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Targeted Research Training: Developing Minority Psychiatric Investigators

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Introduction

This study reviews the more than 20 year experience of the American Psychiatric Association's (APA) efforts to provide targeted research training to young psychiatrists from underrepresented populations through its Program for Minority Research Training Program in Psychiatry (PMRTP). Implemented with support from the National Institute of Mental Health (NIMH), the PMRTP's goals, from its inception in 1989 to its termination in 2010, were to train minority psychiatrists as psychiatric researchers and to provide them with the tools necessary to maintain independent research careers. Further, the program sought to identify the critical factors impacting the development of research careers.

The need for an increase in the number of physician-scientists across all medical specialties has been supported by a substantial body of literature.^{1–4} Numerous obstacles to developing such careers have been identified. Among the disincentives noted are the increasing costs of medical education, the long “apprenticeship” leading to an independent research career, the instability of research funding, and the changing academic health care climate which has increased pressure for physicians to engage in clinical practice with minimal, if any time to devote to research.^{1,2,5,6} Other identified deterrents to developing research careers include the limited number of physician-scientists able to serve as role models⁷, and the lack of attention in physicians' training to developing the research skills necessary for physician researchers to compete for grants with more typically research-literate Ph.D. investigators.⁶

Though endemic to medical training, the challenges to recruit and retain young clinician-researchers in psychiatry has been even greater. For a number of years during the 1990's, fewer U.S. senior medical students were selecting psychiatry as a specialty, limiting the pool of potential psychiatric researchers. The number of US medical graduates entering psychiatry through the National Residency Matching Program (NRMP) reached a high of 745 students in 1988; by 1998 that number had fallen to 428 students. More recently, however, there has been an upward trend in the number of US medical students selecting psychiatry as a specialty. Six- hundred- fifty-three students matched in PGY-1 psychiatry positions in 2005; 670 students did so in 2010. Reflecting this trend, the number of ethnic

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minority psychiatry residents has increased as well, with such physicians now accounting for more than 40% of all psychiatry residents.⁸

Nonetheless, the number of psychiatry residents who additionally pursue research training remains small⁹ and the number of minority psychiatric residents who do so, is smaller still. Among the factors cited for the difficulties in launching a psychiatric research career have been the relative lack of faculty in academic psychiatry departments who have experience or training in biomedical and behavioral research (or are active, funded investigators) compared to other clinical departmental faculty, the rapidly changing demographics of medical students and paradigm shifts in health care which have created new challenges for mentoring relationships¹⁰, and essential component of research career development.¹¹ Further, the decline in funding for psychiatric research training in general, and for targeted minority focused research training, in particular, has further constricted the availability of research training opportunities for young psychiatric investigators.⁶

The problems for ethnic minorities are particularly acute. Even when ethnic minorities, (particularly African-Americans) have been successful in navigating the initial hurdles of research career development, they are likely to face additional obstacles in maintaining and furthering their academic careers. As a recent article in *Science* noted, those obstacles, though not always explicit, can be daunting. When reviewing the association between receiving a National Institutes of Health (NIH) R01 grant and an applicant's self-identified race or ethnicity, it was found that Asians and black applicants were less likely to receive funding than white applicants. After controlling for educational background, country of origin, training, previous research awards, publication record, and employer characteristics, the results remained basically the same; black applicants still remained 10 percentage points less likely than whites to be awarded NIH funding.¹²

Program Description and Implementation

In response to the identified need of increasing the number of ethnic minorities in psychiatric research, the National Institute of Mental Health (NIMH) in the late 1980's, encouraged professional mental health associations, among them the American Psychiatric Association, to provide discipline-based research training as part of a national effort to promote the development and maintenance of research careers among young minority investigators. The PMRTP was first funded in 1989 with the aim of providing research training to minority medical students and post-residency fellows.

The PMRTP primarily focused on providing high quality academic research training for post-doctoral level minority psychiatrists through the provision of stipends for fellowships at academic research facilities throughout the United States. In order to reach potential psychiatrists at an early stage in their professional development, the PMRTP also supported a small number of minority medical students to work on a research project over the summer under the guidance of a mentor. This allowed these pre-doctoral trainees to be introduced to a research setting with the ultimate goal of their later applying for a PMRTP post-doctoral position.

Targets for the PMRTP were underrepresented population groups with the greatest need as noted in the Pew Health Professions Report.³ A group is typically considered underrepresented if their percentage in the physician population is less than the group's percentage in the total population. Asian-Americans, although not an underrepresented group in medicine, were included as a target population for the PMRTP, as specific Asian sub-groups are underrepresented in psychiatric research.

The PMRTP provided stipends for trainees to be placed at host sites, most often at major research-intensive departments of psychiatry. These sites were characterized by the presence of investigators able to serve as mentors as well as providing opportunities for focused research training and course work. In some instances, based on geographical limitations or trainee preferences, trainees were placed in less comprehensive, though still adequate, research facilities. In all instances, host sites agreed to develop and provide a comprehensive training plan for PMRTP fellows that included training in the responsible conduct of research and the importance of addressing the inclusion of minority populations and women in research studies. The assurance of institutional resources necessary to support the conduct of the fellow's research was essential, as was the provision of opportunities for the fellow to attend appropriate scientific meetings to present their research findings. Each trainee, regardless of location, was assigned a mentor who participated in developing a specific research training plan, and who monitored the trainee's progress over the course of the fellowship.

Selection Process

Prospective applicants, all of whom had completed psychiatric residencies, were matched to training sites and mentors through initial counseling with PMRTP program staff. Formal applications required a description of planned research, including study aims, hypotheses, proposed research methods, a discussion of the relevant literature, and a career development plan. Selections to the program were made in conjunction with the PMRTP advisory committee, a group of highly experienced psychiatrists, including members of different ethnic minority groups, with primary responsibilities for research training. Each applicant, and their proposed mentor, was also interviewed by a member of the advisory committee. Application criteria were rated on a five-point rating scale and applicants were rank ordered on the sum of their application ratings. Final selections to the PMRTP were determined by the applicants' rankings, augmented by interviewer's comments.

Over the course of the program, a total of 99 post residency fellows were selected to participate. By gender, those accepted included 49 males and 50 females. Overall, of the 99 post-resident fellows accepted into the PMRTP, 25 (25.3%) were Black/African American (7 M, 18F), 32 (32.3%) Hispanic/Latino (17M, 15F), and 42 (42.4%) Asian (25M, 17F). Fifty-eight of these trainees were trained in sites that did not have another training grant. Without the PMRTP, it is unlikely they would have been able to pursue any research training. The figures for African Americans are notable; seventeen, or more than 70% of the African American PMRTP fellows trained in sites that did not have another training grant.

As a post residency research training program targeted to minority psychiatrists, the PMRTP drew upon a limited pool of potential applicants. Despite the increasing number of minority psychiatric residents, the percentage of self-identified racial and ethnic minority psychiatric residents in most population groups has remained relatively small. Over the period from 2002–2013, for example, only some 7 percent of residents self-identified as Black/African American; about 25% identified as Asian, some 8 percent as Hispanic/Latino and less than 1 percent each identified as American Indian, Alaskan Native or Native Hawaiian.¹⁴ As these figures include all areas of specialization within psychiatry, those interested in pursuing research careers represent a fractionally smaller percentage.

Over the period of year 10 through year 20 of the PMRTP where data regarding the number of applications to the program was available, there were a total of 74 applications. From this group, there were 20 Black/African American applicants, 15 (75%) of whom were accepted; 18 Hispanic/Latino applicants, of whom 15 (83%) were accepted and thirty-six Asians who applied, of whom 32 (88%) were accepted. Of interest, Asians comprise less than 14%, Hispanic/Latinos about 5%, and Black/African American less than 4% of the total membership of the APA.

Evaluation Methods

Regular evaluations were performed on an annual basis throughout the program's duration. In addition, in 2009, a comprehensive on-line survey was sent to the pool of 99 current and former PMRTP Research fellows. This comprehensive program assessment addressed the success of the program from the participant's perspective, but also analyzed the impact the research training experiences had on their careers as psychiatric investigators. Data was collected on the accomplishments of the postdoctoral trainees throughout the twenty years of the program's existence. A total of 55 fellows responded to the survey; additional information on non-responders was obtained by PMRTP program staff through an online search.

Several survey questions related to the current positions of trainees, their maintenance of research careers, including whether they were currently in an academic setting, their job titles, and if they were conducting research. Those conducting research were asked if they had received grant funds, the source of those funds and the specific types of grants received. Additionally, they were asked about their publication/presentation history, and the focus of their research activities. As the data continues to be updated, we have included, where possible, additional information in the text.

Results and Outcomes

Current Job Titles

At the time of the survey, a review of job titles, Table 1, of the 99 PMRTP fellows indicated that 64 of them have been continuing their careers in a primarily identified academic or research/related position. Another 13 self-identified as holding hospital related positions with 22 identifying their primary job title as private practice. A more recent web search was able to obtain current data on 61 (33M, 28F) of the PMRTP participants who were

continuing their research careers, including the 8 former research fellows who now hold positions at the Assistant Professor or Instructor level in academic departments of psychiatry.

Current Involvement in Research

A majority of the 55 survey respondents (92.5%) were engaged in research activities during the current academic year. Fifty percent of the respondents reported spending at least 80% time (four days a week) on research activities. Additional data augmenting the survey indicates that of 61 fellows engaged in research, 28 were female, (11 Asian-American, 9 African-American and 8 Hispanic) and 33 males (17 Asian-Americans, 4 African-American, and 12 Hispanic).

Types of Grants Received

In addition to the responses from the survey, PMRTP program staff review of the NIH Project Reporter (formerly known as CRISP) revealed that 63 (63.6) of the 99 PMRTP fellows had secured post-fellowship grants; 21 fellows were recipients of a single grant, 42 were recipients of multiple grants. The remaining 36 fellows had not received a grant, though it was undetermined whether they applied and failed to receive an award, or never applied. This latter group included trainees still enrolled in the PMRTP, who would be unlikely recipients of grants at this early career stage, as well as former research fellows who chose private practice over continuing research careers. Specific details regarding the types of grants received by the group are provided in Table 2.

Sources of Grant Funding

Seventy percent of respondents reported receiving internal funding, while 64.7% reported their funding was from external sources. Funding from the National Institutes of Health (NIH) provided the largest category of support, with the NIMH being the largest single provider of grant support. Specifics related to other sources are found in Table 3.

Publications and Presentations

At the time of the survey, nearly 90% of the respondents reported that they had been able to complete their fellowship research project with more than 70% of them publishing their results. Of this group, 79.6% reported that they had been able to present their findings in a poster session. In addition, 79.6% of the respondents reported that they had been able to present their findings in an oral presentation such as a scientific meeting, grand rounds, or as part of a panel discussion. As a group, they reported collectively producing 787 publications. By gender, current data attributes publications to 42 females, and 45 males.

Research Focus

Fully 56.4% of PMRTP fellows reported that they were able to use the funding from the program to conduct research on minority mental health issues. In addition, 98.2% of the respondents reported that the receipt of support from the PMRTP allowed them to have added protected time away from clinical duties that enabled them to devote more time to their research projects.

Beyond the specific measures identified, a research training program's ultimate success is measured by its outcomes--the productivity and academic accomplishment of its trainees. In that regard, the performance of the PMRTP has been exemplary, standing well in comparison to any physician-based training program in the United States. In one study on the impact of research training on career outcomes, Fang and Myer¹³ examined the career trajectories of medical students at the Howard Hughes Medical Fellows Program (MFP) and the NIH Medical Scientist Training Program (MSTP), using the percentage of NIH research awards and research faculty appointments as outcome measures. As noted in Table 4, the success rate of PMRTP trainees on these measures exceeded the success rate of graduates of both the MFP and the MSTP. Further, only 7% of MFP awardees and 2% of MSTP program participants were members of underrepresented minorities.

Discussion

Broadly, a successful research career is measured by the capacity to perform independent research, receive grant awards, publish and present research findings, and demonstrate an upward trajectory in academic and/or research appointments. By these measures, the PMRTP has demonstrated the efficacy of a targeted research training program for minority psychiatrists as a means of promoting these goals.

In addition to successfully launching the careers of minority psychiatric researchers, the experience of PMRTP has also provided important insights into the factors influencing the development and maintenance of successful research careers.

First, exposure to research projects at early stages of medical education is an important propellant for developing researchers. Stipends to medical students for pilot studies under the guidance of a mentor, contributes to a "research-readiness" that can make further involvement in research a less intimidating venture. That early recruitment of medical students can foster an interest in psychiatry and psychiatric research is evidenced by the number of PMRTP medical students electing to pursue research training through the PMRTP or other research training mechanism.

Second, neutralizing financial barriers to embarking on a research career allows potential researchers to consider research training as a meaningful option to other career opportunities. Without the support provided by PMRTP training stipends, many trainees would have been unable to initiate research careers. The availability of such mechanisms as the NIH funded Loan Repayment Program has also increased the viability of continuing a research career, particularly when a large educational debt exists.

Third, continued participation in research activities such as attending research meetings and providing opportunities for association with peers and mentors enhances the likelihood of maintaining a young investigator's research interests. The intellectual stimulation of research can become a propelling motivation if such interest is nurtured by shared and supportive research experiences which promote professional identification as a researcher.

Fourth, maintaining a peer network of communication and support among minority scholars is a vital element for sustaining interest and involvement in research, and for helping young

investigators profit from the experience of other researchers in similar circumstances. Young researchers often report feeling unsure about managing the intricacies of the grant application process, or of balancing research involvement with requirements for clinical practice. For participants in the PMRTP, having the opportunity to discuss such issues with mentors and peers with similar concerns served to relieve a sense of isolation and provided strategies for their next career steps.

Fifth, the importance of a good relationship with a mentor cannot be overestimated, particularly for minority researchers, who are often faced with a paucity of role models. In addition to providing consultation on multiple research issues, the enthusiasm of a mentor for the trainee's work, and the help provided to mentees navigating the shoals of academic research has been reported by PMRTP graduates to have been a critical, and often the most influential element in their decision to continue their research careers.

Finally, the PMRTP has demonstrated that a tipping point in determining career direction often arrives at the completion of a trainee's research fellowship. Career path expectations for research trainees are ladderized, so that completion of a fellowship is to be followed by an application for a K-Award, which will be subsequently followed by application for, and receipt of, R-01 or other grant funds. Given the steep competition for these awards, however, initial success is not guaranteed, and many trainees may opt out of research careers to seek more financially stable options. The experience of the PMRTP supports the importance of maintaining bridges for young researchers completing fellowships such as short-term transition grants.

Without such support, there is a risk that qualified investigators who are not initially successful in their grant applications—an increasingly likely prospect in an era of budgetary cutbacks—will feel compelled to leave the research field. It is imperative for mentors and others to plan for this transitional period when pivotal decisions are being made regarding the direction of research careers.

In addition to identifying critical factors influencing the development of successful research careers, the PMRTP also highlighted the underrepresentation of African-Americans and Hispanic/Latinos in the pool of minority psychiatric residents, reflecting the relative dearth of these populations within psychiatry itself, and the even smaller pool of male African-American psychiatric residents interested in pursuing research careers. Of African-American participants in the PMRTP, females predominated, with males comprising only 28% of the total number of African-Americans. This strong gender imbalance was not noted in either the Asian-American, or the Hispanic/Latino groups. While the reasons for this are complex, ensuring adequate representation of underrepresented minorities, and particularly African-American males in psychiatric residency training programs remains an unmet challenge which has serious consequences for the development of minority racial and ethnic psychiatric researchers.

Conclusion

The Program for Minority Research Training in Psychiatry has been a successful research training program with regard to the recruitment, retention, and career development of minority psychiatric investigators. The findings that 64% of all former PMRTP fellows have remained in clearly identified academic/research settings with more than 90% of survey respondents currently engaged in research (50% of these devoting at least 80% time to research), 70% of all fellows reporting publication of their findings, and 64% receiving post-PMRTP fellowship grants demonstrates success in the program's central objective of increasing the number of trained psychiatric researchers from minority backgrounds. Further, the percentage of PMRTP graduates appointed to academic faculty research positions, and their receipt of R01 and/or K awards exceeded that of two highly regarded national training programs. Of particular importance, well more than half of the fellows conducted research on minority mental health issues, fulfilling the broad promise of the program that these investigators would focus on and expand research addressing underserved racial and ethnic minorities.

With the expected demographic changes in the U.S. in the mid-21st century, it becomes increasingly important for psychiatry to address the health care needs of diverse populations. It is too soon to tell if such programs as the PMRTP will successfully impact the needs of these populations. It is possible that in the long-run, the PMRTP may influence future research agendas through the values of its program graduates, their increased visibility in academic and research settings, and ultimately, in their service as mentors to others. There is some evidence that it has already done so. In any case, the importance of targeted research training program as a vehicle for training underrepresented minority investigators cannot be overestimated, and the decline in their availability does not portend well for increasing the numbers of underrepresented minority psychiatric researchers.

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Implications for Administrators

- Residency training programs need to ensure sufficient numbers of minority psychiatrists are available to provide both adequate peer support and mentoring experiences for young psychiatrists from underrepresented population groups.
- Residency training programs need to provide research opportunities for young investigators and to protect their research time.
- Additional consideration should be given to understanding the reasons underlying the relatively low proportion of African-American males developing psychiatric research careers.

Implications for Educators

- Stimulating interest in research and participating in research projects needs to begin at early stages of medical education, if not before.
- Intensive and supportive mentoring of young psychiatric investigators is a key factor in their development and maintenance of research careers.
- Participation in professional research meetings is an important educational adjunct in the development of psychiatric researchers.

Table 1

Summary of Job Titles – former PMRTP Research Fellows 1989 – 2010

Job Title	Number
Research Director	2
Associate Professor	4
Assistant Professor	38
Instructor	10
Industry Research Scientist	2
Research Fellow	8
Hospital Department Chair	1
Medical Director	1
Clinical Services Director	1
Associate Clinical Director	2
Hospital Staff	8
Private Practice	22

Table 2

Types of Grants Received by PMRTP Former Fellows

Funding Source:	Total Number of Awards Received
NIH K-Award	22
NIH R-Award	15
Other NIH Career Development Awards	15
University/Internal	36
Industry/Pharmaceutical Company	13
NARSAD	16
Veterans Administration	7
Private Foundation	16
Miscellaneous/Other sources	19

A review of the NIH Project Reporter revealed that 9 of the women in academic positions had secured K awards as well as additional R- awards. Thirty-one males received one or more grants, including 17 who received K awards, and 14 who received various R-awards.

Table 3

Source of Grant Funding for PMRTP Former Fellows

Source of Funding	Percentage
National Institute of Mental Health	54.5%
National Institute on Drug Abuse	9.1%
National Institute on Alcoholism and Alcohol Abuse	3.0%
Other NIH Institutes	21.2%
Other Departments Of Health and Human Services	9.1%
Veterans Affairs	18.2%
Other Federal Sources	9.1%
NARSAD	36.4%
Other Private Foundation	45.5%
Pharmaceutical Company	39.4%
Other Industry or Business	12.1%

Table 4

Comparative success rates of PMRTP Trainees

Appointed to Academic Research Faculty Positions:	
PMRTP Fellows	52%
NIH Medical Scientist Training Program	24%
HH Medical Fellows Program	16%
Received One or More R01/K Awards:	
PMRTP Fellows	43%
NIH Medical Scientist Training Program	33%
HH Medical Fellows Program	24%