

IMPACT STATEMENT: RESEARCH IN UNDERGRADUATE INSTITUTIONS.

The PI requests funds to support the continuation of her previously-funded research program (NSF PAC award #0545133 to Barnard College, 05/2006 through 04/2010) at a predominantly undergraduate institution, Montclair State University. The requested funds reflect costs associated with course release time, summer salary, student assistants, travel to professional meetings, participant support costs, and materials and supplies. This impact statement describes efforts at both the institutional and departmental level to educate undergraduates for careers in science, particularly members of currently underrepresented groups, and to support faculty and student research activity. The current project will enhance the institution's undergraduate educational mission by providing opportunities for undergraduate students to participate in every aspect of scientific research, from conceptualization to publication.

Description of Institution & Efforts to Support Research Activity

Montclair State University is currently the second largest higher-education institution in the state of New Jersey, with over 18,000 undergraduate and graduate students, on a 246-acre campus located 14 miles from Manhattan. The University was founded in 1908 as a normal school, gradually expanding to a teacher's college, then a state school, finally becoming established as a scholarly University in 1994. As such, the University offers more than 250 majors, minors, and concentrations across 6 colleges and schools (Colleges of the Arts, Education & Human Services, Humanities & Social Sciences, Science & Mathematics, School of Business, and The Graduate School). The College of Humanities and Social Sciences offers a traditional liberal arts education, with a choice of 19 majors, 36 minors, and 20 areas of graduate study. Roughly a quarter of the over 4,100 undergraduates in the CHSS major in Psychology, making it one of the top 3 majors at the University.

With the implementation of a number of new initiatives developed as part of its Centennial Strategic Plan, the University has recently received outside recognition for excellence. *Forbes* magazine named Montclair State University the number one public institution in New Jersey in 2009. Moreover, with a diverse student body, the University was recognized in 2010 for the number of Bachelor's degrees awarded to Hispanic students and placed in the "Top 100 Colleges for Hispanics" by *The Hispanic Outlook in Higher Education*. The student body has enrollment that is 61% female, 57% white, 21% Hispanic, 10% African American, 6% Asian and <1% other. The University currently participates in the Minority Access to Research Careers (MARC U-STAR) program, and 7 of 10 of the awardees are Psychology Majors.

At the heart of the University's Centennial Strategic Plan is a focus on the development of a faculty of teacher/scholars. In order to achieve this goal, the University has made specific commitments to recruit and retain full-time faculty with strong academic credentials, to seek significant increases in external funding for research support and to provide enhanced services for faculty who seek and acquire such funding, and to increase the proportion of undergraduate and graduate students who become actively involved in research with members of the faculty. Part of the University's recruitment efforts include offering competitive startup funding packages and providing for course release through the Faculty Scholarship Program, which recognizes the efforts of faculty with active research programs by reducing teaching responsibilities from 8

courses/year to 6 courses/year. In addition, the University provides a matching tuition waiver for Graduate Assistants who are paid a stipend from an outside grant.

Psychology Department. The Departmental requirements for majors in Psychology reflect a strong focus on scientific research education. Every student is required to take 4 pre-requisite courses in order to compete the major, *Introduction to Psychology, Introduction to Psychological Research Methods, Statistics, and Experimental Psychology*. In particular, the *Experimental Psychology* course requires students to devote 5.5 hours /week engaged in lecture, discussion, and research activities, including completion of 2 empirical research projects. Additional requirements are well-distributed across traditionally recognized areas in the field, and there are opportunities for undergraduates to receive course credit for research. In the PI's experience, the undergraduate curriculum is comparable in depth, breadth, and scope to those at more prominent research institutions.

The Master's programs in General Psychology, Industrial/Organizational, and Clinical Psychology (with an optional concentration in Spanish/English Bilinguals or Child/Adolescent Psychology) provide additional mechanisms for preparing students for professional careers in Psychology. Of the roughly 75 Master's students, an increasing number have entered fellowship Doctoral programs in the past few years, again reflecting an increased commitment on the part of the University and the Department to prepare students for careers in science. This is no doubt related to the concomitant increase in the number of faculty engaged in active research that have been hired by the Department in the last 10 years. Moreover, the Department offers several Graduate Assistantships, which provide a stipend and tuition waiver for students working with faculty researchers.

With a total of 27 full-time faculty and additional adjunct appointees, the Psychology Department currently educates over 1000 undergraduate majors. The Department's ongoing potential to recruit and to retain faculty researchers is very good. In the past 3 years, and the Department has expanded its research facilities by acquiring new space for a Center for Infant and Child Research as well as a suite of rooms in an office building adjacent to campus that formerly housed the Speech and Audiology Department facilities (which in turn were moved to a larger facility). The PI's research space is located in the new suite, and a core group of faculty engaged in research on auditory perception, developmental neuroscience, and human communication have setup laboratories in other rooms in the suite. The laboratories of most researchers in the Department incorporate multiple undergraduate research assistants. The collegial atmosphere of the new facility will foster productive interactions among both faculty and undergraduate and graduate research assistants across these areas.

Impact on Research Environment, Undergraduate Education, and Faculty Career

The current proposal incorporates rigorous scientific investigation into the nature of variability in communication. As such, the research entails relatively labor-intensive activities that will be completed over 4 years, including 1) recruitment of 90 participants over three years who will each provide data from multiple measures in three phases, 2) scoring and analysis of psychophysical tests, 3) digital editing and acoustic analysis of speech, 4) transcription of conversations, and 5) recruitment and testing of approximately 900 participants over three years who will provide perceptual judgments of the prior participants' speech. These activities cannot be completed without dedicated skilled assistants.

The requested funds would permit the PI to continue a line of research that was previously supported by NSF, expanding its scope and supporting the PI's career as a researcher. If funded, the current project would join other federally-funded projects in the department (one each from NSF and NIH, and another submitted to NSF), furthering the University's strategic plan to develop faculty teacher/scholars.

In addition, the project has the potential to enhance the research environment at the University by enabling students to dedicate time outside the classroom to research activities. These activities extend concepts acquired in classes to active research settings. Many students attending Montclair State University need to seek part-time work to support themselves. By offering paid positions both during the academic year and the summer, the project can provide opportunities for participation in research activities to students who would otherwise be unable to volunteer or use valuable credits for research activities.

Student Recruitment, Training, and Career Preparation. Undergraduate researchers are fundamental to the PI's research activities. The members of the PI's laboratory meet weekly for training sessions, to discuss current literature, to discuss research activities in the lab, and to commiserate. The current proposal will provide paid opportunities for 6 undergraduate research assistants at a time to work closely with the PI both during the academic year and the summer months. As some of these students gain appropriate experience, they will be mentored in completing senior thesis projects in the laboratory. As senior members of the laboratory graduate, new students will be recruited to maintain the 6-member staff. Therefore, the current project will likely include between 12 to 24 different undergraduates over the course of its 4-year term. As part of the PI's mentorship activities, students will be encouraged to continue their education in the sciences, and the PI will assist them in achieving entry into appropriate graduate programs.

As a full-time term appointee at Barnard College (July 2005-June 2010), the PI accumulated 5 years of experience teaching, recruiting, training, and advising undergraduate and graduate student researchers. Three former students have enrolled in Doctoral programs in Linguistics or Psychology at Northwestern University, University of Chicago, and New York University. Other students have enrolled in graduate programs in Anthropology, sought careers in law or social work, and most recently, been admitted to NYU Medical School. Most students were recruited from classes taught by the PI and stayed with the projects throughout their undergraduate careers. They have been included as coauthors on conference presentations and publications in peer-reviewed journals.

As a recently hired tenure-track Assistant Professor at Montclair State University, the PI currently offers courses in *Experimental Psychology* (n=20/section), *Introduction to Psychology* (n=35-40/section), and *Sensation & Perception* (n=35-40/section) which are excellent venues for evaluating potential research assistants. Undergraduates enrolled in these courses have the potential to benefit from the PI's research activities directly by being a part of their completion and indirectly through awareness that the PI is actively engaged in these activities.

As new students are recruited, the PI will continue to conduct weekly lab meetings, will be directly responsible for providing training to ensure that they are prepared to meet the specific challenges of the research activities, and will oversee the progress of the research activities. Because these activities will consume additional time during the academic year, the PI has requested funds to support release from one course/year.

Although the University provides course release time for faculty involved in research, the course load is still somewhat heavy (6 courses/year) compared to faculty at major research institutions. Most of the data analyses and reporting functions will be conducted during the summer months, in concert with ongoing research activities, and the PI has requested additional salary for summer support.

Summary

The Psychology Department at Montclair State University houses a vibrant and growing research community. As part of its Centennial Strategic Plan, the University has taken concrete steps toward fostering faculty research activities by providing an enhanced scientific environment. These steps include efforts 1) to recruit qualified faculty researchers by offering competitive startup funds and supporting faculty research through course release time, 2) to facilitate undergraduate student involvement in research through its curriculum and through MARC U-STAR awards, and 3) to facilitate graduate student involvement in research through Graduate Assistantships and matching tuition waivers for students working on grants. If funded, the current proposal will provide additional opportunities for undergraduate researchers in the form of paid research assistantships, will enable to PI to continue her previously-funded research program, and will enhance the research climate within the Department and the University at large. Because of the relatively diverse student body, this project has the potential to educate and to promote the participation of members of underrepresented groups in the sciences. The PI is committed to actively encouraging and supporting student participation in scientific research.