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Author: Paul R. Hernandez

Institution: Colorado State University

Article: “Role Modeling is a Viable Retention Strategy for Undergraduate Women in the Geosciences”

Authors: Paul R. Hernandez*, Brittany Bloodhart, Amanda S. Adams, Rebecca T. Barnes, Melissa Burt, Sandra M. Clinton, Wenyi Du, Elaine Godfrey, Heather Henderson, Ilana B. Pollack, Emily V. Fischer.

* Correspondence regarding this data should be addressed to Dr. Paul R. Hernandez, Ph.D.; prhernandez@mail.wvu.edu; (304) 293-4075.

Contributions:

- **Paul Hernandez** contributed to the conception of this work, the design of the intervention, the collection and interpretation of the data, and led the writing associated with this manuscript.
- **Brittany Bloodhart** contributed to the design of the intervention, the collection and interpretation of the data, as well as the writing associated with this manuscript.
- **Amanda Adams** contributed to the conception of the work, the data collection, and drafting of the article.
- **Rebecca Barnes** contributed to the conception of the work, the data collection, and drafting of the article.
- **Melissa Burt** contributed to the conception of the work, the data collection, and drafting of the article.
- **Sandra Clinton** contributed to the design of the intervention, contributed the sample recruitment, data collection, and drafting of the article.
- **Wenyi Du** contributed to data analysis and interpretation.
- **Elaine Godfrey** contributed the sample recruitment, data collection, and drafting of the article.
- **Heather Henderson** contributed to the data collection, data analysis and interpretation.
- **Ilana Pollack** contributed the sample recruitment, data collection, and drafting of the article.
- **Emily Fischer** contributed to the conception of this work, the design of the intervention, the collection and interpretation of the data, as well as the writing associated with this manuscript.

Abstract:

Gender diversity leads to better science; however, a number of STEM disciplines, including many geoscience sub-disciplines show a persistent gender gap. PROmoting Geoscience Research, Education, and SuccesS (PROGRESS) is a theory-driven role modeling and mentoring program aimed at supporting undergraduate women interested in geoscience-related degree and career pathways. This study is unique because it is being conducted in a long-term applied setting, rather than as a laboratory exercise. We compare female STEM majors in PROGRESS to a matched control group (N = 380) using a longitudinal prospective multi-site quasi-experimental design. College women in PROGRESS participated in a mentoring and role modeling weekend workshop with follow-up support, while women in the control group participated in neither the workshop nor the follow-up support. PROGRESS members identified more female STEM career role models than controls (60% vs. 42%, respectively), suggesting that deliberate interventions can develop the networks of undergraduate women. Undergraduate women that participate in PROGRESS have higher rates of persistence in geoscience-related majors (95% vs. 73%), although the rates of switching into a geoscience-related major did not differ across groups. More strikingly, we also find that the persistence of undergraduate women in geoscience-related majors is related to the number of female STEM career role models they identify, as their odds of persisting approximately doubles for each role model they identify. We conclude that our ability to retain

undergraduate women in the geosciences will depend, in part, on helping them to identify same-gender career role models. Further, the success of PROGRESS points to steps universities and departments can take to sustain their students' interest and persistence, such as hosting interactive panels with diverse female scientists to promote the attainability and social relevance of geoscience careers.

Description:

This repository contains one data file. The comma separated values data file contains survey data on the demographic characteristics, measures of group assignment (PROGRESS or control), role models, and measures of holding a geoscience-related major for study participants (n=380). These data were collected between 2015 / 2016 (time at which participants were recruited into the study) and 2017 (date of follow-up survey).

- RoleModelingData.csv (14.6 KB)

Data file is in comma separated values (.csv) format.

Variables in the data file are as follows:

- ID - Participant ID
- Psweight – Sampling Weight from propensity score matching procedure
- Cohort – participant recruited into the study in cohort 1 or 2.
 - 1=fall 2015,
 - 2=fall 2016
- Q101_1 – Which college/ university attended at the time of recruitment
- FR – location of the workshop (Frontrange or Carolinas)
 - 0 = Carolinas
 - 1 = Frontrange
- ETHNIC – participant self-reported race/ethnicity
 - 1=African American
 - 2=Asian
 - 3=Latina
 - 4=Native American / Pacific Islander
 - 5=Other
 - 6=Caucasian / White
 - 7=Declined to respond
- FIRSTGEN – participant self-reported first generation college student status
 - 0=No
 - 1=Yes
- GEOMa_1 – participant self-reported major geoscience related (or not) at the time of recruitment into the study
 - 0=No
 - 1=Yes
- EPROGRESS – participant in the PROGRESS group or control group.
 - 0=Control
 - 1=PROGRESS
- SEM_4 – year-in-school at the time of the follow-up survey (2017)
 - 0=Fall Semester First Year
 - 1=Spring Semester First Year
 - 2=Fall Semester Sophomore Year
 - 3=Spring Semester Sophomore Year
 - 4=Fall Semester Junior Year
 - 5=Spring Semester Junior Year
 - 6=Fall Semester Senior Year

- 7=Spring Semester Senior Year
- EPxGEO1 – PROGRESS status-by-Geoscience major at the time of recruitment interaction term
- tQ225_4 – number of female STEM career role models identified by each participant
- GEOMa_4 – participant self-reported major geoscience related (or not) at the time of the follow-up survey
 - 0=No
 - 1=Yes

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Publications related to dataset:

Hernandez, P.R., Bloodhart, B., Adams, A.S., Barnes, R.T., Burt, M., Clinton, S.M., Du, W., Godfrey, E., Henderson, H., Pollack, I.B., and Fischer, E.V., 2018, Role modeling is a viable retention strategy for undergraduate women in the geosciences: *Geosphere*, v. 14, no. X, p. XXX–XXX, <https://doi.org/10.1130/GES01659.1>.