modifying the Tenure Process
Eight percent of respondents made suggestions concerning tenure. Some suggested that there be more clearly and carefully defined standards for evaluation and promotion. Others felt that tenure, in its current form, had outlived its usefulness:

I have known of young professors with terrific c.v.s—articles and books published, conference presentations, etc.—who are still being denied tenure. Yet I see complacent older professors, granted tenure years ago, who have done little, if any progress on their scholarship, who teach the same courses over and over, etc. I think the whole procedure should be revamped to eliminate these extremes.

Reduce Politics
Six percent of respondents said that they would like to see efforts to reduce political pressures in academic life. This suggestion centered around fairer treatment of one another and less favoritism in matters such as distributing funds for research and in the tenure process.

Group Differences
Respondents in the social sciences were most likely to cite the need for change in the profession and in professional conduct and respondents in the humanities cited this least frequently \[ \chi^2 (2, N = 211) = 11.48, p < .01 \]. Postdoctorates made suggestions about the family-friendliness of academia more frequently than predoctorates \[ \chi^2 (1, N = 212) = 4.50, p < .05 \]. There were no differences in the frequencies of suggestions made by minority versus nonminority women.

DISCUSSION

Participants' responses revealed issues relevant particularly for women and minorities in academia but also represented broader concerns that likely affect Ph.D candidates and new Ph.D.s in general. It is interesting that the most prevalent concerns were of this more general nature. Overall, these concerns reflect an intense and stressful scholastic and academic environment. Accordingly, several of
the most frequently cited difficulties involved highly practical issues. For instance, by far the most frequently mentioned concern surrounded finding employment. This is a natural preoccupation at this stage of a career, but the comments also reflected the current competitive job market. Recent retrenchment at colleges and universities has led to fewer available tenure-track slots and reliance on part-time and short-term appointments (Horwitz, 1994). Relatedly, the second most frequently cited concern surrounded personal finances and the financial hardships of being a graduate student. Experiencing such financial difficulties while pursuing an education may affect minorities disproportionately (Gibbons, 1996; Wyche & Graves, 1992). Importantly, other concerns were interwoven with these financial issues such as the ability to support children and families and strains on personal relationships and productivity. These emerging scholars were also worried about academic success and professional development such as gaining the skill to advance in their careers and securing grant money, a particular concern for those in the life and physical sciences.

Stress and time pressure are also troubling to many aspiring academicians. Some research has identified work-related stress as a particular difficulty for women. For instance, stress related to professional identity (a sense of accomplishment regarding career goals) was higher for women faculty as opposed to men, and women reported greater work demands, less job control, and greater work related to role strain (Luska & Friend, 1994). As one might expect, stress related to professional identity declined as one increased in academic rank, but only for men (Luska & Friend, 1994). Other studies have shown that female graduate students, compared to their male colleagues, suffer from more stress and distress, in combination with less support from their family and academic departments (Hodgson & Simoni, 1995; Malinekrodt & Leong, 1992). Moreover, stress in academic women may take a toll beyond the workplace. In studies that compare physiological indices of stress in male and female workers outside and inside the home, the reaction was similar while at work but was higher for women while at home or after work (Dunne & Mullins, 1989; Frankenhaeuser et al., 1989).

One of the major changes suggested by participants involved modifications in training in ways that would facilitate employment and financial stability. Such changes, including limiting the number of doctoral candidates enrolled in graduate school and making training shorter and more marketable, are currently being discussed and implemented, particularly in the sciences, in response to the changing economy, sluggish employment at research universities, and increased competition for research grants (Holden, 1995a, 1995b; Moffat, 1995). For instance, some universities are beginning to offer master’s degrees in science fields geared toward work in industry (Moffat, 1995). However, there is pressure against limiting trainees’ numbers because many universities rely on a steady stream of graduate students to teach and conduct research (Holden, 1995b). Indeed, some respondents mentioned feeling exploited as cheap labor and wished to change their pay structure to be more independent. Administrators at universities and federal funding agencies are considering putting more money into fellowships that go directly to departments or students, so that trainees’ support is not tied to their supervisor (Moffat, 1995).

Even the more philosophical concerns mentioned, such as questions about the structure of the academic system, had a similar pragmatic ring that seemed to reflect a tough academic environment. For instance, there was consternation over
the focus on research at the expense of teaching and the pressure to publish and win large research grants. Too strong an emphasis on publishing may lead to practices that compromise the quality of work produced (Berardo, 1989). Furthermore, the notion that engaging in research necessarily makes one a better instructor has not been confirmed (Friedrich & Michalak, 1983). Respondents in the social sciences more frequently made suggestions about improvements in the profession or professional conduct. This may be caused by the fact that a proportion of this group (i.e., those in psychology) is likely to be made up of clinicians or clinicians in training as well as academic researchers; hence they have greater exposure to problems in the area of professional practice.

Participants suggested modifying the requirements for tenure or even abolishing it. The debate over tenure is long-standing, but it is clear that the current tenure system represents a formidable hurdle to young academics (Horwitz, 1994). One suggestion involved standardizing and clarifying the criteria for tenure. Because standards can seem subjective and flexible, tenure and promotion are areas in which women can easily be discriminated against (Gibbons, 1992b), although some subjectivity is inevitable. Caplan (1992) has provided a helpful series of guidelines for hiring, promotion, and tenure committees that can ensure fair treatment for all job candidates, and there are resources for women and ethnic minorities to help them maximize their chances for promotion and tenure (American Psychological Association Committee on Women in Psychology, 1992). Other innovative suggestions include changing the reward structure to give teaching positions tenure (Selvin, 1992) or developing a tenure system for part-timers, granting them some of the same benefits, such as access to resources and sabbaticals (Naparsteck, 1991).

Personal issues also preoccupied a number of young academicians. Perhaps in response to the stress of working within academia, respondents were concerned with balance between their personal and professional lives and with having a supportive environment to help deal with their struggles. Furthermore, participants identified a lack of support or outright conflicts with faculty or administrators. Relations with faculty represent a particularly important influence on the quality of graduate experience and progress (Girve & Wemmerus, 1988). Sometimes the issues surrounding these conflicts were related to other categories of concern such as balancing personal and professional responsibilities and desires.

A less frequent but potentially more damaging problem with faculty involved sexual harassment. In the present sample, not only did unwanted attention or advances make one feel uncomfortable, but they precipitated the breakdown of crucial relationships with faculty and brought about barriers to privileges. Other studies have shown sexual harassment to be quite common; in a poll of clinical psychology graduate students, for example, 30% of female respondents reported unwanted sexual advances from a professor (Glaser & Thorpe, 1986). However, increased public attention to this issue may have sensitized students to it. Our respondents recommended improving mentoring, perhaps by offering guidance to mentors or providing more than one. Mentoring is crucial to career development in many ways, including helping young academics make contacts and learn professional skills (Gibbons, 1992a).

Concerns specific to women were not predominant but were a priority for 15% of respondents. They were mentioned most frequently by women in the physical sciences and least frequently in the social sciences. This may be because women
have made fewer inroads into the physical and life sciences relative to men ("Diversity counts," 1966). One important example of this type of concern involves the scarcity of women faculty and role models. One investigation indicated that to some extent, female graduate students with female as opposed to male advisors believed their supervisors had more concern for their welfare, and had higher quality interactions (Schroeder & Myatt, 1993). These effects remained even after the percentage of women in the particular faculty (which could influence the general departmental atmosphere) and the rank of the professor (because junior professors may have more time to devote to students) were taken into account. In another study, the proportion of male graduate students who had gotten to know one or more male faculty members well was 78%, whereas the proportions of female graduate students reporting the same was 54% (Berg & Ferber, 1983). Most often, students and faculty of the same gender interact most comfortably and thus, where female faculty are scarce, especially in proportion to rising numbers of female graduate students, women students are at a disadvantage for finding mentors (Berg & Ferber, 1983). This issue is also significant because women are more sensitive to the supportiveness of the academic environment than men (Hartnett, 1981).

Another important example of a type of concern specific to being a woman was the perception of inequality in opportunities and pay. Evidence suggests that such imbalances are not merely an impression. Salary levels are a very concrete example of where discrepancies still exist, and where disparity increases at higher levels of experience (Bereman & Scott, 1991). For the levels of lecturer, instructor, assistant professor, associate professor, and full professor, women's salaries, expressed as a percentage of men's salaries remain at 89%, 96%, 94%, 93%, and 88%, respectively (Bell, 1997). These figures, however, are not controlled for number of years in rank.

Relatedly, participants thought it was also important to make academia more family-friendly. This was suggested more frequently by postdoctorates, possibly because their mean age was slightly older (1.9 years), and thus they were more likely to have family responsibilities. Although this is not necessarily an important issue only for women, professional women are often saddled with home and family responsibilities to a greater extent than are their husbands (Biernat & Wortman, 1991). The conditions of the academic workplace and the requirements for tenure and promotion are based on the time when male faculty, supported by homemaking wives, could devote themselves exclusively to academic career involvement (Bronstein, Rothblum, & Solomon, 1993). Thus, women academics (as well as men in dual-career marriages) often feel isolated and struggle without the parallel benefits of a stay-at-home partner. In addition, the perceptions of colleagues that a woman is a less serious academic when she has a family can also be damaging (Amato, 1992). Altering the tenure clock and offering flexible leave time or provisions for adequate child care would help make women's professional lives at least no more difficult than that of their male colleagues (Amato, 1992). Currently, the double burden of family and career is primarily borne by women, but with the emergence of more dual-career couples, such adjustments will become important for men too.

Concerns specific to ethnicity such as tokenism, lowered expectations of performance, lack of minority peers and faculty, exclusion, being held as an example or spokesperson for a given ethnic group, pressure to do work related to their ethnicity,
racial insensitivity, and racism were noted by almost a quarter of the minority participants. Such problems emanated from all levels, from the interpersonal to the institutional. Although minority women cited most concerns no more frequently than nonminority women, when concerns were broken down by race for the total sample, some differences emerged. African American respondents cited concerns specific to ethnicity most frequently, and Asian American respondents did not mention this category at all. This may be because Asian Americans experience more subtle forms of discrimination and may be more willing to attribute them to cultural differences or language barriers (Miller, 1996).

Suggestions related to ethnicity involved not only increasing diversity, but also creating support networks and including a more multicultural perspective in academia as a whole. Increasing diversity, however, is threatened by the recent backlash against affirmative action (Gibbons, 1996). It has been pointed out by other authors that, although affirmative action may help to bring more women and minorities into academia, resources, information, and support are necessary to make them an integral part of the university (Gaines & Boice, 1993). It is important to encourage structural changes that make affirmative action unnecessary (Malcom, 1996).

This study identified several areas of concern experienced by women and minority academics at a critical stage in their careers. In addition, it illuminates specific areas where change is needed, including professional conduct, job and pay structure, and training. An important step for future research would be to compare how prevalent the areas of concern identified here are among men. In addition, this study grouped minorities together and more sophisticated studies that break down various racial/ethnic groups would be illuminating. A potential limitation of this study is that responses may have come from individuals with the most extreme difficulties, whereas those who experienced few problems did not respond. In addition, those voluntarily listed in the directory from which we recruited our sample may also represent a self-selected group who are particularly cognizant of issues affecting women and minorities. The response rate to the questionnaire was adequate and comparable to other mailed questionnaire studies surveying graduate students, however (Berg & Ferber, 1983; Schroeder & Mynatt, 1993). Finally, the responses of participants in this study may not reflect the concerns of women and minorities in other types of higher education, such as professional schools or in subdisciplines other than those represented here. Thus, future research might devote attention to understanding the influence of particular contexts and other aspects of the institution, such as size, the community a university is located in, and public versus private universities.

We used a qualitative approach in order to obtain a detailed picture of the challenges facing female academics that could not be captured using a quantitative approach. Such descriptive data are helpful for generating hypotheses. Future research could be directed toward exploring some of the identified concerns more fully. Although the concerns and suggestions revealed here are illuminating and helpful for improving the lot of emerging academicians, we cannot be certain that they are most important in contributing to the funneling effect. Nor do we know if the factors identified here would be important to individuals in positions higher on the academic ladder, where women and minorities are even more scarce. In addition, the wording of our open-ended questionnaire asked respondents specifically about their "concerns." It is possible that attrition of women and minorities
from academic environments has less to do with negative aspects of academia than attractive aspects of the alternatives. This study, too, has used “successful academics” as its focus, in that all participants were still on the academic track. In future research, it would be helpful to compare the concerns of individuals who are still in the process of pursuing an academic career and compare their concerns to those of individuals who have decided to leave academia.

Etzkowitz et al. (1994) maintain that simply increasing the number of women in a given field is necessary but not sufficient to create a nurturing environment for female academics. This “paradox of critical mass” occurs when increases in number are achieved without a corresponding change in the structure. Also paradoxical is that women and minorities may be drawn to academic life because they envision it to be more tolerant, open, objective, flexible, and welcoming than other environments, such as business or law (Caplan, 1992; Nakanishi, 1993). As Bronstein (1993) points out, however, academic institutions are microcosms of the larger society and likely to reflect its shortcomings. Not only must more opportunities for women and minorities in academia be developed, but a more conducive environment must also be created (Girves & Wemmerus, 1988).

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