

FINAL REPORT



DEVELOPING MINORITY BIOMEDICAL RESEARCH TALENT IN PSYCHOLOGY:

A Collaborative and Systemic Approach
for Strengthening Institutional Capacity for
Recruitment, Retention, Training, and Research

"The APA/NIGMS Project" · 1996-2009



AMERICAN
PSYCHOLOGICAL
ASSOCIATION
PUBLIC INTEREST DIRECTORATE
OFFICE OF ETHNIC MINORITY AFFAIRS

AUGUST 2011
GRANT T36-GM08640

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ON THE COVER

"It Takes a Village" (*counterclockwise, right to left*): University of Miami (UM) PRIME student Hanan Hamed graduated summa cum laude from UM and was the 2002 Outstanding Undergraduate Psychobiology Major; Dr. Patrice Saab, Hamed's faculty mentor; Dr. Victoria Noriega, director of undergraduate studies in UM's Department of Psychology and core team member; and Hamed's mother. The University of Miami's PRIME (Psychology Research Initiatives Mentorship Experience) program was part of the APA/NIGMS Project to enhance minority participation in the educational pipeline for biomedical research careers in psychology.

Cover design by David Spears

Available online at <http://www.apa.org/pi/oema/programs/recruitment/minority-research.aspx>

The three appendixes to this report are available online at <http://www.apa.org/pi/oema/programs/recruitment/minority-research.aspx>

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ACKNOWLEDGMENTS

In 1996, the American Psychological Association (and its Office of Ethnic Minority Affairs) was competitively awarded a 3-year grant from the Minority Opportunities in Research (MORE) Division of the National Institute of General Medical Sciences (NIGMS) to develop and administer an innovative multi-institutional training project aimed at increasing the participation of ethnic minority undergraduate students in the educational pipeline for research careers in biomedical areas of psychology. That effort, the **APA/NIGMS Project**, continued for 13-years—primarily because of the exceptional commitment, work, and leadership of the following persons, most of whom made substantive contributions to the project without financial compensation. We take this opportunity to recognize and commend these individuals. (Please note: Names, titles, and institutional affiliations listed are those used by the individuals during their participation in the project; not all listed persons assumed an indicated project role during the entire term of the project).

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We also extend our appreciation to the **APA Grants and Contracts Office**, which graciously prepared all project financial reports; Joanne Zaslow, Deborah Farrell, David Spears, and Elizabeth Woodcock of **APA's Editorial and Design Services**, who provided assistance with the production of this and all other project reports and publications; **Alberto Figueroa-García, MBA**, acting senior director of the APA Office of Ethnic Minority Affairs, who graciously committed staff effort and budget funds that enabled the preparation of this report; **Sherry T. Wynn**, who meticulously prepared the report manuscript; and **Henry Tomes, PhD**, and **Gwendolyn Keita, PhD**, respectively, former and current executive director of the APA Public Interest Directorate, whose support was critical to the success of the APA/NIGMS Project. Special appreciation is given to **Adolphus Toliver, PhD**, director of the NIGMS Minority Access to Research Careers (MARC) Program, who consistently provided extraordinary advice and assistance to the project.

EXECUTIVE SUMMARY

This is the final report of Project T36 GM08640, *Developing Minority Biomedical Research Talent in Psychology: A Collaborative and Systemic Approach for Strengthening Institutional Capacity for Recruitment, Retention, Training, and Research*, also known as the **APA/NIGMS Project**. This project, which was administered by the American Psychological Association (APA), was initially funded in 1996 by the Minority Opportunities in Research (MORE) Division of the National Institute of General Medical Sciences (NIGMS). This funding, which totaled approximately \$4 million, ended in July 2009. During this 13-year period, the project developed five collaborative regional training centers, each consisting of three institutions: a major research university, a predominantly minority 2-year institution, and a predominantly minority 4-year institution. Each center engaged in consultant-moderated strategic planning related to implementation of the following training procedures:

- Outreach/orientation
- Engagement
- Academic support and preparation for educational transitions
- Research mentorship

During the 13-year period, more than 635 students were engaged in more than 730 intensive research mentorships with more than 140 psychological researchers, and more than 91 project students entered a doctoral program. The *Final Report* not only describes activities of the last funding period (i.e., 2004–2009) but also highlights the project’s major achievements during the 13-year period, as well as lessons learned and associated recommendations that can inform future minority research training efforts.

Project Rationale

The federal government has long recognized that the nation’s communities of color have been underserved by biomedical scientists and that ethnic minorities (i.e., people who identify themselves as African American/Black, American Indian/Alaska Native, Asian American/Pacific Islander, or/and Hispanic/Latino) are underrepresented in biomedical research. These realities have become especially problematic given the continuing and increasing racial health disparities that often involve high-risk behaviors and

neurological disorders that could be reduced using the perspectives of psychologists who have both extensive cultural and biomedical knowledge and behavioral/psychological intervention skills.

The dominant federal response to the underrepresentation of ethnic minorities in the biomedical sciences has been to provide research and training grants to ethnic minority students at the doctoral-training and postdoctoral levels. However, this strategy is not working. For example, in 2006, ethnic minorities represented 13% of the psychology workforce in the United States and 21.3% of PhDs awarded in psychology in the United States. Ten years earlier, in 1996, minorities comprised 14.4% of psychology PhD recipients. But despite this 23.5% increase, the future enrollment of such persons would have to nearly triple to keep pace with the steadily growing population of persons of color in the United States. The growing disparity between community needs and the shortage of minority biomedical scientists provided the rationale for the APA/NIGMS Project.

The growing disparity between community needs and the shortage of minority biomedical scientists provided the rationale for the APA/NIGMS Project.

Project Description

The APA/NIGMS Project sought to increase the number of persons of color in the educational pipeline for biomedical research careers in psychology. The project is distinguished by its emphasis on (a) the development of five **Regional Centers of Excellence in Minority Research Training**, each involving a collaborative partnership among a major research institution, a predominantly minority 2-year institution, and a predominantly minority 4-year institution; (b) **systemic change** of academic cultures and enhancement of capacities to engage minority students effectively in research training; and (c) **pipeline training procedures** to ensure that ethnic minority students have the necessary commitment, skills, and experience to succeed at progressively advanced levels of biomedical research. Consequently, the APA/NIGMS Project was guided by the following hypotheses:

Over the course of a 15-year project period, all participating institutions will progressively demonstrate increased capacity to effectively recruit, retain, and train students of color for biomedical research careers in psychology as indicated through

- initiation of new activities in psychology departments;
- increased numbers of students of color involved in research mentorship experiences, completing degrees in psychology, and pursuing education in psychology at the next level of the educational pipeline;
- student and faculty perceptions of positive project benefits;
- project resource leveraging and institutionalization; and
- broader systemic change in support of minority recruitment, retention, and training.

These hypotheses and their associated objectives were addressed by each of the project's 14 participating institutions through use of specific systemic procedures (institutional partnership development, needs assessment, strategic planning, technical assistance and consultation, demonstration [strategic plan] implementation, assessment and evaluation, product development and dissemination, and institutionalization) and specific pipeline training procedures (outreach/orientation, engagement, academic support and preparation for educational transitions, and research mentorship). During the 13-year period, each of the project's institutions received annual demonstration grants ranging from \$15,000 in 1996/97 to \$24,300 in 2006/07.

Project Outcomes

The following is a partial listing of the project's outcomes during the 13-year period. The project:

- Provided technical assistance to the regional centers, including (a) leadership of three national project conferences, (b) independent project consultation with regional teams at least once per year, and (c) provision of continual information, advice, and support by APA staff.
- Sought aggressively to facilitate recruitment and training of the nation's future minority biomedical/behavioral researchers through dissemination of the project's findings, procedures, and demonstration models. For example, such information was the primary focus of the project's newsletter, *The Pipeline*, which was disseminated to over 2,500 institutions, agencies, and individuals. Project updates routinely appeared in *Communiqué*, the semiannual newsjournal of the APA Office of Ethnic Minority Affairs (OEMA), which is disseminated to more than 5,000 persons and institutions, including every psychology department in the United States and Canada.
- Engaged in multimethod, multilevel project documentation and evaluation through its *Diversity Needs of Academic Settings* (DiNAS) pretest assessment ($n = 2,067$), a periodic project evaluation survey, annual institutional progress reports, various types of surveys of student participants, and development of both a standardized strategic plan format and a minimum data set reporting system.
- Documented that increased numbers of minority students at project sites were participating in research mentorships. During the project years 1997/98–2008/09, an average of **61** students per year were involved in a biomedical/behavioral research mentorship, a marked increase from the **31** minority students engaged in a research mentorship in all areas of psychology at the project's participating institutions in the 1996/1997 baseline year. Since the project's inception, a total of 635 (unduplicated) students have engaged in one or more mentored research experiences.
- Increased students' competitiveness for educational/research progression. Since the inception of the project, participating students prepared **493 research poster/paper presentations** and submitted **39 scholarly articles/book chapters** for publication.
- Demonstrated compelling evidence of success in retention, transfer, graduation, and advancement of **students at 2-year community colleges**. Since project initiation:
 - ▶ **57% ($n = 94$)** of 2-year college participants **transferred to a 4-year institution**; most transferred prior to receipt of an AA/AS degree, and nearly **60% of these transferred to a 4-year institution within their regional center**, with 70% continuing to receive intensive research mentorship through the APA/NIGMS Project.

- ▶ **31% ($n = 29$)** of 2-year college participants who transferred to a 4-year institution **earned a BA/BS degree**, and **55% of these** went on to **pursue an advanced degree**. To date, **2 have earned MA degrees**, and **1 has earned a doctoral degree**.
- Demonstrated compelling evidence of success in retention, graduation, and advancement of **students at 4-year institutions**. Since the project's inception:
 - ▶ **458 students** who were initially enrolled at 4-year institutions were engaged in project-**mentored research**, of whom **59% ($n = 271$) earned a BA/BS degree**, while **41% ($n = 187$) were still enrolled** in undergraduate studies in 2008/09.
 - ▶ **54%** (298 out of 552) of all students attending 4-year institutions (including transfer students) **earned a BA/BS degree**.
 - ▶ More than **35% ($n = 60$)** of students who pursued advance degrees **earned one or more advanced degrees**, including **15 doctoral degrees**.
- Assisted its students in attaining **the following educational/career statuses** (as of 10/31/09): 315 were continuing their undergraduate studies (61 at 2-year institutions, 254 at 4-year institutions); 140 were enrolled in a graduate program (41 in a master's program [27 in psychology], 76 in doctoral programs [54 in psychology, 13 in some other biomedical/behavioral discipline, and 11 in other disciplines]); 23 were enrolled in a professional program (7 in MD programs, 6 in MSW programs, and 8 in other professional areas—e.g., law and public health); 23 had earned terminal MA degrees; 13 had earned professional degrees; and 15 had earned doctoral degrees (7 currently engaged in academia and 6 engaged in other sectors of the biomedical workforce).
- Succeeded in involving more than 25,000 secondary participants (i.e., students who were not engaged in intensive research mentorship but participated in other project activities), thus ensuring a large pool of students for research mentorships and sparking interests in biomedical issues.

The *Final Report* describes these and other outcomes in greater detail as well as the goals, activities, and associated outcomes for the project's most recent 2004–2009 reporting period.

Lessons Learned

The following is a synopsis of lessons learned that are presented in the *Final Report* and related recommendations that may inform policy, advocacy, as well as implementation of minority research training programs, especially those involving institutional partnerships. These lessons learned are derived from information, evaluation, and accomplishment data presented in the *Final Report*.

THE UNIQUE CONTRIBUTIONS OF PSYCHOLOGY TO MINORITY RESEARCH TRAINING

We urge that federal research agencies increasingly recognize the research contributions that can be made by psychologists to biomedical, health, and health disparities issues. Further, we urge that consideration be given to encouraging the increased involvement of psychologists as evaluators and reviewers of minority research training programs.

THE VALUE OF A STRUCTURED PARTNERSHIP PROCESS AND ITS USE OF CONSULTANTS

We urge that consideration be given to increased use of interinstitutional partnerships facilitated by independent consultants as a strategy for increasing minority research training participation.

THE SPECIAL NEEDS OF PARTNERSHIP RESEARCH TRAINING PROJECTS

Recognition of Diversity Among Institutions

We urge that funders of partnership research training programs consider extending supplemental funding to collaborating community colleges and tribal institutions to enable them to reduce teaching loads for project leaders, hire project support staff, and purchase necessary equipment, resource materials, and services, etc.

Importance of Administrator Support

We urge that minority research training programs aggressively seek the support and active involvement of institutional administrators.

Continuity of Project Leadership

We recommend that minority research training partnership programs consider advanced preparation of formal orientation procedures and project operational manuals in anticipation of possible changes in institutional program leadership.

Creative Faculty Incentives

We urge funders of partnership training programs, in consideration of the complexity (and additional workload) involved in partnership and systemic change efforts, to consider the importance of providing funding for such faculty incentives as release time, reduced instructional responsibilities, access to student assistants, or partial summer salary. Should funding restrictions foreclose such consideration, alternative efforts should be made to fund creative nonrecurring incentives.

We urge funders of partnership training programs that involve multiple geographical sites to consider the importance of including funding provisions for biennial projectwide conferences.

SYSTEMIC CHANGE REQUIRES LONG-TERM COMMITMENT

We urge that, as a means for promoting project stability and continuity of effort, partnership projects with systemic emphases that have successfully completed an initial 3-year (or shorter) funding period be awarded (if meritoriously appropriate) continuing grants for 5-year funding periods.

THE IMPORTANCE OF INTERVENTION AT EDUCATIONAL TRANSITION POINTS

We urge consideration of the advisability of both continuing and expanding federal support of comprehensive minority research training efforts that focus on preparing undergraduate students for educational transition and extending such efforts to high schools.

THE VALUE OF ACCOUNTABILITY TOOLS AND PROGRAM EVALUATION

We urge that consideration be given to increasing the requirement for and investment in the development of accountability tools and the conduct of program evaluation of federally funded minority research training programs.

Readers of this Executive Summary are encouraged to review the APA/NIGMS *Final Report* in its entirety to better understand the complexity and richness of the project's procedures, activities, findings, outcomes, and lessons learned.

Questions about the APA/NIGMS Project and its activities and outcomes should be directed to Principal Investigator/Project Director Bertha G. Holliday, PhD, at bhollidaypsy@gmail.com.

PROJECT OVERVIEW: 1996–2009

This is the final report for Project T36 GM08640, *Developing Minority Biomedical Research Talent in Psychology: A Collaborative and Systemic Approach for Strengthening Institutional Capacity for Recruitment, Retention, Training, and Research*, also known as the APA/NIGMS Project. This project, which was administered by the American Psychological Association (APA), was initially funded in 1996 by the Minority Opportunities in Research (MORE) Division of the National Institute of General Medical Sciences (NIGMS). The project's last renewal grant was for the period of 2004–2007, with extensions in time granted only through July 2009. During this 13-year period, the project developed five collaborative regional training centers, each consisting of three institutions: a major research university, a predominantly minority 2-year institution, and a predominantly minority 4-year institution. Each center engaged in consultant-moderated strategic planning related to the implementation of training procedures focused on outreach/orientation, engagement, academic support and preparation for educational transitions, and research mentorship. During the 13-year period, more than 635 students were engaged in more than 730 intensive research mentorships, and more than 91 students in the project entered a doctoral program. This final report not only describes activities of the last funding period (i.e., 2004–2009) but also highlights the project's major achievements during the 13-year period, as well as lessons learned and associated recommendations that can inform future minority research training efforts.

Background

PROJECT HISTORY

The APA/NIGMS Project was initially funded as a T-36 MARC (Minority Access to Research Careers) Ancillary Project for the 3-year period of 9/30/96–9/29/99, with training activities beginning during the 1997/98 academic year, followed by an eventual renewal for another 3-year period of 7/1/00–6/30/03. A 5-year competing continuation application was submitted in September 2002, which was subsequently revised and resubmitted and eventually funded for the 3-year period of 8/5/04–7/31/07. A 5-year competing continuation application was submitted in January 2006 and denied funding. Subsequently, a 1-year extension in time was granted only until 7/31/08, and a second and final extension in time was granted until 7/31/09. Total NIGMS funding awarded during the 13-year period was approximately \$4 million.

Information and data presented in this report suggest that, despite the inherent administrative complexity of a national project involving 14 institutions with varying missions, minimal funding (an average of \$20,000 per institution per year), and repeated lapses in funding, the APA/NIGMS Project achieved a remarkable number of highly positive outcomes.

STATEMENT OF THE PROBLEM

The federal government has long recognized that the nation's communities of color are underserved by biomedical scientists and that ethnic minorities (i.e., people who identify themselves as African American/Black, American Indian/Alaska Native, Asian American/Pacific Islander, and/or Hispanic/Latino) are underrepresented in biomedical research (Hammond & Yung, 1993; NAGMS Council, 2006). These realities have become especially problematic given the continuing and increasing racial health disparities that often involve high-risk behaviors and neurological

disorders (Smedley, Stith, & Nelson, 2003; Staveteig & Wigton, 2000; U.S. Department of Health and Human Services, 2001; Whitt-Glover et al., 2008). Taking into account the perspectives of psychologists who have both extensive cultural and biomedical knowledge and behavioral/psychological intervention skills could help to reduce such disparities.

The dominant federal response to the underrepresentation of ethnic minorities in the biomedical sciences has been to provide research and training grants to ethnic minority students at the doctoral and postdoctoral training levels. There has been much less support for undergraduate students. In our original application, we described data that suggested that the dominant strategy is not working (NAGMS Council, 2006; NIGMS, 1995). The growing disparity between community needs and the shortage of minority biomedical scientists provided the rationale for the APA/NIGMS Project.

In 2006, ethnic minorities represented 13% of the psychology workforce in the United States (Finno & Kohout, 2009). In 2006, 21.3% of PhDs awarded in psychology in the United States were granted to ethnic minorities (National Science Foundation [NSF], 2008). Compared to 14.4% in 1996, the year the project began, this represents a 23.5% increase (NSF, 2007). Despite this increase, future enrollment of such persons would have to nearly triple to keep pace with the steadily growing population of persons of color in the United States.

A substantial number of students of color (42.2% of all African American college students and 56% of all Hispanic college students) attend community colleges, many of which are predominantly minority-serving institutions that are frequently outside the scope of recruitment targets for major research universities (American Council on Education [ACE], 1997, 1998). As indicated in the recent *Final Report of the NAGMS Council MORE Division Working Group* (2006), the formalization of relationships between research universities and feeder institutions, such as community colleges and 4-year minority-serving institutions, is essential to the long-term success of effective recruitment, retention, and training innovation. Such relationships necessitate an expansive, multifaceted, and systemic approach that emphasizes interorganizational collaboration, accessible and qualified mentors, and significant and relevant academic, financial, and social support (Connell, 1990; Jackson, 1992; Neisler, 1992; Oliver & Brown, 1988; Porche-Burke, 1990). The APA/NIGMS Project addressed all of these factors.

The APA/NIGMS Project sought to demonstrate the effectiveness of such a systemic approach to increasing the number of persons of color in the educational pipeline for biomedical research careers in psychology. It specifically targeted training in research areas at the intersection of health and behavior that have a disproportionately negative impact on the health and life span of persons of color, including AIDS, stress, cardiovascular disease, diabetes, cancer, substance abuse, neuroscience, gerontology, pain management, and developmental disorders.

Project Description

MAJOR HYPOTHESIS AND OBJECTIVES

In the initial APA/NIGMS Project application, the following hypotheses were proposed:

Over the course of a 15-year project period, all participating institutions will progressively demonstrate increased capacity to effectively recruit, retain, and train students of color for biomedical research careers in psychology as indicated by:

- the initiation of new activities in psychology departments;
- increased numbers of students of color participating in research mentorship experiences, completing degrees in psychology, and pursuing education in psychology at the next level of the educational pipeline;
- student and faculty perceptions of positive project benefits;
- project resource leveraging and institutionalization; and
- broader systemic change in support of minority recruitment, retention, and training.

The project's related major objectives were the following:

1. To establish five multi-institutional Regional Centers of Excellence, each comprising a minority 2-year, a minority 4-year, and a major research institution. Centers would not be defined by a physical location but by collaborative institutional relationships and activities.

The formalization of relationships between research universities and feeder institutions, such as community colleges and 4-year minority-serving institutions, is essential to the long-term success of effective recruitment, retention, and training innovation. Such relationships necessitate an expansive, multifaceted, and systemic approach.

2. To implement at each regional center a specific methodology for strengthening institutional relationships and ethnic-minority-training capacities involving education, information, relationship building, needs assessment and strategic planning, technical assistance, consultation, and research training program development and/or enhancement.
3. To provide the centers with consultation by subject matter and diversity experts who will facilitate the implementation and evaluation of their research training activities.
4. To increase the number of students of color at participating institutions who are interested in pursuing biomedical research careers in psychology through activities focused on outreach/orientation, engagement, research mentoring, and academic support, including preparation for educational transitions.
5. To facilitate the recruitment, retention, and training of the nation's future ethnic minority biomedical/behavioral researchers by disseminating the project's findings, procedures, and program to all of the nation's academic departments of psychology.

PROCEDURES

Institutional Partnership Development

In December 1996, APA established five multi-institutional Regional Centers of Excellence in Minority Recruitment, Retention, and Training. Each regional center comprised departments or programs in psychology at three postsecondary educational institutions: a major research institution, a predominantly minority 2-year institution, and a predominantly minority 4-year institution. At each institution, project activities were implemented by a project team headed by a team leader. Each team consisted of a departmental administrator (usually the department/program chair), one or more faculty, and a student representative. Major research institutions typically used some of their project funds for the hiring of a research assistant responsible for day-to-day project operations and data collection. Table 1 lists the project's regional centers and their respective participating institutions. During the life of the project, two institutions (University of Illinois–Chicago and Dull Knife Memorial College) withdrew from the project due to loss of project leadership, and one institution was added (Sisseton Wahpeton).

Partnership development was guided by the project's commitment to a systemic approach to enhancing diversity in research training. This approach emphasizes the modification and transformation of institutional cultures and programs of collaborating academic departments in a coordinated and planned

manner in order to strengthen their capacities to identify, affirm, and nurture minority talent at all levels of the educational pipeline. As Figure 1 depicts, this transformation and capacity building requires (a) the building of partnerships that facilitate the sharing of skills, knowledge, and resources; (b) an initial needs assessment; (c) engagement in collaborative strategic planning; (d) the assistance of independent consultants; (e) implementation of the strategic plan; (f) collection of project evaluation and student accomplishment/progression data; and (g) development of products that aid in dissemination of project lessons learned and best practices. Thus, the project's systemic approach provides a procedural methodology for developing, maintaining, and institutionalizing (through leveraging of internal and external resources) minority research training efforts.

Needs Assessment

The project's *Diversity Needs of Academic Settings* (DiNAS) surveys, which were developed and administered in 1997, served as the global (and more distal) assessment of the project's systemic impact and outcomes. The DiNAS consists of four questionnaires targeted to administrators, departmental faculty, departmental staff, and psychology students. There were also two questionnaires that solicited demographic information at the departmental and institutional levels. A total of 2,067 surveys (1,830 student, 126 faculty, 50 staff, 34 administrator, 13 institutional statistical, and 14 departmental statistical) from 15 participating institutions were completed in 1997/98. (The 15th institution withdrew from the project soon thereafter.) In 2002, APA staff completed analyses of pretest (or baseline) DiNAS data. All DiNAS items that exhibited statistical differences on critical comparative factors were identified for inclusion in a DiNAS Short Form for posttest assessment.

Strategic Planning

Strategic planning occurred at least once a year (usually in the spring) in each regional center. Strategic planning was a structured formal collaborative process that resulted in institutional

(continued on p. 10)

A systemic approach requires (a) the building of partnerships that facilitate the sharing of skills, knowledge, and resources; (b) an initial needs assessment; (c) engagement in collaborative strategic planning; (d) the assistance of independent consultants; (e) implementation of the strategic plan; (f) collection of project evaluation and student accomplishment/progression data; and (g) development of products that aid in dissemination of project lessons learned and best practices.

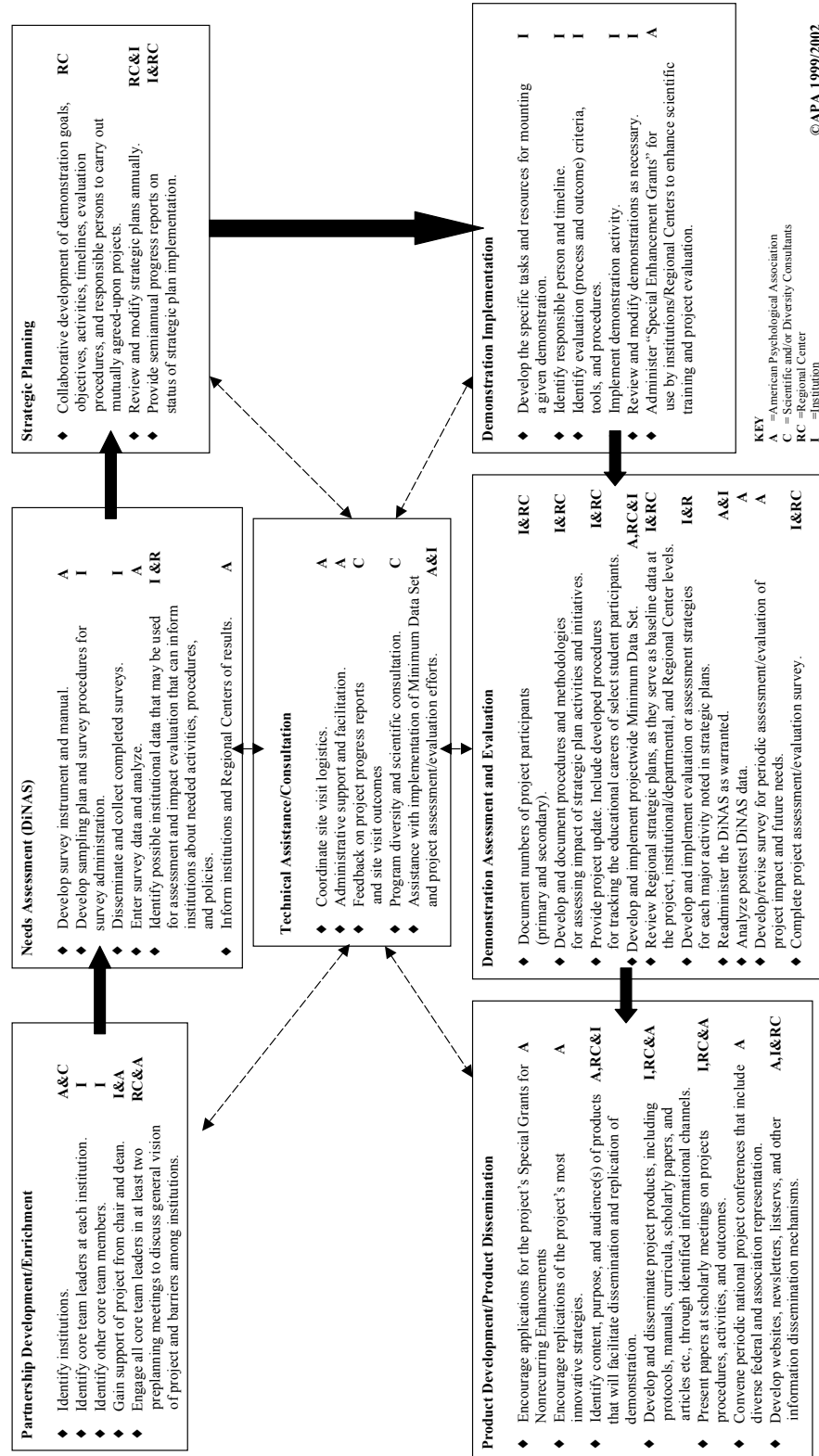
TABLE 1

The APA/NIGMS Project's Regional Centers of Excellence

Institution Type	Institution Name	Location	Core Team Leader(s)
EASTERN REGION	2-Year (African American) Prince George's Community College (PGCC)	Largo, MD	Sonia Bell, MS – Asst. Professor, Psychology Robin Hailstorks, PhD - Former Chair, Psychology
	4-Year (HBCU) Morgan State University (MSU)	Baltimore, MD	Pamela E. Scott-Johnson, PhD – Chair & Assoc. Professor, Psychology
	Major Research University of Maryland, College Park (UMD)	College Park, MD	Steven E. Brauth, PhD – Professor, Psychology William S. Hall, PhD – Professor & Chair, Psychology
MIDWESTERN REGION	2-Year (Hispanic) Truman Community College (TCC)	Chicago, IL	Mahesh Gurung, PhD – Asst. Professor & Chair, Biology Richard Kampwirth, PhD, Professor & Chair, Biology
	4-Year (African American) Chicago State University (CSU)	Chicago, IL	Josie McDonald, MA – Admin. Coordinator, Psychology Ivy S. Dunn, PhD - Professor & Chair, Psychology
	Major Research Withdrew from the project		
NORTHERN PLAINS REGION	2-Year (Tribal College) Sisseton Wahpeton Community College	Sisseton, SD	Harvey DuMarce, MA – Vice President, Academic Affairs
	4-Year (Tribal College) Sinte Gleska University (SGU)	Mission, SD	Burdette C. Clifford, MS – Dean, Human Services
	Major Research University of South Dakota (USD)	Vermillion, SD	Elizabeth A. (Todd-Bazemore) Boyd, PhD – Professor, Psychology
SOUTHEASTERN REGION	2-Year (African American & Hispanic) Miami-Dade College (MDC)	Miami, FL	Yuly Pomares, PhD – Professor, Social Sciences Evelyn Diaz, PhD – Chair, Social Sciences
	4-Year (Hispanic) Florida International University (FIU)	Miami, FL	Bennett L. Schwartz, PhD – Professor, Psychology Marvin Dunn, PhD – Professor & Chair, Psychology
	Major Research University of Miami (U of M)	Coral Gables, FL	A. Rodney Wellens, PhD – Chair & Professor, Psychology Victoria Noriega, PhD – Director, Undergraduate Studies, Psychology
WESTERN REGION	2-Year (African American & Hispanic) Santa Monica College (SMC)	Santa Monica, CA	Karen S. Gunn, PhD – Professor, Behavioral Studies
	4-Year (African American & Hispanic) California State University, Dominguez Hills (CSUDH)	Dominguez Hills, CA	Ramona A. Davis, PhD – Professor, Psychology L. Mark Carrier, PhD, Assoc. Professor, Psychology
	Major Research University of California, Los Angeles (UCLA)	Los Angeles, CA	Hector F. Myers, PhD – Professor, Psychology & Psychiatry

FIGURE 1

Project Flowchart: The Systemic Focus of the APA/NIGMS Project



(continued from p. 7)

collaboration related to problem identification and solution, planning, implementation, and accountability. The regional strategic plan made use of a standardized format developed by APA that described the region's planned systemic and training approaches and specific efforts. Initial planning meetings were guided by DiNAS findings. Planning meetings were arranged by APA and included participation of a project diversity consultant and a scientific consultant. Other key participants included the region's core team members and leaders. Site visits, typically 1 or 2 days in duration, focused on review and revision of the regional strategic plan, appraisal of the institutional and regional strengths and needs, and assessment of the success or failure of previously identified activities.



Eastern Region strategic planning meeting, 2007.

In addition, each institution was expected to submit an annual strategic plan progress report that included student progress reports. Copies of all strategic plans are on file at APA's Office of Ethnic Minority Affairs.

Technical Assistance and Consultation

This critical activity was conducted by independent project consultants hired by APA and was central to maintaining the project's systemic/collaborative transformational approach. The project's technical consultants provided advice related to the plans for administration and analyses of project assessment/evaluation efforts, such as the DiNAS assessment. Scientific and diversity consultants facilitated annual strategic planning meetings; mediated various challenges of institutional collaboration and changing leadership; and served as moderators, mediators, and advisors to project institutions. Each region had a lead consultant, who provided a written report to APA of his/her region's annual strategic planning meeting and other consultant activities. These reports are on file at APA.

Strategic Plan Implementation

Annual demonstration grants were awarded to each of the project's participating institutions (until the 2007/2008 academic

year) for implementing those activities/objectives identified in their respective strategic plans. These awards were contingent upon receipt of annual progress reports, a description of activities to be supported by the grant during the forthcoming year, and the report of each institution's financial officials on the amount and use of all APA/NIGMS grant funds that were previously disbursed and/or available for expenditure.

During the project's initial grant (9/96–8/99), these awards were in the amount of \$15,000 per institution. However, during the first 3-year continuation period (7/00–6/03), these awards were increased to \$20,000 per year per institution in order to underwrite increased institutional activity and effort associated with an increased emphasis on assessment and evaluation of project activities. The project's grant during the final continuation period (8/04–7/07) provided for an institutional grant in the amount of \$24,300 per year.

The final 2 years of the project (8/07–7/09) were administered on the basis of an "extension of time only," with no additional funds provided. As a result, after AY 7/08, demonstration/ implementation funds in the amount of \$15,000 per year were competitively awarded for summer programming based on proposals submitted by institutions. A description of funded summer programs is included in the Outcomes section (see Table 4, p. 35).

Student Selection

Participating students were required to apply for mentorship, meet certain academic and other requirements that were established by each project team, and participate in a review and selection process. The specific selection criteria used by the projects are noted in Table 2. The design, content, and length of the mentorship program as well as the process of matching mentee with mentor were determined by each region/institution but typically minimally involved preliminary mentee review of a prospective mentor's research and interviews between prospective mentee and mentor.

Student Research Training Activities

The identification and demonstration of specific training activities were products of the academic partnerships and their institutional contexts. Regional centers were challenged to provide research

(continued on p. 15)

Regional centers were challenged to provide research training experiences for students with varying prior exposure to research. Working in a collaborative manner to ensure that research training experiences were both meaningful and developmentally appropriate was a major challenge and impetus for departmental transformation and innovation.

TABLE 2

APA/NIGMS Project Selection Criteria for Primary Student Participants

Student Selection Criteria						
	GPA	Student Status	Course Requirement	Time Commitment Requirement	Recommendation	Other
PARTICIPATING INSTITUTIONS	2.70 minimum overall GPA. 3.0 GPA in identified major.	Open to sophomores, juniors, and seniors in psychology.	Completed introduction to psychology, statistics, and one upper-division psychology course at UCLA or another UC.	Must be able to attend weekly seminars. Must be able to devote 8–10 hr./week to research.	Faculty letter of support.	Students will be required to obtain a faculty sponsor who is available during Winter and Spring quarter. Preference given to students who have attended UCLA for at least one year.
	3.0 GPA overall. 3.0 psychology GPA.	Must be of junior class standing and in good academic standing.	None indicated.	Must commit to and be available for all aspects of the program.	Personal statement of 300 words.	Must have adequate writing and quantitative skills. Must sign the CSUDH acceptance agreement.
	3.0 GPA overall.	Currently enrolled in 6 units at SMC.	Completed Psychology 1. Completed 3–6 units of psychology with a final grade of A, B, or C.	None indicated.	Written personal statement.	Writing skills will be critiqued. Year of admission to SMC will be reviewed. Desire to pursue career in psychology/social science will be ascertained.

(continued on p. 12)

(continued from p. 11)

TABLE 2

APA/NIGMS Project Selection Criteria for Primary Student Participants (CONTINUED)

Student Selection Criteria					
GPA	Student Status	Course Requirement	Time Commitment Requirement	Recommendation	Other
3.0 GPA requirement.	Must be full-time student. Sophomore standing. Psychology major or potential major.	Completed statistics, advanced mathematics, or research methods.	Must be able to devote necessary time to the program.	Letter of recommendation from faculty and statement of purpose required.	Must have a listing of courses completed in psychology, science, and math. Must submit transcripts. Must participate in personal interview.
3.0 GPA	Must be at least a sophomore.	Completed statistics, advanced mathematics, or research methods courses.	Must be able to devote necessary time to program.	Letter of recommendation from faculty. Statement of purpose.	Must identify possible mentor during application process. Provide postgraduate plans.
3.0 GPA	Must be a full-time student.	Must be interested in psychology.	Must be able to devote the necessary time to the project.	Letter of recommendation from faculty. Statement of purpose.	None indicated.

PARTICIPATING INSTITUTIONS

UNIVERSITY OF MARYLAND

MORGAN STATE UNIVERSITY

PRINCE GEORGES COMMUNITY COLLEGE

TABLE 2

APA/NIGMS Project Selection Criteria for Primary Student Participants (CONTINUED)

Student Selection Criteria					
GPA	Student Status	Course Requirement	Time Commitment Requirement	Recommendation	Other
2.75 GPA or above.	Sophomore standing/ minimum of 30 credits.	Complete Intro. to Psychology course, Intro to Biobehavioral Statistics (PSY 204), Experimental Psychology (PSY 316), & Seminar in Research and Careers in Psychology (PSY 365).	Must work at least 20 hr/ week in laboratory.	None indicated.	Priority given to students who have worked with mentor as a volunteer or as part of PSY 367/8. JUMP START students receive less stipend but can apply.
Cumulative GPA of 3.0	Must be a psychology or biology major.	Enrollment in PSY 4913 for 3 credits during identified summer session.	Ability to work in identified research lab for at least 20 hr/week over a 15-week period during summer.	Letters of recommendation.	None.
2.75 GPA	Sophomore standing (minimum of 30 credits).	Must have taken introductory psychology course.	None indicated	None indicated.	Recommended course: PSY 204.
None indicated.	Doctoral student.	None specifically identified.	None indicated.	None indicated.	Program seeks minority psychology doctoral students who are willing to mentor minority undergraduate and high school students in return for project academic support and enrichment services.

PARTICIPATING INSTITUTIONS

UNIVERSITY OF MIAMI

FLORIDA INTERNATIONAL UNIVERSITY

MIAMI DADE COMMUNITY COLLEGE

UNIVERSITY OF SOUTH DAKOTA

(continued on p. 14)

(continued from p. 13)

TABLE 2

APA/NIGMS Project Selection Criteria for Primary Student Participants (CONTINUED)

Student Selection Criteria							
	GPA	Student Status	Course Requirement	Time Commitment Requirement	Recommendation	Other	
PARTICIPATING INSTITUTIONS	SINTE GLESKA UNIVERSITY	None indicated.	Sophomore standing or higher.	Must be identified as a Human Service or nursing major.	None indicated.	Recommendation from faculty.	Must be willing to work with freshmen students. Must be willing to travel into local Native American communities.
	CHICAGO STATE UNIVERSITY	2.8 GPA for undergrads. / 3.0 for graduate students.	Must be a psychology student in good standing.	Must be a psychology major.	None indicated.	None indicated.	Must have demonstrated interest in behavioral science and mental health and biomedical research.
	TRUMAN COMMUNITY COLLEGE	2.8 or better GPA.	Must be enrolled full-time.	None indicated.	None indicated.	None indicated.	Preference given to life science, biology, and psychology majors.

(continued from p. 10)

training experiences for students with varying prior exposure to research ranging from community college to (in one region) graduate students. Working in a collaborative manner to ensure that research training experiences were both meaningful and developmentally appropriate was a major challenge and impetus for departmental transformation and innovation. Thus, training activities were expected to—and indeed did—vary both across and within regional centers.

However, the development of all training activities was guided by the project's pipeline training approach. This approach was inspired by a finding of the APA Commission on Ethnic Minority Recruitment, Retention, and Training in Psychology (CEMRRAT): In psychology, the proportionate representation of ethnic minorities progressively declines at each succeeding level of the postsecondary educational pipeline (APA, 1997). Ten years later, in its *Progress Report* (APA, 2008), CEMRRAT reported that between 1997 and 2004, although the representation of ethnic minorities had increased at all levels of psychology's educational pipeline, their participation continued to be significantly constricted at the upper levels of the pipeline. In response to these findings, the pipeline training approach seeks to (a) increase the size of the pool of persons of color at all levels of the educational pipeline; (b) improve the rate of retention of persons in the pool; and (c) provide educational/career/research experiences that ensure students' eligibility for, access to, knowledge of the needs of, and requisite professional competencies for biomedical research in multicultural settings on issues of importance to communities of color. Consequently, the project's pipeline training approach or model (see Figure 2) required a focus on four major types of training procedures:

- **Outreach/Orientation:** These are activities integral to gaining and maintaining student interest in postsecondary education in general—and specifically in psychology and biomedical/behavioral research.
- **Engagement:** These activities are typically more intense (in content and/or time required) than are outreach/orientation activities and serve either to (a) prepare students progressively for formal research mentorship (or supplement research mentorships by reinforcing the initial commitment and interest of new research mentees) or (b) increase student retention. Such activities include peer mentoring, specialized research or scientific courses, and colloquia or seminar series that are either prerequisite for mentorship or required as part of mentorship.
- **Academic support and preparation for educational transitions:** These are activities that enhance specific academic or research skills (e.g., tutoring, tutorials, paper presentations, conference attendance, etc.) and/or prepare students for educational transitions (e.g., information/assistance regarding applying to and preparing for graduate school; GRE preparation,



Left: California State University, Dominguez Hills APA/NIGMS Scholars students at the 2006 Western Psychological Association conference (*left to right*): Julie Mojica (CSUDH graduate assistant), Edtna Bogarin (APA Scholar), Kevin Montes (APA Scholar), and Heather Ruoti. **Center:** Florida International University PRIME students Maria Rodriguez (*left*) and Tracey Garcia presented their Summer 2005 PRIME project at a poster session at the meeting of the Association for Women in Psychology, February 2006. **Right:** Nathaniel Giles III and Prince George's Community College Core Team Leader Sonia Bell at the 2006 Annual Biomedical Conference for Minority Students (ABRCMS) in Anaheim, CA, where Giles was awarded the ABRCMS Research Prize.

etc.) and often take the form of a seminar or workshop series that may be incorporated into a comprehensive mentoring program.

- **Mentorship:** These are organized, structured, progressive programs for students conducting biomedical/behavioral research (including preparation and presentation of research reports) under the direction of an experienced researcher. At lower undergraduate levels, these activities might involve preparatory research activities focusing on exposure to and knowledge of the research process and alternative settings and uses of biomedical/behavioral research. The amount of the student training stipend is determined by each institution.

Recruitment/Selection of Research Mentors

Efforts were made to involve research mentors who are knowledgeable of multicultural research and training issues and engaged in research that is focused on ethnic minority issues or multi-ethnic populations. The APA/NIGMS Project, in part due to its multi-institutional collaboration, provided its students high-quality research mentorships, as indicated by the quality of the mentors and the research projects in which the students participated. During the 13-year period, the project involved more than 140 researchers as mentors. On average, at any given point, approximately 15% of these had 5 or more funded studies; 12% had 3 or 4 funded studies; and about 35% had 1 or 2 funded studies.

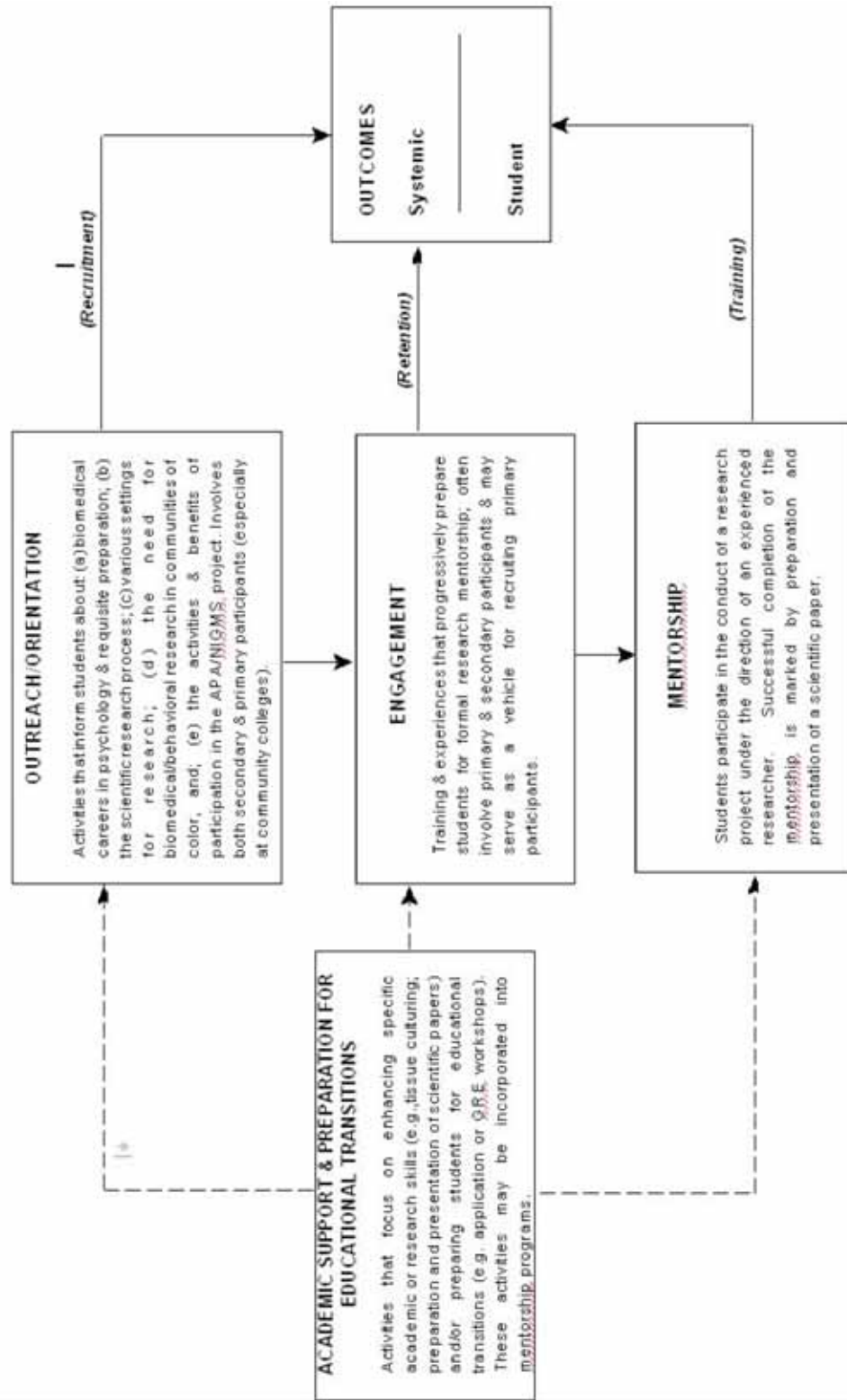


"Mentoring is a real honor and privilege"—Wendy Silverman, PhD, Florida International University Professor & PRIME mentor.

(continued on p. 17)

FIGURE 2

Training Procedures Flowchart: APA/NIGMS Project



(continued from p. 15)

Monitoring of the Mentee–Mentor Relationship

All mentee–mentor relationships were monitored through regularly scheduled individual and group meetings with mentees that were conducted by project core faculty and/or by advanced graduate assistants who were paid by project funds to perform such monitoring and to coordinate other aspects of the mentorship program. A Mentor Evaluation Form also was developed by APA staff and sent to mentees for completion; aggregated results were forwarded to each institution’s core project team.

Institutionalization of Project Demonstrations

Design and institutionalization of innovations derive from the structural and ideological contexts in which recruitment and retention planning take place (Oliver & Brown, 1988). A program’s success or failure reflects the institution’s overarching philosophy regarding ethnic minority presence on campus, the actions by facilitators and inhibitors of programs that target ethnic minorities as beneficiaries, and the time frame and resources available for accomplishing stated recruitment and retention goals (Mervis, 1998; Oliver & Brown, 1988). Colleges and universities committed to long-term academic and social integration of people of color must first create a culture or atmosphere that supports this commitment.

Institutions wrestling with problems of recruitment and retention are advised that finding a system of successful innovation and implementation requires much trial and error—and thus an adequate time commitment (Haro, 1992). Accordingly, institutions that win support for innovation must be prepared to take aggressive steps toward achieving diversity on campus and avoid quick and simple fixes for long-standing, complicated problems. Although change in departmental cultures and commitments to diversity may require ample time, the entire academic community may reap the benefits of successful innovations, which not only increase the number of students of color on campus but also help in the long run to diversify the academy’s teaching and administrative bodies.

Outcomes: 1996–2009

The APA/NIGMS Project was able to maintain a high level of continuity in institutional leadership, which indicates not only an interest in the project but a dedication to its goals and objectives. Thirteen of the original 15 institutions participated throughout the 13-year period. Thus, the project was characterized by the development of long-term relationships among team leaders, team members, and their institutions.

The APA/NIGMS Project achieved a remarkable number of highly positive outcomes that are comparable to those of many Minority Access to Research Careers (MARC) projects with per-student funding that is 4 or 5 times greater than that of the APA/NIGMS Project.

Despite the inherent administrative complexity of a national project involving 14 institutions with varying missions and repeated lapses in funding, in a relatively short time (13 years) and with minimal funds (an average of \$20,000 per institution for 9 funded years), the APA/NIGMS Project achieved a remarkable number of highly positive outcomes that are comparable to those of many Minority Access to Research Careers (MARC) projects with per-student funding that is 4 or 5 times greater than that of the APA/NIGMS Project.

MAJOR PROJECT OBJECTIVES AND HYPOTHESES

An evaluation of the outcomes since the inception of the project reveals that the project achieved its six major objectives:

- It established and maintained five multi-institutional regional centers over a 13-year period.
- It consistently implemented at each regional center a specific methodology for strengthening institutional linkages and minority recruitment, retention, and training, as noted earlier in the Procedures section.
- It increased the number of students of color at participating institutions who were interested in pursuing biomedical research careers, as indicated by the dramatic increase in the number of students engaging in biomedical/behavioral research mentorships at those institutions.
- It aggressively sought to facilitate recruitment and training of the nation’s future minority biomedical/behavioral researchers through dissemination of the project’s findings, procedures, and demonstration models. For example, project updates routinely appeared in the APA Office of Ethnic Minority Affairs (OEMA) semi-annual newsjournal, *Communiqué*, which is disseminated to more than 5,000 persons and institutions, including every psychology department in the United States and Canada. The annual national project newsletter, *Pipeline*, was disseminated to over 2,500 institutions, agencies, and individuals. APA’s flagship magazine, *Monitor on Psychology*, has published numerous major articles on the project. The project director and faculty at participating institutions conducted presentations on the project at numerous universities and professional conferences (a list of presentations is included on p. 31). Also, APA and many of the institutions maintained a project website (see <http://www.apa.org/pi/oema/programs/recruitment/nigms.aspx>).

- It engaged in multimethod, multilevel project documentation and evaluation, including its DiNAS pretest assessment ($n = 2,067$), a periodic project evaluation survey, annual institutional progress reports, student participants surveys, development of a Minimum Data Set reporting system, and continuous maintenance of a project chronology (see Appendix A: <http://apa.org/pi/oema/programs/recruitment/chronology-accomplishments.pdf>).

The Project also affirmatively addressed its major hypotheses related to increasing institutional capacity to effectively recruit, retain, and train students of color for biomedical/behavioral research careers in psychology, as indicated by the following:

- Documented (through its project evaluation survey and evaluations of its two national project conferences) that faculty and student participants do perceive and identify specific benefits that have been gained as a result of the project.
- Demonstrated and documented that its systemic approach resulted in leveraging of resources and in departmental and institutional change related to minority student recruitment, retention, and training.
- Documented that ALL of its participating institutions initiated new strategies, activities, and programs targeted to support minority students interested in biomedical/ behavioral research.
- Documented that increased numbers of minority students at project sites were participating in research mentorships. During the project years, 1997/98–2008/09, an average of **61** students per year were involved in a biomedical/behavioral research mentorship, a marked increase from the **31** minority students engaged in a research mentorship in all areas of psychology at the project's participating institutions in the 1996/97 baseline year. Since the project's inception, a total of **635** (unduplicated) students have engaged in one or more mentored research experiences.
- Increased students' competitiveness for educational/research progression. Since the inception of the project, participating students prepared **493 research poster/paper presentations** and submitted **39 scholarly articles/book chapters** for publication. For more information on student performance and progression outcomes, see Table 3.
- Demonstrated compelling evidence of success in retention, transfer, graduation, and advancement of students at **2-year community colleges** (see Figure 3). Since the project's inception:
 - ▶ **25% ($n = 41$)** of the project's students at a 2-year college ($n = 165$) received an AA/AS degree, and more than **75% ($n = 31$)** of these transferred to a 4-year institution.
 - ▶ **57% ($n = 94$)** of 2-year college participants **transferred to a 4-year institution**; most transferred prior to receipt of an AA/AS degree, and nearly **60% of these transferred to a 4-year institution within their regional center**; 70% of such

transferred students continued to receive intensive research mentorship through the APA/NIGMS Project.

- ▶ Less than **10% ($n = 10$)** of students who received an AA/AS degree at a 2-year institution **exited the academic pipeline** without transferring to a 4-year institution, and **less than 5% ($n = 7$)** of the project's 2-year college participants are known to have **dropped out** of their institutions (one of whom was called up for active military service), while **61 students continued their 2-year college studies**.
- ▶ **31% ($n = 29$)** of 2-year college participants who transferred to a 4-year institution **earned a BA/BS degree**, and **55% of these** went on to pursue an advanced degree. To date, **2 have earned MA degrees**, and **1 has earned a doctoral degree**.
- Demonstrated compelling evidence of success in retention, graduation, and advancement of **students at 4-year institutions**. Since the project's inception:
 - ▶ **458 students** who initially were enrolled at 4-year institutions were engaged in project **mentored research**, of whom **59% ($n = 271$) earned a BA/BS degree**, while **41% ($n = 187$) were still enrolled** in undergraduate studies in 2008/09.
 - ▶ **54% (298 out of 552)** of all students attending 4-year institutions (including transfer students) **earned a BA/BS degree**.
 - ▶ Only **41% ($n = 109$)** of the project's BA/BS graduates **exited the academic pipeline** without pursuing an advanced degree, while the remaining **59% ($n = 158$) pursued an advanced degree**.
 - ▶ More than **35% ($n = 60$)** of students who pursued advanced degrees **earned one or more advanced degrees**, including **14 doctoral degrees** (see Figure 4 for additional advanced degree data).

The APA/NIGMS Project was successful not just in engaging its primary students but also in involving secondary participants. During its 13 years, the project involved more than 25,000 students who were involved as secondary participants (secondary participants



Students at Morgan State University's Mae P. Claytor and Martin D. Jenkins Memorial Behavioral Sciences HBCU Undergraduate Research Conference in 2007.

(continued on p. 22)

TABLE 3

APA/NIGMS Project: Student Performance and Progression Data by Academic Year (9/1/1997 - 10/15/2009)

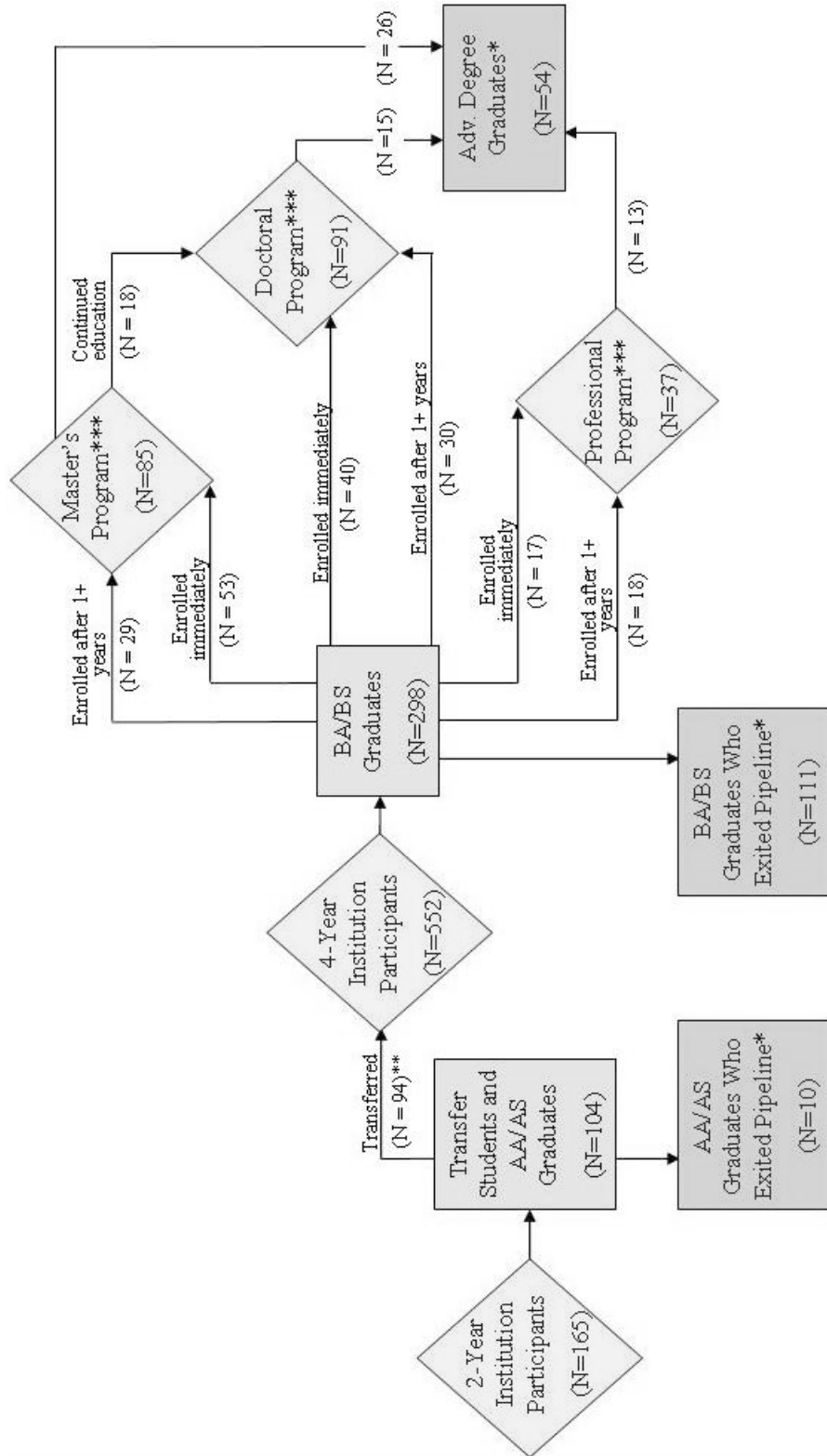
	NIGMS Program Year													TOTAL	
	BASELINE YEAR	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08		08/09
Students involved in intensive research mentoring	31 ^b	12	36	73	70	103	75	63	60	77	61	46	44	13	733 ^c
Research presentations by students	—	2	19	33	71	83	78	34	35	44	17	16	39	6	475
Students who transferred to 4-year institution from community college	—	0	1	7	6	17	13	16	6	5	7	7	6	3	94 ^d
Students who graduated with BA/BS degrees	—	0	16	32	45	34	34	35	42	18	12	13	17	—	298
Students who pursued MA/MS degrees	—	0	0	4	10	9	8	11	9	14	5	6	4	5	85
Students who pursued PhD/ PsyD degrees ^e	—	1	4	3	6	1	14	12	12	11	9	2	5	1	91
Students who pursued professional degrees (MD, JD, MSW, etc.) ^e	—	1	0	2	1	5	1	7	1	6	5	2	5	1	37
Graduates from MA programs	—	0	0	1	0	7	7	8	10	3	5	2	1	—	44
Graduates from doctoral programs	—	0	0	0	0	3	3	2	4	1	1	0	1	—	15
Graduates from professional degree programs	—	0	1	0	0	0	1	0	3	4	1	3	0	—	13

OUTCOMES

^a The report was submitted before the graduation dates for the current academic year (May/June 2010). As a result, graduation counts for undergraduate and graduate programs were not available.
^b This baseline count includes ALL psychology department minority students involved in any kind of intensive research mentoring. The counts for subsequent years include only APA/NIGMS Project primary student participants engaged in biomedical/behavioral research.
^c This is a duplicative count: Each student is counted once for each year in which he/she participates in intensive research mentoring. It includes 70 students who participated for 2 years and 14 students who participated for more than 2 years. Also, this is a total of counts from program years only and does not include the baseline (pre-project initiation) count.
^d This count includes students who transferred from a 2-year to a 4-year institution with (n = 31) and without (n = 63) obtaining an AA/AS degree.
^e Three (3) students who enrolled in dual degree programs (i.e., those offering a joint professional degree and doctoral degree in psychology) are counted in both categories.

FIGURE 3

APA/NIGMS Primary Student Academic Pipeline



* Indicates students have received a terminal degree or have not, as yet, pursued a further degree after completing the given program. Note: These counts may not coincide with those in other charts and tables that list degree recipients, as some students who obtained an associate's, bachelor's, or advanced degree (i.e., those who have continued on to pursue further studies) have been excluded.

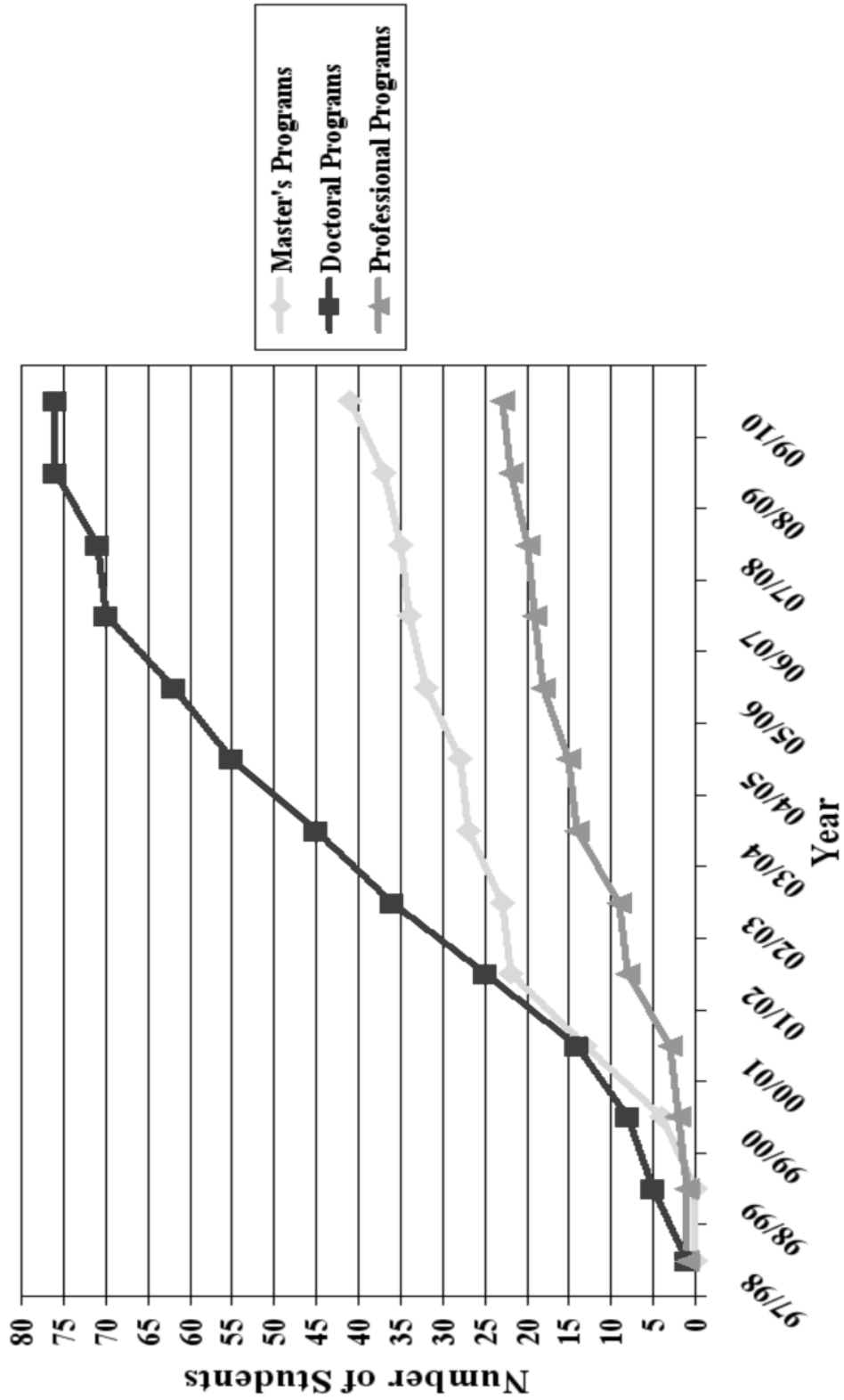
** 34 of the 94 students who transferred also obtained an AA/AS degree.

*** Includes students who entered the APA/NIGMS program as advanced degree students.

Note: All counts are non-duplicative person counts and do not reflect student participation in multiple years or pursuit or attainment of more than one advanced degree.

FIGURE 4

Advanced Degree Program Enrollment by Year



(continued from p. 18)

are those students who, for various reasons, were not engaged in intensive research mentorship but participated in other project activities). Such outreach efforts served to ensure that the projects maintained a large pool of interested and knowledgeable students for consideration for research mentorships. Outreach and orientation activities also served to increase the number of students informed about behavioral and biomedical research careers in psychology.

PROGRAM IMPLEMENTATION: SELECTED MODELS

Annual project grant awards were used primarily to implement demonstration research training activities as proposed in regional strategic plans. Programs varied in response to varying institutional capabilities and student needs. All programs involved one or more collaborative activities with other regional institutional partners. The following are brief profiles of some of the programs implemented by a number of the project's participating institutions.

The **University of Miami (UM)** Psychology Research Initiatives Mentorship Experience (PRIME) program uses a 10-week summer research program format to provide an intensive research experience. The summer begins with the PRIME Welcome Breakfast, at which new PRIME students are introduced to the program, their fellow participants, and their mentors. The students work in the laboratory of their respective mentors for 20 hours a week. They also attend a 1-hour weekly group session on topics including research methods, ethics, graduate school preparation, making poster presentations, and developing publications. Students apply what they learn by collecting, analyzing, and presenting original data at several conferences during the summer and the coming year. The summer program ends with one such presentation opportunity: the annual poster session at which students present their projects to their colleagues, mentors, and guests. Students receive 75% of their stipend during the summer and the final 25% after they participate in the poster session.



University of Miami 2010 PRIME Summer Research Program students. This program is currently funded by the Fred C. and Helen Donn Flipse Endowment to the Department of Psychology.

Noting over time that some students lacked critical knowledge, skills, and socialization necessary to conduct research successfully, UM and its partner institutions in the Southeastern Region (**Miami-**

Dade College [MDC] and Florida International University) has progressively developed additional targeted programs that could “feed” into PRIME. UM’s Freshman Advising Contact Term and Faculty Overview of Research and Undergraduate Mentorship (FACT FORUM) is a mandatory advising process for all newly declared psychology and neuroscience majors that seeks to orientate them formally to psychological research processes and opportunities. As part of the Psychology Undergraduate Experience for New Transfer Enhancement (PUENTE) Program, recent MDC transfer students are introduced to psychological research by shadowing PRIME students. The Just for University of Miami Psychology Students to Accelerate Research Training (JUMPSTART) is a PRIME companion program for students who have not taken the prerequisite courses to obtain independent research credit. JUMPSTART students spend the summer working alongside mentors and PRIME students to complete a literature review, contemplate various research hypotheses, and develop a research proposal that is presented at the annual summer poster session.

Similarly, **Prince George’s Community College (PGCC)** provides its student participants with summer training opportunities through its APA/NIGMS Summer Institute. The 6-week experience was designed to expose students to the research enterprise and to develop those student skills necessary for careers in the behavioral sciences (e.g., critical thinking, quantitative reasoning, and information literacy/documentation). The Summer Institute also incorporates collaboration between PGCC and Howard University. This partnership provides an intensive research experience that culminates in the development of a research project focusing on gender and personality traits as predictors of cardiovascular health. The final component of the Summer Institute is a series of statistics workshops. Products of each student’s work include an oral research presentation and an abstract that is submitted to the Annual Biomedical Conference for Minority Students (ABRCMS), PGCC’s Science, Technology, and Research Training (START) Conference, and/or the Johns Hopkins Bloomberg School of Public Health’s Addictions Research Conference. Participation in the Summer



Undergraduate students Avis Jackson (*left*) and Lynnett Gray, both from Morgan State University, participated as panelists at the START Conference, held at Prince George’s Community College on April 18, 2006.

Institute motivates students to participate in ongoing research and professional development initiatives throughout the school year.

The program at PGCC also takes full advantage of its partnership with the other institutions in the Eastern Region (**University of Maryland College Park [UMCP] and Morgan State University [MSU]**). The region's collaborative project, Enhancing Research Training Opportunities for Ethnic Minority Students in Psychology (ETEP), provides intensive mentored research opportunities for qualified students who had taken statistics, advanced mathematics, or research methods and had indicated an interest in the biomedical sciences and graduate studies in the biomedical areas of psychology. PGCC students are given the opportunity to participate in a mentored 1–2-year laboratory-based research program at UMCP or MSU, including the UMCP Summer Institute.

The **NSPIRE Project [Native Student Pipeline in Reclaiming Education]** provides a model of a culturally centered program that incorporates all of the institutions in the Northern Plains Region (i.e., Sinte Gleska University, Sisseton Wahpeton College, and the University of South Dakota [USD]). NSPIRE seeks to improve the recruitment, retention, and training of Native American students in the educational pipeline for careers in human services and psychology. Project funds are used to sponsor both a Native American Cultural Advisor and a Council of Indigenous Advisors, who provide grounding in the context of tribal culture and community for the project, its students, and their institutions. As a result of the efforts of these advisors, USD has effected changes in the advising, housing, counseling, and academic support of all of USD's American Indian students, which very significantly increase their retention rates.



University of South Dakota NSPIRE Project's Council of Indigenous Advisors (left to right): Diane Williams (Cheyenne River Lakota); Dr. Duane Mackey (Santee Dakota); Gene Thin Elk, Cultural Advisor (Sicangu Lakota); Dr. Wayne Evans (Sicangu Lakota); and Kathy Prasek (Minnecouju Lakota).

NSPIRE also engages its students in research relevant to Native American communities in South Dakota, specifically Lakota peoples. The project's collaborative research group is involved in the

continuation of a research effort originally headed by Roger Hornby, a former core team member at Sinte Gleska who was tragically killed in a car accident in 1996. The research group studies ways to improve the training of human service providers to culturally and appropriately meet the needs of Lakota community members by incorporating cultural awareness, self-healing, and understanding of inter- and intratribal legacies and relationships among and with federal and state governmental agencies. Students also collect, clean, and code survey and interview data related to developmental, relational, culture-specific, and help-seeking behaviors.

Other project initiatives include the maintenance of an NSPIRE website that includes information on the project and its partner institutions. Outreach to Native American high school students, another major focus, involves the development of an informational brochure, a newsletter, and videos; recruitment fairs and visits; invitational campus tours; and a mentoring program. Professional development and academic support are also provided for project students and faculty through research involvement, educational programming, tutoring, and opportunities to attend and present at conferences, including the project-sponsored Building Bridges/Youth Red Road Conference.

The Scholars Program at **California State University, Dominguez Hills (CSUDH)** provides a mentored research experience for up to 2 years for selected students. Student Scholars are paired with a faculty mentor for a minimum of 6–8 hours per week of research mentoring and laboratory work. With assistance and encouragement from their mentors, students develop their own research projects and attend educational workshops and lecture series on pursuing advanced degrees and careers in psychology. Students also receive career guidance, GRE preparation resources, financial assistance with graduate school applications, and opportunities to travel and present research at local and national conferences.

CSUDH also uses a portion of its APA/NIGMS Project funding to sponsor a conference called *What Can You Do With a Degree in Psychology?* The conference features a welcome by the president



Doctoral panel at the conference sponsored by the APA/NIGMS Scholars Program at California State University, Dominguez Hills.

of the university and presentations by successful CSUDH alumni with bachelor's, master's, and doctoral degrees in psychology. These alumni share information on their current positions and overall career paths and advice on obtaining and using degrees in psychology at all levels. Over 200 students from the host campus, local high schools, and community colleges participate in the conference.

Activities of the Midwest Region have an interdisciplinary focus, which is grounded in collaboration between the psychology department at **Chicago State University (CSU)** and the biology department at **Truman Community College (TCC)**. Project students participate in a CSU/TCC jointly taught and jointly listed biopsychology course. In addition, CSU students may enroll in TCC's tissue culture course. Both institutions have project-funded academic support centers. At TCC, the Center for Achievement in Life Sciences (CALFS)/Center for Science Success (CSS) provides both an intensive 2-week research experience and, through partnership with area Chicago universities, intensive summer biomedical research experiences. CSU's Life Sciences Center provides educational resources, academic support services, GRE and other skill-building workshops, and behavioral/biomedical research experiences not only to CSU and TCC project students but also to students in CSU's biology and chemistry departments.

PROGRAM INSTITUTIONALIZATION

Project leaders at participating institutions also successfully leverage project funds, project success, and the accomplishments of student participants to effect systemic change in their institution. In the process, they infuse the values and goals of the project into the regular operations of the institution and weave the project itself into the fabric of the department. Efforts to institutionalize the project demonstrations include securing additional funding from institutional and external sources, adding project-initiated courses to the psychology curriculum, developing ongoing programs, and using project funds to develop programs that impact a broader audience. Listed in Figure 5 are selected specific examples of institutionalization submitted by project team leaders.

Other examples of institutionalization include the creation of **Chicago State University's (CSU) Life Sciences Center (LSC)**, which provides academic support, educational planning, and research experiences. Initially, 50% of CSU's APA/NIGMS Project funds were devoted to the establishment and operations of the LSC. These funds constituted 80% of the Center's direct costs,

with the remainder provided by the psychology department. Over time, the department increasingly assumed responsibility for LSC operating costs (e.g., payment of student workers, purchase of library materials). Participating **Truman College (TCC)** project students may use LSC services, as may all students in CSU's departments of psychology, biology and chemistry (which results in savings to these departments). In turn, the chemistry department contributes 80% of the cost of LSC's GRE training workshops and sets aside slots in its NSF-funded summer research program (CLIMB) for project students.

CSU parlayed its highly successful peer mentoring program—which evidenced retention rates significantly higher than those for the department and the institution—into a successful application for a State Education Retention Grant. This grant provides stipends to peer mentors and laptops to all participants in the peer-mentoring program.

The Dean at **Prince George's Community College (PGCC)** annually contributes funding for the PGCC Science, Technology, and Research Training (START) Conference, which is attended by high school, community college, and 4-year college students throughout Maryland. Faculty and students from all of the Eastern Region's participating schools also attend and present papers.

The **University of Miami** Provost and Dean of the School of Arts and Sciences awards the Department of Psychology \$60,000 per year for PRIME II. This program essentially duplicates the APA/NIGMS-funded research mentoring effort PRIME. However, PRIME II supports students who are academically eligible to participate in PRIME but who do not meet the criteria because they do not qualify as ethnic minorities or identify as minority but have psychology research interests outside of the biomedical focus of PRIME. While PRIME II was developed in part to benefit nonminority students, a disproportionately higher number of PRIME II stipends are awarded to ethnic minority students. Most recently, in the absence of APA/NIGMS Project funding, the PRIME summer research program is being funded by the Fred C. and Helen Donn Flipse Endowment to the Department of Psychology.

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Project leaders at participating institutions also successfully leverage project funds, project success, and the accomplishments of student participants to effect systemic change in their institution. In the process, they infuse the values and goals of the project into the regular operations of the institution and weave the project itself into the fabric of the department.

FIGURE 5

Models of Institutionalization

UNIVERSITY OF CALIFORNIA, LOS ANGELES

- Annual award of additional funds and scholarships from Vice Provost of UCLA College of Letters & Sciences to support 16 additional students.
- Addition of PROPS (its APA/NIGMS Project) as a line item in the department budget supplements activities, staff time, and supplies.
- PROPS seminar formalized as 2-credit course every quarter.
- Yearly donation of \$2,000–\$4,000 from private donor.
- Recognition of PROPS as model program for college and tangible evidence of department's commitment to diversity.

UNIVERSITY OF MIAMI:

- Continuation of many summer program participants as honors research students and assistants in mentors' labs.
- Extramural faculty grants used to supplement program budget.
- Matching funds provided by Provost for 8 years of the project.
- Development of PRIME II.
- Donor funding secured to continue program during no-cost extension.
- Development of a series of graduate school preparation seminars.

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

- Support from Dean's and Provost's offices for faculty and student travel for conference presentations.
- Recognition of project students on college newsletters and website.
- Designation of project as a department committee means that project can be discussed in staff meeting and leaders receive service credit.
- Donation of department secretary's time for administrative support.
- Departmental funding for printing of student posters.

FLORIDA INTERNATIONAL UNIVERSITY

- Annual support from Chair to run summer course, regardless of enrollment levels.
- Development of PRIME website.
- Commitment to the continuation of the project beyond termination of grant funding.
- Recognition of PRIME as an institutional tradition.
- Establishment of summer course titled Advanced Research Methods and Careers in Psychology.

FIGURE 6

APA/NIGMS Project: Students' Current Status (as of October 31, 2009)

- 61 are enrolled in a 2-year institution.
- 254 are enrolled in a 4-year institution.
- 140 are enrolled in a graduate program.
- 41 are enrolled in a master's program (many of which are feeders into PhD programs), of whom 27 are enrolled in an MA program in psychology; 7 in programs in unknown disciplines; and 6 in programs in education.
- 76 are enrolled in doctoral programs, of whom 52 are enrolled in a PhD/PsyD program in psychology; 13 in a PhD program in some other biomedical/behavioral discipline (i.e., neuroscience, molecular biology, or health care research); 2 in a PhD program in a nonbiomedical/behavioral discipline; 9 in programs in unknown disciplines.
- 23 are enrolled in a professional program, of whom 7 are in MD programs; 6 in MSW programs; 8 in other professional programs (i.e., law or public health); 2 in programs in unknown disciplines.
- Of the 27 students who have earned terminal MA degrees, 6 are known to be employed in the biomedical/behavioral workforce.
- Of the 15 of students who have earned doctoral degrees, 7 are known to be engaged in academic teaching/research; and 6 are known to be engaged in other sectors of the biomedical/behavioral workforce.
- Of the 13 of students who have earned professional degrees, 2 earned degrees in law, 6 in social work, 1 in business administration, 1 in public health, and 2 in an unknown field; 2 are known to be employed in law firms; 2 are known to be employed in mental health care agencies; and 1 is known to be pursuing a doctoral degree.

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STUDENT PARTICIPANTS' CURRENT STATUS

The greatest evidence of the outcomes of the APA/NIGMS Project is the success of the 635 (unduplicated) students who have participated in the project. See Figure 6 for a snapshot of the current status of the project's primary students (see also Appendix B: <http://apa.org/pi/oema/programs/recruitment/student-accomplishments.pdf>).

SELECTED STUDENT PERSPECTIVES OF PROJECT IMPACT

During the term of the project, APA staff periodically solicited statements from participating students of their individual perceptions of the project's benefits and impact. Some of these statements, accompanied by brief updated biographical information on the students, follow. One cannot help but be struck by the immense value students place on their mentorship experiences. For this, the credit must go to the project's highly committed project team members and its more than 140 research mentors. The team members and mentors not only provide participating students with the fundamental knowledge and skills needed for successful graduate study for a research career but they also transform lives through nurturance of students' personal sense of confidence, competence, and value. In doing so, project team members and mentors contribute to ensuring a talented, well-trained, and diverse future biomedical research workforce for the nation.

Tiffany Brannon—Florida International University

Tiffany Brannon, a former participant in the Florida International University (FIU) PRIME Project, received her BA with honors in 2007. She then began doctoral studies with full university funding as one of three newly admitted students in the social psychology program at Stanford University. She is also the recipient of a Ford Foundation Fellowship.



I am able to look back on my time as an undergraduate at FIU and proclaim, "Mentorship has made the difference." The power of mentorship and the role that it has played in my undergraduate career became personally evident after a recruitment weekend at a graduate program to which I had applied. I can remember looking around me at one of the events and realizing that I was the only

African American who was invited to interview. This had such an effect on me that I later mentioned it to my graduate mentor. In response to my attempt to understand why there was not more diversity among the prospective students, my graduate mentor stated, "They did not have the mentorship."

My graduate mentor was correct. ... Chief among the beneficial mentorship experiences that I had ... was my participation in the PRIME program at FIU. ... As a PRIME fellow, my research pursuits were nurtured, and I was given the guidance and resources needed to pursue my graduate and professional goals. As soon as I enrolled in the PRIME program, I perceived a message of investment. The PRIME faculty was invested in the growth of my research inquiry and in my overall development as a scholar. This sense of their investment in me eased my anxieties about applying to graduate school. ... Another way in which the PRIME program invested in me ... was by awarding me a travel grant ... [that] enabled me to travel to Stanford University to conduct research related to my thesis. ... Knowing that the PRIME faculty believed in my abilities as a student researcher and that I was worthy of a travel grant gave me humble confidence. ... I am proud to be a product of great mentoring relationships like those provided by PRIME. ... Thanks to effective mentoring, I am an ethnic minority and first-generation college graduate, ... yet I am reminded of the great need for more programs like PRIME. I sincerely hope that programs like PRIME can serve as a testament to and model for providing mentorship to minority undergraduates.

Rona Carter—Florida International University

After participating in the PRIME project at Florida International University and being awarded the Psi Chi Honor Society's National Research Award, Rona Carter entered FIU's doctoral program in developmental psychology. She received her PhD in 2008 and is currently a research fellow at the University of Michigan, where her research focuses on the interactions and contributions of developmental processes, social contextual factors, and cultural/ethnicity factors on emotional and behavioral problems and health outcomes among culturally diverse youth.



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Rona Carter (continued from p. 27)

I was first exposed to research psychology when I attended the annual APA convention in Washington, DC, in 2000, where I met a postdoctoral fellow who was working with Dr. Wendy Silverman at FIU. During the course of our conversation, we discovered we had similar interests. So the postdoc encouraged me to assist him in his research on child anxiety, and I did. That experience became my passport to admission and participation in the APA/NIGMS–funded FIU PRIME program, working with Dr. Silverman in her laboratory. Later, I was honored to be granted the award for best presentation at the University of Miami PRIME Conference.

I think the connections I made with the students in the PRIME program and being able to have a support network of people—to talk to about my research projects, to practice presenting and defending research results with, and getting feedback from the students in addition to the mentors—all of these were really helpful to me.... The project I worked on as a PRIME student... sparked my interest in pursuing that particular area of research for my master's thesis... and led to my commitment to pursue a research career in developmental psychology.

Denise Casillas—University of South Dakota

Denise Casillas, a member of the Lakota tribe, was raised on the Cheyenne River Sioux Reservation. She initially became involved in the APA/NIGMS Project as an undergraduate at the University of South Dakota. Later, that project encouraged and supported her application to USD's MA program in interdisciplinary studies with a concentration in psychology, counseling, and alcohol and drug abuse. Subsequently, she was admitted to USD's doctoral program in clinical psychology and has completed her internship. Currently, Denise is working for her tribe as the director of its Tribal Substance Abuse Program while completing her dissertation.



I first became involved in the APA/NIGMS Project at USD as an undergraduate when the USD project team leader asked me to do volunteer field work surveying residents of the Standing Rock Reservation, where the project's Northern Plains Regional institutions were engaged in a collaborative research project related to that reservation's epidemic of teen suicides. Later, the project

encouraged me to apply and helped me gain admission to USD's MA program in interdisciplinary studies. With the support of the USD project, that program served as a bridge to strengthen my knowledge and skills... [and enabled me] to eventually apply to the USD doctoral clinical psychology program. Throughout my graduate studies, my involvement with the USD APA/NIGMS Project continued. For example, I participated in its peer-mentoring program. After my admission to the PhD program, the project immediately linked me with a research mentor and encouraged me to apply for an APA Minority Fellowship—which I was awarded in 2002! When a couple of other project students and I encountered problems in our statistics course, the project provided funds for a statistics tutor. The project was always there to encourage and support me whenever I encountered critical academic and personal crossroads. And through service as a peer mentor, I was able to share with others my journey and the skills and knowledge I have acquired.

Andres De Los Reyes—Florida International University

Andres De Los Reyes began his participation in the FIU PRIME Program in 2001. In 2002, he received his BA degree and received a National Institute of Mental Health fellowship for doctoral studies in clinical psychology at Yale University. He received his PhD from Yale in 2008. He is currently an assistant professor of psychology at the University of Maryland in its clinical psychology program, where his research focuses on (a) understanding why different measurements of behavior yield different conclusions in research and how these differences influence the science behind identifying effective treatments, and (b) what happens to children when the people in their lives do not see important aspects of their behavior in the same way.



Perhaps the greatest experience I had as a PRIME fellow was simply collaborating with a professor on research that I found interesting. This collaboration gave me an understanding of whether a career in research was something I could pursue. Moreover, I was fortunate because PRIME provided those sorts of funded research experiences during the summer months, so I was able to gain research experience without having other burdens.

Most important, my research experiences in the PRIME program played a major role in my belief that the research collaborations I had with my graduate school advisors were the aspects of graduate training that I felt most comfortable with and most proficient in. Indeed, PRIME gave me some of my first experiences in aspects of research collaboration that I would commonly encounter in graduate training, such as data collection, hypotheses testing, and receiving commentary from a research advisor. As a result, when I initially encountered these aspects of research collaboration during graduate training, I was able to excel in them from the outset because of my experience in PRIME.

Being a PRIME fellow allowed me to gain the kinds of experiences prior to graduate school that enabled me to decide whether an academic career was right for me... and facilitated my entrance in research collaborations.... As a result, PRIME may have a lasting influence on the remainder of my graduate training and, indeed, on my academic career.

Nathaniel Giles III—Prince George's Community College (MD)

As a student at Prince George's Community College (PGCC), Nathaniel Giles III participated in the Project's ETEP project. At PGCC he was on the dean's list and a member of the Psi Beta Honor Society. He attended and presented at the national Annual Biomedical Conference for Minority Students, where he won the first place award for community college student research in psychology. He also participated in the National Institute on Drug Abuse Summer Research Program at the University of Rochester. He is currently completing his undergraduate studies at Howard University, where he is engaged in psychophysiological research.



Since joining the APA/NIGMS Project at PGCC, it seems as if Pandora's Box has opened up for me.... I have had many valuable experiences as part of the ETEP program and have learned much, such as the basics of research protocol, how to effectively and correctly present research, how to improve networking skills, and how to analyze and critique psychological journal articles. All of my newly acquired skills are put to practice on a regular basis.... The

grant has given me, as a scholar and as an aspiring psychologist, a head start. Without the grants funding, PGCC might not have had the psychology research team, and I might not have known about the wide array of opportunities available to not only minority students, but to psychology majors as a whole.

Lynn Hernandez—Florida International University

Lynn Hernandez began participating in the FIU PRIME program in 2001. After receiving her BA, she entered FIU's MA program in psychology and received her MA in 2004. She then entered FIU's doctoral program in developmental psychology and received her PhD in 2007. In 2008, she was a senior postdoctoral research fellow for the NIAA/NIDA T32 program at Brown University. In 2009 she was the recipient of the Junior Investigator Award from the Research Society on Alcoholism. She is currently an assistant professor of community health (research) at Brown University, where her research interests focus on (a) adolescent treatment development and outcome research, especially as these relate to culturally sound interventions for adolescents of diverse ethnic/racial backgrounds engaging in risk behaviors; and (b) psychosocial and ethnocultural variables as protective and risk factors in adolescents' developmental trajectories.



The opportunity to be a part of the FIU PRIME as a minority student was one of the most beneficial experiences of my undergraduate training. Not only did this program allow me to carry out my first research project, but it also enabled me to see all the possibilities that exist beyond undergraduate training for minority students to excel in the world of psychological research. It gave me the opportunity to make meaningful connections with professors... who were genuinely interested in minority students' professional development. The most important connection I made during my participation in PRIME was with my PRIME mentor, Dr. Marilyn Montgomery. This is a relationship that has continued far into my graduate school training.

PRIME also allowed me to see that a career in psychological research was attainable for me. As a member of a Latino family who migrated from Cuba,... obtaining a graduate degree seemed like a far-fetched

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Lynn Hernandez (continued from p. 29)

idea. However, my experiences with PRIME and the opportunities it gave me to attend conferences where I could interact with other minority researchers who encouraged me to approach graduate school and research with optimism. Additionally, the connections made with fellow PRIME students who also shared similar experiences played an important role.

The opportunity to carry out my first research project from start to finish and later present the findings at a conference was an invaluable experience [that] allowed me to see not only how much I would enjoy a career in research, but also helped me develop the research skills I would need to excel in graduate school. ... Therefore, PRIME prepared me for many graduate school tasks before I had even applied to graduate school.

I can't help but acknowledge what an important role this program played and continues to play in my professional development. Seeing the benefits that I obtained from my participation, ... I look forward to the day when I will be able to mentor other minority students and encourage them in the same way that PRIME encouraged me.

Kizziah Knight—Prince George's Community College (MD)

At the time of her participation in the APA/NIGMS Project, Kizziah Knight was a psychology major, honors student, and Psi Beta Honor Society member at Prince George's Community College. As a project participant, Kizziah attended and presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS) two times. She also participated in the National Institute on Drug Abuse (NIDA) Summer Research Program two times—once at University of Pennsylvania and later at Harvard University. She later transferred to the University of Maryland, College Park.



As an undergraduate psychology major, I have been constantly reminded of the importance of hard work, networking, and determination. ... [For example], in Fall 2007, I attended the ABRCMS Conference, where I presented a poster titled “Stressful Encounters: Exploring the Relationship Between Cultural Orientation, Affect, and Cardiovascular Health.” The conference

enabled me to network and interact with various professionals in psychology and to gain knowledge of some of the topics my peers were interested in. By networking, I was offered several internship possibilities along with scholarships and job offers. This just goes to show the importance of networking—you never know whom you will be standing next to, or whom you may have the opportunity to meet. ... I strongly encourage everyone to look into the many internship and research opportunities, because they truly train you for your future and offer an excellent networking experience.

More recently, I participated in the PGCC annual Science, Technology, and Research Training (START) conference, which is co-sponsored by the APA/NIGMS Project at PGCC. I conducted both a poster and an oral presentation, for which I took home one of the top three awards. Also, at START I was blessed with the opportunity to facilitate a roundtable at which I shared with my peers from various schools my recommendations on networking, choosing a major, applying for internships, and working on research projects. ... This is my favorite part of attending conferences—I enjoy hearing my peers and graduate students encourage us in our academic pursuits, and it allows you to share in the “you can do this!” spirit.

Victor Rico—California State University at Dominguez Hills

Victor Rico enrolled in the CSUDH's Scholars Program, funded by the APA/NIGMS Project, as a sophomore, after being exposed to psychological research during a summer internship. During his participation in the Scholars Program, he made numerous research presentations—many with his research mentors—and received the Psi Chi Honor Society's Regional Research Award. He received his BA from CSUDH in 2003 and immediately entered the doctoral program in counseling psychology at the University of Texas at Austin, from which he subsequently received his PhD.



I started in the Scholars Program by participating in several seminars at both CSUDH and UCLA related to preparing for and applying to graduate school. Then I engaged in several mentored research experiences with a both a developmental and a social psychologist. The Scholars Program also facilitated my application to and

participation in a summer research program at the University of Utah. Later, I had the courage and confidence to apply for and attend a diversity program in Thailand in the Chang Mai area, which was great! I don't think I would have ever done that [if I hadn't been involved] in the Scholars Program. Also, as a result of the support I received from both faculty and graduate student mentors, I was able to develop a strong impressive statement of purpose and secure strong letters of recommendation to support my graduate school applications. My mentors offered me invaluable insight into the various aspects of a career in psychology and, in particular, clinical and social psychology.

As a freshman, I wasn't really sure what I wanted to do with a degree in psychology. The APA//NIGMS Scholars Program helped me to narrow down my decision and encouraged me to participate in other programs.... My parents are not college educated. They barely have I guess a third-, fourth-grade level education. They came from Mexico. They don't really know what the process of getting into graduate school is—so this [the Scholars Program] provided all the resources.

SCHOLARLY PRODUCTS

The bulk of the project's scholarly products are reflected in the more than 493 research poster/paper presentations and 39 articles and book chapters submitted for publication by participating students. However, APA staff and institutional project leaders also engaged in scholarship that focused on the project's activities and outcomes. The project's knowledge regarding pipeline and transformational systemic approaches was disseminated through their efforts, which also helped to promote national minority research training competence. Below is a partial listing of their work.

Conference Presentations

- Carrier, L. M., & Davis, R. (2001, April). *The APA/NIGMS Scholars Program: Facilitating student progress through the biomedical sciences educational pipeline*. Paper presented at the CSUDH-ECC Building Bridges Conference, Carson, CA.
- Carrier, L. M., & Mojica, J. (2008, October). *Graduate school preparation for students from underrepresented groups*. Paper presented at the 38th Annual International Society for Exploring Teaching and Learning Conference, Las Vegas, NV.
- Clifford, B., Todd-Bazemore, B., Foote, B., Caraway, S. J., Decorah, M., & Pond, D. (1999). *Pipelining Native students in higher education: Recruitment, retention & training*. Workshop presented at the annual meeting of the American Indian Higher Education Consortium, Billings, MT.

- Holliday, B. (1997, April). *Barriers to undergraduate and graduate matriculation among minority students in the social and behavioral sciences: The response of the American Psychological Association*. Paper presented at the "Exploring the Role of Social and Behavioral Science Careers in the 21st Century" conference, sponsored by the Louisiana Alliance of Minority Participation and the National Science Foundation, New Orleans, LA.
- Holliday, B. (1999, April). *Increasing minority participation in biomedical research through systems transformation*. Paper presented at the Lonnie E. Mitchell National Substance Abuse Conference, Baltimore, MD.
- Holliday, B. (2003, October). *Ensuring the success of underrepresented groups in STEM learning environments: The role of disciplinary societies and educational associations—The American Psychological Association's "Developing Minority Biomedical Talent" Project*. Paper presented at the Project Kaleidoscope Assembly, Glassboro, NJ.
- Holliday, B. (2007, September). *Increasing minority participation in psychology*. Keynote address presented at the Oklahoma Network on the Teaching of Psychology, Oklahoma City, OK.
- Scott-Johnson, P., Wellens, R., & Richardson, D. (2006, November). *Developing minorities for graduate training*. Paper presented at the annual meeting of the Association of Heads of Departments of Psychology, Atlanta, GA.
- Todd-Bazemore, B. (2004, October). Paper presented at the Indian Child Welfare Conference, Sioux City, IA.
- Todd-Bazemore, B. (2004, June). Paper presented at the Indian Health Service Professional Development Conference, Denver, CO.
- Todd-Bazemore, B., & Clifford, B. (2004, March). Paper presented at the 23rd Annual American Indian Higher Education Consortium Conference, Billings, MT.
- Todd-Bazemore, B., & Thin-Elk, G. *Native American student retention model*. Paper presented at the NSPIRE Partners Meeting, Sloan, IA.
- Publications**
- Caraway, S. J. (2001). Toward increasing the number of behavioral and cognitive-behavioral ethnic minority therapists. *The Behavior Therapist, 24*, 210–211.
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PROJECT ACTIVITIES AND ACCOMPLISHMENTS: THE 2004–2009 REPORTING PERIOD

In the APA/NIGMS Project's 2003 Revised Competing Continuation Application, specific goals were set for the project's final reporting period. These goals were framed in terms of the two types of major project activities—that is, activities related to the project's systemic approach and pipeline training approach. Measurable goals were developed for each of the procedures.

The continuation application originally requested funding renewal for a 5-year period. However, the grant was only renewed for a 3-year period, and the program operated without additional funding during the last 2 years of the reporting period. Consequently, the goals were adjusted accordingly. Some goals were modified to accommodate an abbreviated funding period and some, which were dependent on increased funding, were eliminated altogether. In the following section, we discuss the project's modified goals (as stated in the Progress Report section of the January 10, 2006, APA/NIGMS Project Grant Application) and the project's success or failure in meeting the respective goals. Specific accomplishments associated with the goals are reported as well.

Systemic Goals and Accomplishments

A series of goals were developed that corresponded specifically with the project's systemic approach to institutional transformation and building departmental capacity to recruit, retain, and train ethnic minority students.

PARTNERSHIP DEVELOPMENT AND ENRICHMENT

Goal: *Project will continue to promote education and information on the state of knowledge and practice related to minority recruitment, retention, and scientific training.*

The partnership development goal was accomplished, resulting in promotion of ethnic minority research training at participating institutions and throughout psychology. The project's well-established institutional sites continued to develop collaborative activities.

Efforts to enrich these partnerships and their focus on education and information activities included the following:

- **Newsletters and media:** Newsletters and the media were one means of disseminating information about the project and minority research training. These included APA publications, such as the project's national newsletter, *Pipeline*. In addition, several institutions developed newsletters and other promotional materials: The University of Miami psychology department's newsletter (*Psychology News*) and the Northern Plains Region's newsletter (*The Native Student Pipeline*) were primary vehicles for communicating those programs' goals and their students' accomplishments.
- **Electronic communications:** Eight projects developed websites (six of which remain active). In addition, APA continued to enhance its national APA/NIGMS website (<http://www.apa.org/pi/oema/programs/recruitment/nigms.aspx>), and several of the projects also maintained listservs. The Northern Plains Region continued its use of video teleconferencing among its project sites.

- **Meetings and conferences:** APA consistently hosted an annual voluntary projectwide brunch meeting during the APA conventions in 2004, 2005, and 2006. Also, in 2004, 2005, and 2006, APA was a sponsor of the Annual Biomedical Research Conference for Minority Students and contributed \$1,000–\$2,000 for poster prizes. Plans for a national project conference were eliminated due to lack of funding.

NEEDS ASSESSMENT

Goal: *Conduct posttest administration of the Diversity Needs of Academic Settings (DiNAS) Survey*

This goal was eliminated due to lack of funding. However, APA contacted numerous sources, including NIGMS and NSF, in search of funding for the posttest, without success. The failure to secure such funding was extremely disheartening, as we believe the DiNAS database is unique and unparalleled in its scope and size as a global and more distal assessment of a systemic approach to ethnic minority training and its effects on departmental cultures; a posttest administration would result in exceptionally notable and valuable findings.

DEMONSTRATION (STRATEGIC PLAN) IMPLEMENTATION

During the first 3 years of the current reporting period, each of the 14 participating institutions received annual grants in the amount of \$24,300. These funds were used to implement a variety of training activities, many of which are mentioned throughout this report and in the Training Goals and Accomplishments section (see pp. 38–41). However, during the final 2 years of this reporting period, the project operated in an “extension of time only” status. Therefore, during that period, implementation funds were awarded to participating institutions on a competitive basis. Along with annual progress reports, participating institutions were asked to submit proposals for summer programs for the Summer 2008 and Summer 2009 semesters. Proposals were reviewed and funded for a maximum of \$15,000. The summer programs that were funded are shown in Table 4.

DOCUMENTATION, ASSESSMENT, AND EVALUATION

Goals: *Expand the projectwide Minimum Data Set.*

Encourage participating institutions to develop and install systems for student tracking.

Ensure project accountability by requiring institutions to provide annual written reports.

Refine APA’s comprehensive documentation procedures.

The project maintained a strong commitment to aggressive and ongoing documentation, assessment, and evaluation of its procedures, activities, and outcomes.

Documentation

Project activity documentation occurred through several means: strategic plans; institutional progress reports; continuing updates of the Project Chronology of Major Accomplishments; and required periodic progress reports to NIGMS, including updated tables of student accomplishments. Documentation in part was assured by linking receipt of project reports by APA to disbursement of demonstration grant funding.

Expansion of the project’s Minimum Data Set was attained through the development of the Assessment of Mentors and the Mentoring Experience for projectwide use. Greater comparability of outcome measures across institutions and regional centers was also achieved by standardizing the project progress report format. The data set was also augmented by departmental/institutional responses to supplementary questionnaires, issued throughout the reporting period. These questionnaires requested data regarding value added, best practices, program design and implementation, and student case studies.

The *student tracking systems* goal was partially attained. Three additional institutions (CSUDH, CSU, and Truman Community College) developed student tracking database systems. Many of these were modeled after the system developed and shared by the UCLA PROPS project. Such efforts promoted more robust project outcome data. A standardized form for reporting these data to APA was also developed, helping to standardize the type and format of data collected and reported by the participating institutions.

Assessment and Evaluation

These occurred at three levels: The projectwide level, the regional center/institutional level, and the departmental level. APA was responsible for projectwide assessment, while participating institutions conducted evaluations at the other two levels.

The *Project Evaluation Survey* was readministered and slightly revised in 2006. The survey requested assessments of the APA/NIGMS Project related to programmatic focus, institutional and departmental change, departmental outcome and participating student impact, departmental capacity, and project consultants. The survey provided data for development of project goals.

Of the 14 project institutions, 13 returned a completed survey. The survey instrument included 17 multiple-choice items concerned with the success and impact of specific aspects of the project, as well as the institutions’ general satisfaction. Overall satisfaction with the project was high, with a total mean of 4.5 out of 5: Eight institutions indicated that they were “very satisfied,” and four of the remaining institutions indicated that they were “satisfied” with the project. Other highly rated items involved the success of the

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TABLE 4

Competitively Funded Summer Programs: 2008 and 2009

Institution	Proposed Program	Program Expenses	Award Amount
Florida International University (FIU)	Supplementary funding for FIU PRIME Summer Program : laboratory experience facilitating student research, including designing, conducting, and presenting findings of projects.	(a) 2008 honors thesis research support; (b) conference travel allowance for all fellows; (c) salary for graduate student coordinator; and (d) competitively awarded full stipends for fellows.	\$15,000
	Supplementary funding for the UM PRIME Summer Science Fellowship : annual program including research mentorship, presentation training, academic and career development, an introductory breakfast, and a closing ceremony and poster presentation.	For each of an additional 5 ethnic minority fellows: (a) partial stipend; (b) poster session expenses; and (c) stipend for a minority graduate student mentor.	\$15,000
	Prince George's Community College (PGCC)	Full funding for the PGCC Summer Institute : 5-week research experience offering training in conducting and presenting research designed to build skills such as writing literature reviews, analyzing data, and developing and delivering research presentations.	(a) Summer salaries for 1 full-time and 2 part-time faculty members; (b) stipends for 5 students; (c) food; (d) supplies, such as books, folders, and certificates; and (e) student and faculty travel between PGCC and Howard University.
University of California, Los Angeles (UCLA)	Supplementary funding for the UCLA Intensive Summer Undergraduate Research Experience : skill development program offering mentorship and collaborative experience in designing and conducting research for students interested in pursuing doctoral degrees and research careers.	Full stipends for 5 students.	\$15,000
	Truman College	Supplementary funding for Truman's Student Research Internship Program : research immersion program offering students intensive mentoring and experience in laboratories at Truman and partner institutions (e.g., Chicago State University, DePaul University, Illinois State University, and Dominican University).	(a) Stipends for 3 interns; (b) cost sharing with partner institutions for students expenses, supplies, and faculty release time.
Florida International University (FIU)	Supplementary funding for FIU PRIME Summer Program : laboratory experience facilitating student research, including designing, conducting, and presenting findings of projects.	(a) 2008 honors thesis research support; (b) conference travel allowance for all fellows; (c) salary for graduate student coordinator; and (d) competitively awarded full stipends for fellows.	\$9,000
	University of Miami (UM)	Supplementary funding for the UM PRIME Summer Science Fellowship : annual program including research mentorship, presentation training, academic and career development, an introductory breakfast, and a closing ceremony and poster presentation.	(a) Partial stipend; (b) poster session expenses; and (c) stipend for a minority graduate student mentor.
University of California, Los Angeles (UCLA)	Full funding for the UCLA Summer Research Program : mentored collaborative research experience, research skills training, and academic and career consultation and information.	Full stipends for 5 students.	\$15,000

AWARD DATE

5/2008

6/2009

(continued from p. 34)

regional/institutional programs and activities (4.7 out of 5), the positive impact on the students in the department (3 out of 3), and the positive impact on the number of students transferring to 4-year institutions (3 out of 3); see Table 5 for a summary of these data.

Open-ended questions also invited institutions to elaborate on their responses to previous items and offer opinions and suggestions for improvement. The first series of these questions asked respondents about the major strengths of the overall project and recommendations for improving it. Responses regarding *project strengths* included the opportunity for students to have summer research experiences that were related to their curriculum and that encouraged them to go to graduate school; other strengths were the diversity of the institutions and the core team members, as well as the continuity of the program, which allowed participating students to see and be encouraged by the accomplishments of former students.

Recommended changes included using some program resources to begin encouraging interest and participation in research among students at the elementary, middle, and high school levels. Respondents also suggested planning national gatherings, such as conferences, to allow students and mentors to share research and program innovations.

Several of the survey's open-ended items focused on the "value-added" to the institutions and departments due to their participation in the APA/NIGMS Project. Noted advantages include helping to unify the psychology department by involving faculty from various programs, increasing awareness of minority recruitment and retention issues, and increasing students' understanding of the value of research. It was also noted that students have been able to develop research skills beyond what they could have gained in the classroom and that institutions have been able to use the project as a recruitment tool for new minority students.

Goals related to *project accountability* and *refined documentation procedures* were achieved by ensuring that participating institutions' receipt of demonstration funding was contingent on APA's receipt of institutional annual reports on the progress of five major types of efforts: (a) project implementation activities; (b) project assessment and evaluation; (c) partnership, institutionalization, grantsmanship, and dissemination; (d) student training, accomplishments, and outcomes; and (e) fiscal accounting of previously awarded project demonstration grants. As mentioned previously, reporting of this information was further standardized by requiring use of the newly developed progress report format.

DEVELOPMENT AND DISSEMINATION OF PROJECT PRODUCTS

The goal related to these activities was eliminated due to reduced funding. Nevertheless, participating institutions continued to engage in such activities throughout the funding period. These efforts were highlighted and publicized in the project's *Pipeline* newsletter, produced by APA.

Product Development Efforts

Examples of these efforts include the following:

- **Truman Community College** revised and reinstated its team-taught biopsychology course syllabi; in Fall 2006, 32 students enrolled in this course.
- **University of California, Los Angeles (UCLA)** updated its project resource guide, *Preparing for Graduate School*. UCLA now offers the PROPS seminar as a formal course in which participants receive 2 unit credits for completing all requirements.
- **Florida International University (FIU)** developed a course called Advanced Research Methods and Careers in Psychology that is offered every summer semester.
- **University of Miami (UM)** updated its *Research Manual*.
- **University of South Dakota (USD)** wrote and produced a video targeted to American Indian high school students attending the "Building Bridges" American Indian education student conference. USD faculty, partly on the basis of its APA/NIGMS experience, submitted a federal grant focused on building research partnerships among tribal communities.

Project Information and Dissemination Efforts

Examples of these efforts include the following:

- **The Northern Plains region** developed a brochure for its project, which was recently named *Native Student Pipeline in Reclaiming Education (NSPIRE)* and developed a project logo.
- **USD** wrote and produced a video targeted to American Indian high school students attending the "Building Bridges" American Indian education student conference.
- **Prince George's Community College** developed a student recruitment CD-ROM and brochure.
- **APA**, and the project teams at **California State University, Dominguez Hills (CSUDH)**, **UM**, and **FIU** produced newsletters dedicated fully or partially to highlighting project activities and student accomplishments.
- **CSUDH** project students were featured in university newsletters and promotional materials.
- **APA** and several of the project's participating institutions ($n = 6$) updated and revised their project websites.

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TABLE 5

Means for 2006 APA/NIGMS Project Evaluation Survey Items

Item Description	Total Mean (N = 13)
Overall satisfaction with APA/NIGMS Project	4.5
Success of region/institution programs and activities	4.7
Success of collaboration between institutions in region	4.2
Positive impact on department as a whole	2.9
Positive impact on institution as a whole	2.9
Positive impact on students in department	3.0
Positive impact on students at institution	2.7
Positive impact on retention of primary students	2.8
Positive impact on retention of secondary students	2.6
Positive impact on minority-related training and research	2.7
Positive impact on recruitment of minority students	2.7
Positive impact on retention of minority students	2.8
Positive impact on training of minority students	2.9
Positive impact on climate for minorities in department	2.8
Positive impact on number of minorities transferring to 4-yr. institution	3.0
Positive impact on number of minorities pursuing graduate study	2.7
Positive impact on graduate student assistants	2.9

1 - 5
(VERY
DISSATISFIED/
UNSUCCESSFUL TO
VERY SATISFIED/
SUCCESSFUL)

1 - 3
(NO POSITIVE IMPACT TO POSITIVE IMPACT)

(continued from p. 36)

Additionally, project faculty and the project director made presentations citing the project, its goals, and its accomplishments, as noted previously in this report.

Training Goals and Accomplishments

The following describes both the specific training goals and their accomplishment during the reporting period (2004–2009) and provides selected examples of related institutional efforts concerning the project's four major training procedures: outreach/orientation, engagement, academic support and preparation for academic transitions, and mentorship.

OUTREACH/ORIENTATION

Goal: *Involve at least 1,600 secondary participants per year in project activities.*

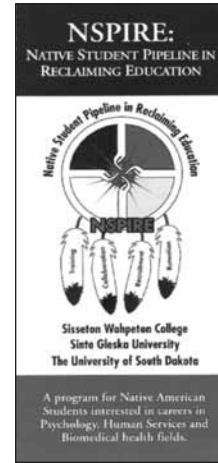
Accomplishment: *The outreach/orientation goal was greatly exceeded: Slightly more than 10,000 students (i.e., an average of more than 2,000 per year) were secondary participants.*

During the reporting period, the project's outreach/orientation goal focused on involving secondary participants who, for various reasons, were not engaged in intensive research mentorship but who participated in other project activities.

The **Northern Plains Region** offers an excellent example of orientation and outreach efforts. The region's largest targeted minority group, American Indians, exhibit unusually high dropout rates at all levels of the educational pipeline. Nationally, only 40% of American Indian high school graduates enroll in undergraduate programs, and retention of American Indian students in these programs is cited to be as low as 15% (Larimore & McClellan, 2005). Consequently, this region chose to focus its efforts on the outreach/orientation aspect of training—especially at the lower levels of the pipeline—in order to create an American Indian student cohort of meaningful size for later engagement and research mentoring efforts.

During the reporting period, the region's collaboratively implemented NSPIRE program engaged in several efforts targeted to high school students. One such effort was a brochure featuring information on psychology careers and education specifically geared to American Indian high school students. The University of South Dakota (USD) also planned special recruiting activities in which these students were invited to tour the campus and department, meet with American Indian

undergraduates, and receive campus resources. More than 120 high school students accepted the invitation to attend the NSPIRE-sponsored Building Bridges/Youth Red Road Conference. High school students also worked with college students in the production of an educational video emphasizing psychological perspectives on the prevention of drunk and drugged driving.



Also during the reporting period, the Northern Plains Region, with the guidance of its Councils of Indigenous Advisors, continued its efforts to ensure that institutionalwide cultures (including housing, academic advising, and social support) were more welcoming for American Indian students, especially at USD. Consequently, between 2004/05 and 2007/08, USD's overall retention rate of American Indian students increased from 22% to 84%, with even greater increases in the psychology department.

ENGAGEMENT

Goal: *Facilitate the presentation of student research papers/posters at regional, national, and international scientific (non-campus-based) conferences by at least 5% of primary participants.*

Accomplishment: *All participating institutions conducted various types of engagement efforts during the reporting period. As a result, the reporting*

The Northern Plains Region, with the guidance of its Councils of Indigenous Advisors, continued its efforts to ensure that institutionalwide cultures were more welcoming for American Indian students. Consequently, between 2004/05 and 2007/08, USD's overall retention rate of American Indian students increased from 22% to 84%, with even greater increases in the psychology department.

period engagement goal was greatly exceeded: 14% of the project's 274 (unduplicated) primary students made a total of 39 such presentations.

The project's engagement activities generally are more intense in content and/or time required than in outreach and orientation efforts. They serve to progressively prepare students for formal research mentorship, to supplement research mentorships by reinforcing initial commitment and interest of new research mentees, and/or to increase student retention. These activities include specialized research or scientific courses that develop student research competence and skills or colloquia or seminar series that are either a prerequisite or a required part of the mentorship program. A list of project students' presentations and publications during the 2004–2009 reporting period is provided in Appendix C (<http://apa.org/pi/oema/programs/recruitment/student-publications.pdf>); see also Appendix B: <http://apa.org/pi/oema/programs/recruitment/student-accomplishments.pdf>).

The **University of Miami's** PRIME program offers stellar examples of engagement activities. During the reporting period, these included (as described in more detail previously in this report) the FACT FORUM advising process for freshman psychology students, the PUENTE Program for transfer students, and the JUMPSTART program for students who have not taken independent research prerequisites. All three programs bridge gaps in critical knowledge and skills and in academic and research socialization necessary for successful conducting of research. They serve as feeder programs into the more intensive PRIME research mentorship program and ensure that students get the most out of the PRIME experience. These innovations have substantially and positively changed the department's undergraduate culture and academic environment. They have resulted in increasing the number of psychology majors by more than 50% and dramatically increasing minority students' interest in behavioral/biomedical research.

ACADEMIC SUPPORT AND PREPARATION FOR EDUCATIONAL TRANSITIONS

Goals: Ensure that 60% of participating students at 2-year institutions transfer to a 4-year institution.

Ensure that 50% of participating students at 4-year and research institutions receive a BA and that 50% of these initiate graduate studies.

Accomplishment: These goals were only partially attained: 45.2% ($n = 34$) of the 75 students at 2-year institutions transferred to a

4-year institution; 42.0% ($n = 95$) of the project's students at a 4-year of major research institution obtained a baccalaureate degree. Of these, 58% ($n = 55$) exceeded the goal and went on to pursue graduate or professional training. We speculate that partial goal attainment was at least partially due to gaps in funding and related lapses in project activities and resources.

These support and preparation activities included those that enhance specific academic or research skills or facilitated transitions between academic levels (e.g., applying to college, transfer from a 2-year to a 4-year institution, applying to and preparing for graduate school, etc.). These activities took the form of a seminar or workshop series that served as primary project activities at the community college level and sometimes involved collaborative institutional efforts. These activities were also sometimes incorporated into the research mentorship or mentoring programs. They augmented the other project training procedures.

In the Midwest Region, **Truman College's Center for Achievement Life Sciences (CALFS)/Center for Science Success (CSS)** was an example of an academic support initiative. Established in part through use of project funds, the centers served as a part of Truman's plan to recruit and involve minorities to proceed to a 4-year institution in the field of biomedical sciences. The Truman summer program was designed to build partnerships with Chicago-area 4-year institutions and increase the number of summer internship opportunities for students at 2-year institutions. The program included a 2-week intensive classroom and laboratory research experience, working primarily with bullfrogs in a variety of experiments. The program provided exposure to research and built foundational skills such as reading and analyzing peer-reviewed journal articles. It also provided a strong mentoring program for students in the life sciences and

The University of Miami's...programs...bridge gaps in critical knowledge and skills and in academic and research socialization necessary for successful conducting of research. They serve as feeder programs into the more intensive PRIME research mentorship program and ensure that students get the most out of the PRIME experience. These innovations have substantially and positively changed the department's undergraduate culture and academic environment. They have resulted in increasing the number of psychology majors by more than 50% and dramatically increasing minority students' interest in behavioral/biomedical research.

increased the number of minority students pursuing degrees in life sciences and with biomedical career goals.

MENTORSHIP

Goals: *Involve at least 60 students per year in mentored research, of whom at least 10% will be enrolled at a community college.*

Accomplishment: *The mentorship goal was not quite met. An average of about 58 students were involved in intensive research mentoring each year, with actual counts ranging between 44 and 77. Students from 2-year institutions represented an average of 26% of the students mentored each year, with annual percentages ranging from 16% to 33%. We believe the lack of goal attainment was due primarily to the absence of additional funding during the “no cost extension” years of 2008 and 2009.*

Mentorship was the project’s principle method for developing and retaining minority talent. For more detailed data on student performance and progression data by institution type during the 2004–2009 reporting period, see Table 6 (see also Appendixes B and C).

TABLE 6

APA/NIGMS Project: Student Performance and Progression Data by Institution Type

OUTCOMES	Since Initiation of Project Activities (1997/1998 - 9/15/09)			During Current Reporting Period (8/1/04 - 9/15/09)			TOTAL
	Major Research	2-year Inst.	4-year Inst.	Major Research	2-year Inst.	4-year Inst.	
Number of students involved in intensive research mentoring (duplicative count)	270	204	259	124	75	102	301 ^a
Number of research presentations by students at campus-based conferences	212	18	95	76	2	27	105
Number of research presentations by students at regional/national conferences	50	15	93	3	2	34	39
Number of students who have authored scientific articles prepared for journals/books	15	8	16	4	6	7	17
Number of students who transferred to a 4-year institution from community college	N/A	94 ^b	N/A	N/A	34	N/A	34
Number of students who graduated with AA/AS degrees	N/A	41	N/A	N/A	12	N/A	12
Number of students who graduated with BA/BS degrees	162	27	109	64	6	31	101
Number of students who pursued MA/MS degrees	41	6	38	23	5	15	53
Number of students who pursued PhD/PsyD degrees	46	8	37	17	6	17	40 ^c
Number of students who pursued professional degrees (MD, DDS, JD, MSW, etc.)	24	5	8	16	3	1	20 ^c
Number of graduates from master's programs	19	3	22	10	2	9	21
Number of graduates from doctoral programs	12	1	2	5	1	1	7
Number of graduates from professional programs	9	1	3	9	0	2	11

^a This is a duplicative count, as each student is counted once for each year in which he/she participates in intensive research mentoring.

^b Includes 2 participants who transferred to an APA/NIGMS 4-year institution from a 2-year institution that was not part the project network.

^c Double degree seeking (e.g., MD/PhD) counted here.

LESSONS LEARNED: IMPLICATIONS FOR FUTURE MINORITY RESEARCH TRAINING PARTNERSHIP PROGRAMS

Rationale

From its inception, the APA/NIGMS Project was conceptualized as both a social laboratory and a program implementation effort. Thus, exceptional emphasis was placed on documentation, assessment, and evaluation. We wanted to know if the project's systemic approach could be implemented as envisioned—that is, if it made a significant difference (and improvement) both in the welcomeness and support of academic cultures/climates and in the increased participation and success of ethnic minority students in the biomedical research areas of psychology. Fourteen years later, we believe the answer to these concerns is an affirmative Yes! Nevertheless, we encountered numerous barriers and limitations at national, regional, and institutional levels and learned much from both our successes and failures. We take this opportunity to share our “lessons learned,” which are derived both from information and evaluation and from accomplishment data presented in this report. We hope these lessons learned may serve to inform federal education and research policymakers, those who seek to promote greater inclusion of ethnic minorities in the nation's biomedical workforce, and those interested in implementing future minority research training partnership efforts.

Specific Lessons Learned

THE UNIQUE CONTRIBUTIONS OF PSYCHOLOGY TO MINORITY RESEARCH TRAINING

The discipline of psychology, with its emphasis on technologies and procedures for behavioral change of individuals as well as systems, can make unique and valuable contributions to biomedical research in general and to the training of ethnic minority students for biomedical research careers. For example, psychological and behavioral concepts were the driving forces behind the APA/NIGMS Project's conceptual design and its emphases on effecting change in minority student participation through systemic departmental transformation.

Similarly, psychological methodology undergirded the project's emphases on documentation, assessment, and evaluation, the results of which (along with thoughtful comments of federal

review panelists) were used to effect continuous improvements of the project's activities and procedures. Furthermore, the focus of the project students' research demonstrated high relevance (and contributions) to knowledge and methodology related to fundamental biomedical research issues—especially those at the intersection of health and behavior that have a disproportionately negative impact on the health and life span of persons of color.

We urge that federal research agencies increasingly recognize the research contributions that can be made by psychologists to biomedical, health, and health disparities issues. Further, we urge that consideration be given to encouraging the increased involvement of psychologists as evaluators and reviewers of minority research training programs.

THE VALUE OF A STRUCTURED PARTNERSHIP PROCESS AND ITS USE OF CONSULTANTS

Our experience confirms that the development of institutional partnerships requires the mending, nurturing, and strengthening of institutional relationships—especially when those institutions have widely differing histories and missions. We found quite often that participating major research institutions were viewed as having shunned, or ignored, or devalued the efforts of predominantly minority institutions, and these histories served as barriers to effective partnership. We believe this project has to date been successful in building institutional partnerships because of its use of a structured collaborative planning process involving outside consultants who serve to facilitate needed discussions in a context of fair play and equal status in decision making. It is a type of context that is difficult to achieve when all the funding and most of the authority rest with only one of the collaborating institutions.

In addition, the Northern Plains Region in particular has taught us that sometimes—especially in regard to the engagement aspect of minority research training—the issues of concern related to increasing minority participation in the biomedical sciences are not so much about what you do, but how you do it. Thus, cultural nuances can be critical to research training success—and independent consultants are vital to facilitating the recognition of and response to such issues in institutional and scientific contexts. We believe the APA/NIGMS Project would have been further strengthened by additional funding for more frequent independent consultations with project teams.

We urge that consideration be given to increased use of interinstitutional partnerships facilitated by independent consultants as a strategy for increasing minority research training participation.

THE SPECIAL NEEDS OF PARTNERSHIP RESEARCH TRAINING PROJECTS

Our experience suggests that partnership research training projects have special needs that are different from those of a single institution project. These special needs have implications for both the design and the funding of partnership projects:

Recognition of Diversity Among Institutions

Especially at the undergraduate level, partnership projects often involve collaborating institutions with differing missions and histories of involvement in research and research training. Some such partnerships locate nearly all research training experiences within only one of

the partnering institutions, with the other partnering institutions primarily assuming the role of the identifiers of eligible students for research training. However, the APA/NIGMS Project's experience suggests the effectiveness, relative to both long-term costs and outcomes, of ensuring that all collaborating institutions assume some type of coordinated research training role, with the objective of institutionalizing increased minority research training capabilities among all partnering institutions. To do so requires that there is a recognition of institutional diversity, including the valuing of differing institutional strengths.

We found that institutional differences were most acute between major research institutions and community colleges/tribal institutions. The latter types of institutions typically are characterized by little or no financial, staff, and faculty resources needed for effective organization and administration of minority research training. Because of the absence of such resources, we experienced our greatest institutional instability and turnover with tribal institutions in the Northern Plains Region.

We urge that funders of partnership research training programs consider extending supplemental funding to collaborating community colleges and tribal institutions to enable them to reduce teaching loads for project leaders, hire project support staff, purchase necessary equipment, resource materials, and services, etc.

Importance of Administrator Support

We found that a project functioned best (e.g., effectively implemented planned activities) when an institutional administrator (e.g., dean, vice president, etc.) and/or the department chair were members of the core project team. Their involvement signals that the project is a valued activity. When problems occur, these administrators can be the key to their resolution. Administrator involvement also serves as an added incentive to project team leaders who may receive no financial incentive for their participation. Attempts should continuously be made to provide institutional administrators with information about the project and to solicit their involvement, support, and advice.

The APA/NIGMS Project's experience suggests the effectiveness, relative to both long-term costs and outcomes, of ensuring that all collaborating institutions assume some type of coordinated research training role, with the objective of institutionalizing increased minority research training capabilities among all partnering institutions.

We urge that minority research training programs aggressively seek the support and active involvement of institutional administrators.

Continuity of Project Leadership

Changes in core team leadership and membership have the potential to cause disruption in project activities. The learning curve and transition time involved in leadership changes can lead to a decrease in project momentum and to inefficient use of effort as new leaders “reinvent the wheel.”

We recommend that minority research training partnership programs consider advanced preparation of formal orientation procedures and project operational manuals in anticipation of possible changes in institutional program leadership.

Creative Faculty Incentives

Faculty support for new initiatives often requires incentives. Unfortunately, one of the strengths of the APA/NIGMS Project is also one of its weaknesses: its low cost per institution. As a result, almost no funds were available for faculty incentives. For this reason, the project’s continuation grant proposals repeatedly included (unfunded) requests for set-aside funds that could be used flexibly. It was proposed that such funds be used to sponsor special nonrecurring institutionally-based projects such as product development and dissemination, best practices awards, development of innovative scientific teaching and learning strategies, and project assessment and evaluation strategies and efforts.

We urge funders of partnership training programs, in consideration of the complexity (and additional workload) involved in partnership and systemic change efforts, to consider the importance of providing funding for such faculty incentives as release time, reduced instructional responsibilities, access to student assistants, or partial summer salary. Should funding restrictions foreclose such consideration, efforts should be made to alternatively fund creative, nonrecurring incentives.

An additional incentive that we believe is critical for partnership training programs—especially those involving multiple geographical locales—is the conduct of periodic (e.g., biennial) projectwide conferences that enable information exchange among project site teams related to training procedures, activities, and other critical project issues and concerns. Such conferences also provide a national venue for showcasing students’ accomplishments and research. We found that such conferences promote not only enthusiasm and commitment among both faculty and students but also greater congruency among projects in perspectives and in partnership, training, and accountability procedures. Projectwide conferences are

the glue for the creation, maintenance, and continuous development of a multisite partnership project.

We urge funders of partnership training programs that involve multiple geographical sites to consider the importance of including funding provisions for biennial projectwide conferences.

SYSTEMIC CHANGE REQUIRES LONG-TERM COMMITMENT

Ethnic minority research training projects that seek to enhance not only student capabilities but also those of their academic departments typically involve both complicated interventions and persistence. These, in turn, necessitate the use of long timeframes coupled with long-term commitment, especially if the project involves institutional partnerships. One of the most disruptive factors in the administration and continuous development of the APA/NIGMS Project was the need to repeatedly draft continuation funding applications that were necessitated by 3-year funding cycles. These applications were often not initially approved for funding, thus necessitating the preparation of numerous revised applications—and resulting in lapses in project funding. The project had to be “restarted” at least two times. And institutional personnel became increasingly weary of their inability to engage confidently in future project planning.

We urge that, as a means for promoting project stability and continuity of effort, partnership projects with systemic emphases that have successfully completed an initial 3-year (or shorter) funding period be awarded (if meritoriously appropriate) continuing grants for 5-year funding periods.

THE IMPORTANCE OF INTERVENTION AT EDUCATIONAL TRANSITION POINTS

The APA/NIGMS Project has demonstrated that student retention is often a function of the degree of outreach, academic support, and mentorship targeted to prepare students for successful and seamless educational transitions such as entry into college, transfer from 2-year to 4-year institutions, and entry into graduate school. These are points that often engender uncertainty, stress, and anxiety in students. They are also points at which errors in student judgment and decision making can have profound and long-term effects that may not be in the best interests of students or society. The APA/NIGMS Project implemented many successful outreach and academic support strategies such as peer mentoring of freshmen and newly declared psychology majors; research mentoring of community college students and advanced undergraduates; and specialized topical academic and research skill-building workshops. By increasing retention, building interest in education in general and research careers in particular, and ensuring that students could

successfully participate in increasingly difficult academic endeavors including research mentorship, departments increased their understanding of how such educational transition efforts “add value” not only for minority students but to the undergraduate teaching and learning processes in general. This recognition led to and justified the subsequent “institutionalization” of many of these activities.

We urge consideration of the advisability of both continuing and expanding federal support of comprehensive minority research training efforts that focus on preparing undergraduate students for educational transitions, and extending such efforts to high schools.

THE VALUE OF ACCOUNTABILITY TOOLS AND PROGRAM EVALUATION

We found that the APA/NIGMS Project’s use of strategic plans, with their required statements related to goals, objectives, activities, timelines, and responsible persons for task completion, were a valued accountability tool. Additional accountability was provided through use of standardized progress reports from each participating institution; required reports from the project’s independent consultants and reports in the project’s newsletter, *Pipeline*; and continuous maintenance of a project chronology that provided a formal report of all major project efforts and decisions. It is through these accountability tools that we were able to effectively administer and keep on top of the successes and operational problems of the project’s 14 institutions. Accountability data also helped to guide project administration at the institutional and regional levels and were a source of project legitimacy and stature within participating institutions.

Program evaluation played an equally valuable role in project administration. In addition, evaluation was a means both for ensuring formal project documentation and assessment and for testing the project’s major assumptions and hypotheses. As noted previously, we believe that program evaluation data are critical to the continued support of federal legislators and officials who invest in minority research training as a critical strategy for increasing the nation’s future scientific talent pool, addressing national scientific challenges, and enhancing the nation’s international competitiveness.

We urge that consideration be given to increasing the requirement for and investment in the development of accountability tools and the conduct of program evaluation of federally funded minority research training programs.

Lessons Learned by Participating Institutions

The APA/NIGMS Project’s participating institutions were asked to contribute their ideas related to “Lessons Learned.” Their responses served to inform the contents of this section of the report. A summary of the responses of selected institutions is presented in Figure 7.

We believe that program evaluation data are critical to the continued support of federal legislators and officials who invest in minority research training as a critical strategy for increasing the nation’s future scientific talent pool, addressing national scientific challenges, and enhancing the nation’s international competitiveness.

FIGURE 7

Lessons Learned: Responses of Selected Participating Institutions

UNIVERSITY OF CALIFORNIA, LOS ANGELES

- Secure strong support from the department leadership
- Cultivate a solid cadre of faculty supporters
- Get competent and creative staff and graduate students to run the program on a daily basis
- Get departmental and college buy-in and commitment to provide additional funding for the program
- Integrate the APA/NIGMS Program with ongoing mentoring efforts to form a single, coherent program

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

- The training program brought prestige to the department and participating students were more likely to be featured in University announcements, newsletters, and promotional materials
- Program facilitated identification of the strongest students in the department
- Choosing early-career faculty to lead program makes providing course release time less costly
- Work with dean's or provost's office to institutionalize travel support to allow faculty to travel with students for conference presentations
- Tracking students after graduation is difficult and requires the university have a good alumni tracking system

UNIVERSITY OF MIAMI

- Undergraduate students are capable, dedicated, and persistent
- Undergraduate student experience with research and faculty mentoring is important
- Faculty became increasingly interested in mentoring students as they began to see what they could accomplish

FLORIDA INTERNATIONAL UNIVERSITY

- Psychology department faculty are, first and foremost, researchers
- Undergraduates can conduct publishable research
- Problems arise when students are not prepared for a high level of research
- PRIME got our best students access to our research faculty
- Advice, mentorship, letters of recommendation, and eventually graduate school follow naturally from the relationships that students and faculty build together

CONCLUSION

The APA and its Office of Ethnic Minority Affairs were honored to have had the opportunity to conceive and administer the APA/NIGMS Project. The project has positively affected not only its participating students, faculty, and departments but also research training of ethnic minority undergraduates in psychology throughout the nation. We hope others will view as noteworthy this report's data and findings of its impact both on the culture and activities of departments (systemic effects) and on departments' success in recruiting, engaging, mentoring, and retaining minority students in biomedical and behavioral research (training effects). We further hope that this report of the APA/NIGMS Project's assumptions and theory, its outcomes to date (many of its students are still engaged in undergraduate studies), and its lessons learned might serve to further enhance such training in other biomedical disciplines.

Questions about the APA/NIGMS Project and its activities and outcomes should be directed to Principal Investigator/Project Director Bertha G. Holliday, PhD, at bhollidaypsy@gmail.com.

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