

COMPUTING BEYOND THE DOUBLE BIND: WOMEN OF COLOR IN COMPUTING EDUCATION AND CAREERS

PI: Apriel Hodari, Ph.D. (Council for Opportunity in Education), Co-PI: Maria (Mia) Ong, Ph.D. (TERC)

INTRODUCTION

The **Council for Opportunity in Education**, in collaboration with **TERC**, seeks to:

- Advance the understanding of social and cultural factors that increase retention of women of color in computing.
- Implement and evaluate a mentoring and networking intervention for undergraduate women of color based on the project's findings.

The project staff will conduct an extensive study of programs that have successfully served women of color in the computing fields (**TRACK I**) and will conduct formal interviews with professional women of color who have thrived in computing to learn about their educational strategies (**TRACK II**).

Based on those findings, we will develop and assess a small-scale intervention that will be modeled on the practices of mentoring and networking which have been established as effective among women of color who are students of STEM disciplines (**TRACK III**).

By partnering with Broadening Participation in Computing Alliances and local and national organizations dedicated to diversifying computing, we will identify women of color professionals and undergraduates, who can participate as mentors and mentees, respectively, in the intervention phase of the project.

The ultimate goal of the project is a proven, scalable model for reversing the downward trend in the rates at which women of color earn bachelor's degrees in computer science.

Formative and summative evaluation provided by Dr. Angela Johnson, St. Mary's College of Maryland.

“Having her there to push me when needed and back me up when there were problems made a tremendous difference.”

—Cecilia Aragon, on her mentor
(in Heinrichs, 2009)



RESEARCH (TRACKS I - III)

TRACK I: CASE STUDIES OF PROGRAMS

Through case studies, we seek to identify programmatic themes (e.g., professional development workshops, mentoring and networking) that promote women of color as they advance successfully through their undergraduate pursuits of computer science degrees.

Working with the Alliances, we will identify programs at a broad range of institutions (such as research universities, Historically Black Colleges or Universities, and Hispanic-Serving Institutions) with proven records of graduating women of color undergraduates above the national average of 6.9%.

Case studies will include:

- Interviews with Alliance/Program Leaders (e.g., program staff and affiliated faculty) to identify and describe how factors promoting women of color are actualized, implemented and institutionalized.
- Interviews with Students to reflect on their learning and social experiences in the alliance/program, and to explore whether, how and the extent to which these experiences affected their decisions to remain and aspire in computing.
- Observations of Program Activities (e.g., campus spaces, local, regional and national meetings where alliance participants interact).

PROJECT GOALS

1. Expand on what is known about what does (and does not) enable women of color to be successful in computing—both within academic programs and in professional settings.
2. Identify promising program elements that can be tested in a small-scale intervention.
3. Develop and assess a mentoring intervention strategy incorporating the elements that have been theorized to work.



“I realized throughout my entire higher education, I only had two women faculty that I ever saw in the class, you take many classes, but I never saw a person of color. Okay? I never saw a man or woman of color... You go through issues about self doubt. I think that's lack of role models. If you haven't seen anyone that looks like you, you wonder, should I be in this position or not?”

—Valerie Taylor, at the Mini-Symposium on
Women of Color in STEM (2009)

TRACK II: INTERVIEWS WITH COMPUTING PROFESSIONALS

Through individual interviews, we will explore factors (e.g., mentoring, peer cohorts, research opportunities) that enable women of color to proceed successfully through computing education and careers:

- With professional women of color with careers in computing who have affiliations to non-profits or grassroots organizations (e.g., Black Girls Code, CodeChix, Latinas in Computing, The Center for Minorities and People with Disabilities in Computing, and the Coalition to Diversity Computing.)
- At conferences that focus on broadening participation in computing (e.g., an NCWIT-facilitated event, the Grace Hopper Celebration of Women in Computing).
- Via phone or web-based connection such as FaceTime.

DID YOU KNOW?

While representation of women of color is increasing in nearly every other STEM field (NSF, 2011), it is currently decreasing in computing—even as national job prospects in technology fields increase (Thibodeau, 2012).

TRACK III: INTERVENTION

We aim to recruit 50 professional women of color working in IT or computing education to serve as mentors for 100 undergraduate women of color in computer science by:

- Consulting with the Project Partners (CMD-IT, CDC, LiC, CodeChix) and Partnering Alliances (A4RC, ARTSI, NCWIT).
- Matching students and professionals from **TRACKS I and II**.

The mentoring and networking connections will be made in face-to-face meetings at the conferences mentioned in **TRACK II**. Connections will mature via an online forum (Facebook) through a project-monitored site. We will facilitate bi-weekly e-mail communication between mentors and protégées.

REFERENCES

- Heinrichs, C. W. (2009). Dr Cecilia Aragon & friends launch Latinas in Computing. Diversity/Careers in Engineering and Information Technology. Retrieved from http://www.diversitycareers.com/articles/pro/09-junjul/mentors_latinas_computing.htm
- National Science Foundation, Division of Science Resources Statistics. (NSF 2011). Women, Minorities, and Persons with Disabilities in Science and Engineering: 2011. Special Report NSF 11-309. Arlington, VA. Available at <http://www.nsf.gov/statistics/wmpd/>
- Thibodeau, P. (2012, March 29). IT jobs will grow 22% through 2020, says U.S. *Computerworld*. Retrieved from http://www.computerworld.com/s/article/9225673/IT_jobs_will_grow_22_through_2020_says_U.S.

