Minority Faculty Members' Resilience and Academic Productivity: Are They Related?

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Abstract

Purpose
To explore whether there is a relationship between resilience and academic productivity of minority faculty members in U.S. academic health centers. For the purposes of the study, the authors defined academic productivity as peer-reviewed and non-peer-reviewed publications, grants, and academic promotion.

Method
In 2007, the authors simultaneously collected quantitative and qualitative data by using a triangulation (mixed-method) design. Past participants in the Association of American Medical Colleges' Minority Faculty Career Development Seminar completed the Web-based 70-item Personal Resilience Questionnaire (PRQ). In addition, two focus groups were conducted with past seminar participants.

Results
Seventy-four minority faculty members completed the PRQ, and 15 participated in the two focus groups. The quantitative data showed a positive correlation between demographic, educational, and academic productivity variables and certain resilience subscale scores. Common themes that emerged from the qualitative data were categorized under four major domains: existing barriers to academic advancement, internal protective factors or cultural buffers, external institutional or environmental facilitators, and necessary attributes for ensuring academic productivity and advancement.

Conclusions
Certain resilience subscales showed correlation with academic productivity of minority faculty members, and specific personal and/or cultural characteristics were identified as enablers. Minority faculty members may benefit from skill development and coaching that extends beyond the traditional scope of faculty development programs and that specifically targets modifiable resilience characteristics. Additional research is needed, but such nontraditional, resilience-centered intervention strategies may positively affect the advancement of minority faculty in academic medicine.

Over the past decade, a significant demographic transformation has occurred; it has been characterized as the "browning of America."[1] At the time of the latest U.S. Census, in 2000, just over 25% of the total U.S. population was composed of Latinos/Hispanics (12.5%), African Americans (12.3%), and American Indians/Alaska Natives (0.9%).[2] In contrast, medical schools and academic health centers have seen little change in the overall percentage of African American, Hispanic/Latino, and American Indian racial and ethnic minorities. In 2008, approximately 7.3% of full-time faculty members in U.S. medical schools were underrepresented minority (URM) persons[3]—a proportion that has remained essentially unchanged since 2001. Recognizing these dismal statistics and in hopes of reversing this persistent trend, multiple programs have been designed and implemented. Some institution-specific programs have been successful at the local levels. However, at the national level, disappointingly, there has been little or no progress. Challenges with respect to minority faculty recruitment, retention, satisfaction, and advancement continue to pose a persistent dilemma that adversely affects U.S. medical schools, teaching hospitals, and academic medical centers.

Numerous reports of the dual and interrelated problems of underrepresentation and differential treatment of minorities in U.S. medical schools have appeared in the scientific literature. Data strongly suggest that, compared with nonminority academic physicians, minority academic physicians are less satisfied with their jobs,[4] are more likely to report experiencing ethnic harassment and racial–ethnic bias,[5,6] have lower promotion rates,[7,8] and report more frequently that they are considering leaving academic medicine.[4] Price and colleagues[9] reported that additional structural barriers such as lack of mentorship, poor retention efforts, and cultural homogeneity have interfered with the academic success and professional satisfaction of racial–ethnic minorities. Mahoney and colleagues[10] stated, "[M]inority faculty members face a complex series of tensions in everyday academic life, which requires them to balance professional success with the minority experience at their institution." Similarly, Price and colleagues[9] concluded,

> [S]ubtle disadvantages [are] experienced by underrepresented minority faculty, such as differences in social and networking connections and unspoken biases, as well as overt factors that could affect recruitment and career advancement, such as overt expressions of bias, differences in prior opportunities, decreased availability of ethnic concordant role models and mentors, and being asked to fulfill socially responsible

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roles that may take time but not lead to academic advancement.

The scientific literature regarding the recruitment, retention, and advancement of minority faculty has focused on measuring and tracking the degree of underrepresentation over time,[3] identifying persistently disparate rates in promotion and tenure,[7,8] documenting faculty dissatisfaction,[4] and describing pilot faculty development programs. Recent qualitative studies have been instrumental in providing critical data regarding faculty members' perceptions of racial–ethnic discrimination in academic medicine as well as their survival strategies.[5,6] Although these areas of inquiry have enhanced our understanding, surprisingly little is known about the internal characteristics that may serve as enablers, buffers, or facilitators of minority faculty members' advancement and success in medical schools, academic health centers, or teaching hospitals.

One of us (D.C.-B.) hypothesized that "disparate treatment in academic promotion, inadequate mentorship, and unequal access to academic opportunities represent a form of risk exposure for minority faculty" and, further, that the ability to thrive and advance academically in spite of a high-risk environment is dependent on resilience-linked internal assets and external resources such as assertiveness, cultural identity, and communication skills.[11] One definition of resilience is "a dynamic process encompassing positive adaptation within the context of significant adversity."[12] The concept of resilience in the fields of child and adolescent development, psychology, chronic illness, and community development has provided a conceptual framework within which to study and understand this topic. Luthar and colleagues[12] also stated, "[E]arly resilience research studies involving high-risk children demonstrated their ability to adapt and thrive despite significant family, socioeconomic, or community challenges." Moreover, Fergus and Zimmerman[13] found that "a key requirement of resilience is the presence of both risks and promotive factors that either help bring about a positive outcome or reduce or avoid a negative outcome." Resilience is a strength- or asset-based construct that is centered on protective or enabling factors such as competence, coping skills, and self-efficacy. Rather than identifying resilience as an inherent personal trait, investigators have found that both internal factors and external resources help individuals avoid the negative effects of an adverse environment.

Personal resilience and its potential role in helping to overcome workplace challenges or adversity have recently been described in the research literature.[14] Although we could not identify any published research studies that focused on the applicability of the resilience construct to the academic advancement of minority faculty, we found that a handful of researchers have proposed theoretical models identifying factors believed to be correlated with faculty research productivity.[15–20] All of the models include personal attributes—such as a research orientation, the highest academic degree within one's field, and strong organizational skills—observed in productive researchers. Furthermore, all but one of the models include institutional factors and leadership considerations believed to create a nurturing research environment. The model created by Bland and colleagues[20] builds on previous models and encapsulates most of the literature on faculty productivity. Those authors contributed a comprehensive framework of individual, institutional, and leadership characteristics that affect research productivity, and they later analyzed its predictive value.[21] However, despite its comprehensive scope, the model's description of individual characteristics offers limited specificity.

Thus, for the purposes of this study, we chose to apply a tool from the field of psychology, with the intent of obtaining clear and replicable measures of these individual or internal characteristics. Nevertheless, there are conceptual linkages between aspects of resilience, as defined by the Personal Resilience Questionnaire (PRQ) used in this study, and the individual characteristics described in the model of Bland and colleagues.[20] Their description of "motivation" and the PRQ's description of the *Proactive* and *Positive: Yourself* subscales share commonalities. Moreover, in the model of Bland and colleagues, motivation is the most significant individual predictor of research productivity. However, further study of the linkages between the resilience construct and the individual characteristics that facilitate faculty academic productivity is warranted.

This study had five aims. They were (1) to further expand the literature on faculty academic productivity and the literature on minority faculty advancement to cover more than quantification of barriers and challenges, (2) to measure and quantify resilience in a group of minority faculty members, (3) to determine whether there is an association between resilience scores and academic productivity, (4) to apply a tool from the field of psychology that lends more depth and precision to the discussion of individual characteristics described in the literature, and (5) to identify practical applications of the study results to the design and implementation of minority faculty development programs in medical academia.

Method

Study design and analysis

The main research question posed for this study was: Is there a relationship between resilience and academic productivity among minority faculty in U.S. academic health centers? The study's hypothesis was that minority faculty members who have a higher score for resilience will exhibit greater academic productivity than will those with a lower resilience score. For the purposes of this study, we measured academic productivity by the number of peer-reviewed and non-peer-reviewed publications, by the number of federal and nonfederal grants received, and by academic advancement, as evidenced in promotion. We selected the term "academic productivity," rather than "research productivity," to include faculty members with a limited research portfolio who may advance academically on a clinician–educator track.

To address the study's research question, we employed a triangulation (mixed-method) design, wherein quantitative and qualitative components of the study are conducted simultaneously.[22] The institutional research boards at the Children's National Medical Center and the Association of American Medical Colleges (AAMC), which oversee the research of the authors (D.C.-B. at the Children's National Medical Center and

K.Z. and L.C.-P. at the AAMC), approved the study.

Quantitative component

Since 1990, the AAMC has sponsored this annual three-day professional development seminar designed for junior minority faculty (senior fellows, instructors, and assistant professors) who aspire to positions of leadership in academic medicine. Seminar participants self-select for participation in the program. Most seminar participants are in their mid-30s to early 40s and are at the assistant professor level.

In 2007, we sent an e-mail to past participants of the AAMC Minority Faculty Career Development Seminar; the message included a description of the study and a link to a Web-based questionnaire. To facilitate the data collection, we considered a Web-based questionnaire to be most useful for this study; using Web-based questionnaires can save time[23,24] and minimize costs[25,26] associated with data collection.

Because of the availability of reliable contact information, we chose three cohorts of past seminar participants for this study; the cohorts consisted of 65, 78, and 62 participants, respectively (a total of 205 persons). We e-mailed these persons three times, soliciting their participation in our study. Eight of the e-mails bounced back as undeliverable, and 74 recipients responded, for a 38% response rate. In addition to providing demographic, educational, and academic productivity data, study participants were asked to complete the PRQ.[27] This questionnaire is a copyrighted instrument designed to capture the ability to adapt to change; it is a 70-item questionnaire that measures characteristics associated with resilience. Specifically, the questionnaire measures five resilience characteristics that include seven subscales. The subscales are listed below, each accompanied by a quotation from the PRQ handbook[27] that describes characteristics of persons who fit into that subscale:

- Subscale 1, *Positive: The World*—"Is generally upbeat about the future, finds opportunities in times of turmoil, looks for the good in what may appear to be a bad situation."
- Subscale 2, *Positive: Yourself*—"High self-esteem, belief that one's actions can influence situations and people, does not feel victimized by circumstances, belief in one's abilities—a 'can-do' attitude."
- Subscale 3, *Focused*—"Strong sense of purpose, ability to set goals and prioritize actions, ability to distinguish between critical and trivial objectives, using personal objectives to guide everyday actions and decisions."
- Subscale 4, *Flexible: Thoughts*—"High tolerance for ambiguity, comfort dealing with paradoxes, capacity to see things from different perspective/open-minded, avoidance of black-or-white thinking."
- Subscale 5, *Flexible: Social*—"Draws on external resources for assistance and support, values the ideas of others, recognizes interdependence, good 'team player.'"
- Subscale 6, *Organized*—"Quickly sorts information, builds structure in chaos, plans action for maximum efficient use of resources, avoids acting on impulse."
- Subscale 7, *Proactive*—"Actively engages [with] change, takes reasonable risks, willing to try new activities, does not continually strive for predictability and stability."

The PRQ has been tested with more than 50,000 participants, and most of the seven subscales are moderately to highly correlated. Measurements of reliability, internal consistency, and stability are 0.65, 0.83, and 0.85, respectively, as measured by Cronbach α for the entire measure. The PRQ instrument has also been tested in terms of convergent, discriminant, and predictive validity.[27]

After we collected the data, we generated descriptive statistics and then performed correlations to determine whether there was a relationship between resilience subscales and academic productivity. We also conducted *t* tests to verify the significance of the variance among existing associations.

Qualitative component

In 2007, we conducted two focus groups with past participants of the AAMC Minority Faculty Career Development Seminar. A total of 15 faculty members volunteered to participate and were randomly assigned to one of two focus groups (seven participants to one group and eight to the other), which met for 1.5 hours each. We designed the focus groups to capture data on strategies for dealing with stress and academic productivity.

A data-collection team that consisted of a moderator and a note-taker was present at each of the two focus-group sessions, which took place simultaneously. The focus-group data were audio-recorded and later transcribed. (Because of technical difficulties, the tape recording of the second focus group was unavailable. We analyzed the extensive notes taken by the note-taker, and they contributed to the results.) To ensure the accuracy of the data, the transcriptions and notes were reviewed by the respective focus-group note-takers and moderators. Two lead research team members then met to conduct the content analysis. These two research team members read and reread the notes and transcriptions separately and coded the data independently to ensure between-coder comparisons and interrater reliability. They also discussed the common themes observed in the notes and transcriptions and generated a list of the themes that emerged most frequently, grouping them under four domains: existing barriers to academic advancement, internal protective factors or cultural buffers, external institutional or environmental facilitators, and necessary attributes for ensuring academic productivity and advancement.

Results

Quantitative data

Forty-six (62%) of the respondents were female; 51 (68%) self-identified as African American, 15 (20%) self-identified as Latino, 4 (5%) self-identified as multiple-race, and 3 (4%) self-identified as Asian. The mean age of the respondents was 45 years; 37 (50%) had advanced degrees other than the MD degree, 50 (68%) were board certified, and 52 (70%) were assistant professors.

We found a positive correlation between scores on the PRQ subscale *Positive: The World* and a respondent's having peer-reviewed publications. To determine whether the difference between these two variables was significant, we conducted an independent-samples *t* test, which showed a significant difference. That is, the average *Positive: The World* subscale

score of respondents who had peer-reviewed publications was significantly higher than the subscale score of respondents who did not. In addition, there was a positive correlation between having obtained grants and scoring higher on the PRQ subscale for organization. The *t* test indicated a significant difference, and thus the average *Organized* subscale score of respondents who had obtained grants was significantly higher than the subscale score of respondents who had not done so.

We observed a further relationship between gender and scores on the *Flexible: Social* subscale. Specifically, according to the *t* test results, female respondents scored significantly higher on this index for the ability to draw on external resources for assistance than did their male counterparts. Finally, we found a positive correlation between having an advanced degree in addition to the MD degree and higher scores on the *Positive: The World* subscale. However, the independent-samples *t* test showed no significant difference between these two variables.

Correlation coefficients and *P* values for relationship significance can be found in Table 1. Mean subscale scores as they relate to select academic productivity variables, along with *t* test scores, are listed in Table 2.

Qualitative data

We conducted focus groups to further explore the personal and environmental factors that affect academic productivity among minority faculty. We categorized the major themes that emerged from the focus-group sessions into four domains: (1) existing barriers to academic advancement, (2) internal protective factors or cultural buffers, (3) external institutional or environmental facilitators, and (4) necessary attributes for ensuring academic productivity and advancement.

For existing barriers to academic advancement, focus-group participants reported the following barriers: lacking a good mentor, not feeling a sense of belonging, not knowing the "rules of the game," having difficulty in finding collaborative partners, and being one of a few minority faculty members. One participant stated, "I'm [1 of] 3 … staff members who are black [out of 2000] … so I don't even see myself reflected." Another minority faculty member said, "[Y]ou have to have a clear understanding about what the expectations are of you as a faculty member…." Another major obstacle discussed by participants is captured in the following quotation: "Difficulty comes when you are doing work [that] you think is useful, but your institution doesn't [view it the same way]."

The common themes identified as internal protective factors or cultural buffers included having a sense of humor, having the ability to say no, being assertive, working hard, having internal clarity of goals in life, and being spiritual. The following quotation from one of the participants illustrates the importance of clarity and assertiveness within the context of academic career uncertainty:

> Do I stay in this job? Do I stay in academics? It totally comes down to your own internal clarity about the goals in your life, from a professional standpoint [and] from a social standpoint, because if you're constantly being undermined by your choice and by the setting that you find yourself in, then you'll have no chance at success. So one part of … [the issue] is that you can't be antagonistic; you have to be strong but polite and assertive.

For external institutional or environmental facilitators, participants described the following: having a good mentor, having a supportive department chair, and having the opportunity to rely on other people of color. Other external facilitators included social networks, such as family, church, and the community. As one participant stated,

> Mentorship and aligning yourself with individuals who share or can promote what you're all about … [can] spill over into your research endeavors…. I align myself with folks who [are] in the same or [a] similar mind-set and who can, obviously, serve as a good role model [and] give you advice. I think that it's very important to identify one or two or three [such] individuals in your institution, and that … can sort of help you deal with the stressful situations and hopefully diffuse them.

Finally, participants mentioned the following as necessary attributes for ensuring academic productivity and advancement: organizing, mapping, and setting deadlines; being persistent; and protecting their time. Respondents reported that a supportive school environment and a mentor they could rely on also were key to their success. As one participant stated, "The determinants of success for me are, I think, a good mentor [and] a supportive chief. I think those are some of the crucial elements to

Table 1

Correlation of Variables With Subscale Scores in 2007 on the Personal Resilience Questionnaire for 74 Racial/Ethnic Minority Faculty Members*

	PRQ subscales					
	Positive: The World		*Organized*		*Flexible: Social*	
Variable	*r*	*P*	*r*	*P*	*r*	*P*
Peer-reviewed publications	0.32	0.005	—	—	—	—
Grants	—	—	0.41	0.0003	—	—
Gender	—	—	—	—	0.31	0.006
Advanced degree in addition to the MD	0.32	0.005	—	—	—	—

* Correlation coefficients (*r*) are the estimated correlation coefficient between the row variable and the column variable. *P* values are the significance probability for testing the null hypothesis that the corresponding population correlation is zero. The faculty members had previously participated in the Association of American Medical Colleges' Minority Faculty Career Development Seminar.

Table 2

Results of *t* Tests of Subscales From the Personal Resilience Questionnaire (PRQ) With Variables From Subscale Scores in 2007 of 74 Racial/Ethnic Minority Faculty Members*

PRQ subscale	Variable; difference between variables	Respondents: No.	Subscale score: Mean (SD)	*t* value	*P* value
Positive: The World	No peer-reviewed publications	22	41.09 (28.36)		
	Peer-reviewed publications	51	58.74 (29.04)		
	Difference	—	−17.65 (28.84)	−2.4	<.01
Organized	Obtained no grants	41	41.22 (29.71)		
	Obtained grants	32	64.56 (26.6)		
	Difference	—	−23.34 (28.4)	−3.48	<.0008
Flexible: Social	Male	28	43.28 (29.6)		
	Female	46	63.2 (29.8)		
	Difference	—	−19.91 (29.72)	−2.79	<.006
Positive: The World	Advanced degree besides the MD	37	59.89 (26.62)		
	MD only	37	47.84 (31.92)		
	Difference	—	12.05 (25.28)	1.76	<.08

* The faculty members had previously participated in the Association of American Medical Colleges' Minority Faculty Career Development Seminar.

make sure that I proceed along … the path that I'm [on]."

Discussion

Certain resilience subscales (*Flexible: Social*; *Positive: The World*; and *Organized*) correlated with the academic productivity of minority faculty members, and specific personal and/or cultural characteristics were identified as enablers. To our knowledge, this is the first research study suggesting that there may be such a correlation. Notably, our study points to the fact that faculty members who "find opportunity in times of turmoil and are generally upbeat about the future,"[27] as evidenced by their higher scores on the *Positive: The World* subscale, were likely to have published a greater number of peer-reviewed articles than were those with lower scores on that subscale. Likewise, those who scored higher on the *Organized* subscale were more likely to be grant recipients than were those with lower scores. This association is significant, in that both peer-reviewed publications and research grants are deemed as critically important criteria for promotion. Although the degree of positive correlation was found to be in the moderate range, the results raise the possibility of measurable and potentially modifiable resilience factors that may have a positive influence on the academic advancement of minority faculty members. A similar association between work-related performance and a closely related concept, self-efficacy, has been described in the industrial–organizational psychology literature and in the context of social cognitive theory.[28] Conceptually, both resilience and self-efficacy incorporate the element of individuals' beliefs about their capabilities. However, the defining feature of resilience is one's ability to overcome adversity.

Our research study's qualitative data add breadth to the quantitative data by accentuating the individual perspectives of faculty members. Focus-group participants identified spirituality, assertiveness, persistence, clarity about their personal goals, and a sense of humor as internal protective factors. Our data augment earlier findings by Carr and colleagues regarding internal characteristics that foster success among minority faculty—namely, "a positive sense of self-reliance, the need to work harder and prove themselves, and the use of minority excellence to overcome misunderstandings, cultural differences, and preconceived ideas."[29]

As our focus-group participants discussed, other investigators have identified noncognitive factors such as assertiveness as predictors of success in clinical clerkships. Notably, Lee and colleagues[30] identified an association between clerkship grades and culturally determined communication variables such as assertiveness and reticence. They concluded, "White students reported higher levels of assertiveness than [did] URM students and lower levels of reticence than [did] Asian and URM students." They also concluded that "minority students might benefit from mentoring or training in communication skills that are valued during clinical clerkships."[30]

Our research study had several limitations. First, the sample size was small, and therefore the results may not be generalizable. In spite of this limitation, study participants were from multiple U.S. medical schools and academic health centers. Second, the study relied on a less-than-optimal convenience sample. Nonetheless, this sample was readily available and included individuals who suited the study. Third, because study participants were recruited from a pool of minority faculty who attended development workshops and who self-selected to participate in the seminar and the survey, selection bias may be a factor. However, we are not aware of studies whose findings would lead us to believe that our results might have been different if the minority participants had not self-selected for participation. Fourth, our study population did not include white faculty members as a comparison group. Even though faculty members from nonminority groups may not face race- and ethnicity-related barriers in

academia, they may face other obstacles, and it is possible that, also for them, resilience is correlated with academic productivity. Fifth, the survey response rate was relatively low, which may affect the external validity of our study. We note, however, that Web-based survey designs have been associated with lower response rates than have been seen with more traditional mail surveys.[31]

In spite of these limitations, this research study had the following strengths: (1) It expands the scope of the current body of research beyond the traditional focus on minority faculty barriers and disparate treatment to consideration of enablers and facilitators of success, (2) it is the first research study to apply a resilience construct to enable further exploration and contextualization of the field of minority faculty advancement, (3) the triangulation (mixed-method) study design elicited complementary quantitative and qualitative data; and, most important, (4) our study found that there may be an association between minority faculty resilience and academic productivity.

Conclusions

More research is needed to further explore this important area of inquiry and to address the study's methodological limitations. Specifically, future studies should include a sample size large enough and a response rate high enough to allow the results to be generalizable, and they should also include a randomly selected study population made up of both minority and nonminority faculty members. Applying the "lens" of resilience in future studies could sharpen the focus and help us better understand and address other persistently problematic minority faculty challenges pertaining to satisfaction and retention. Results of future studies also may have implications in terms of the thematic content and teaching techniques of minority faculty development programs. Although some health professions researchers have concluded that "educators must design pedagogies that address professional socialization and the development of resilience behaviors in the educational setting,"[32] very few published studies have described or evaluated resilience-enhancing interventions. We identified, for example, only two intervention pilot studies directed at persons with type 2 diabetes,[33,34] another such study involving college students,[35] and one focusing on children of parents with mental illness.[36] However, more studies are needed to elucidate the type and needed duration of effective curricular intervention as well as the optimal teaching methodologies. It is important that the scope of future resilience research studies should include specific applications related to minority faculty recruitment, advancement, and satisfaction.

Whereas faculty development programs unequivocally serve an important role in U.S. medical schools and teaching hospitals, studies such as ours could serve as a research- and evidence-based platform from which investigators can build and shape resilience-centered learning objectives, curricula, and teaching modalities. Some investigators have posited that "individuals can develop and strengthen personal resilience through [following] strategies for reducing their own vulnerability."[14] In addition, McAllister and McKinnon[37] recently advocated the inclusion of a focus on resilience in health professions education. We concur with these authors' observations. Faculty members in general, and those from racial–ethnic minorities in particular, may benefit from skill development and the type of coaching that expands the scope of traditional faculty development programs and that intentionally targets modifiable characteristics of resilience. Finally, and notably, our study has implications in terms of achieving and sustaining a diverse faculty, a goal that has been more recently viewed both as an imperative in terms of an alignment with U.S. demographic changes and as a paradigm of quality in achieving excellence of care.[38]

Larger confirmatory research studies are unequivocally needed. In the meantime, the application of a nontraditional, resilience-centered construct and the future development of related educational interventions hold out promise that they can contribute to an evidence-based platform from which to design and implement effective minority faculty development programs.

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