

Undergraduate Research Students Believe That Anyone Can Be a Scientist – Regardless of Race and Gender

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INTRODUCTION

Stereotypes of scientists as male, Caucasian, mythical, and undesirable have deterred minority students and women from pursuing a science career¹.

Research Questions & Hypotheses

- Will students' scientist drawings depict an increase in females, minority groups, and sexual orientations pre-post their Research Experience for Undergraduates (REU) experience²?
- Will students' scientist drawings depict an increase in REU-related experiences (i.e., poster sessions, science identity themes) pre-post their REU experience?
- We hypothesize that student drawings will depict an increase across these domains.

METHODS

- REU students participated in a semester-long laboratory research immersion and attended didactic seminars.
- The research design used was a single-factor two-level repeated measures (pre-post) design.
- Students' pre-post drawings of scientists were measured using the Draw-A-Scientist (DAST) task and scored using the DAST-Checklist (DAST-C)³.

Demographics

- Sample: $n=19$ ($M=23.37$, $SD=3.24$) across two REU cohorts (2019-2021) impacted by Covid-19 participation.
- Most participants were female, 79.0%. Students were 47.4% Caucasian, 15.8% Asian/Pacific Islander, 21.1% Hispanic/Latino, 10.5% African American, and 5.3% Other.



Pre DAST Drawings



Post DAST Drawings

REU students' representations of scientists change to more diverse characters after REU training



Post DAST Drawings

RESULTS

A paired samples *t*-test found that students' pre-post drawings demonstrated an increase in features depicting *REU-related experiences*. Coding was based on a 20-point scale (1 point per category). Tallied descriptors included scientists presenting poster sessions, working on laptops, submitting IRB protocols, publishing research papers, and other REU-experienced science-identity themes. $t(16) = 4.19$, $p < .001$, $d = 1.02$.



*The gender increase pre-post is non-significant

In contrast with pre-DAST depictions, post-REU drawings were purposeful in their ambiguity and included bi-sexual sex symbols, silhouettes, shaded bi-sexual tones, question marks, and diverse body styles to show that "everyone is a scientist" (see text in image *).

CONCLUSIONS

- Future research should promote greater access to formal research experiences and implement diversity-focused themes in undergraduate-level research methods coursework.
- With continued efforts from educators and policy makers, undergraduate students will continue to learn that anyone from anywhere can be a scientist.

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Literature Cited

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