

“Anybody can do science if they’re brave enough”: Understanding the role of science capital in science majors’ identity trajectories into and through post-secondary science

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Tweet. *How are identity trajectories into and through university science and science outreach shaped by science capital?*

AUDIENCE. Formal post-secondary educators, Informal educators, Science outreach

KEY POINTS

- Science experiences and resources, or science capital, make science more or less ‘thinkable’ for university students.
- Science capital accumulates over time across science identity trajectories as students navigate through science resources and experiences (e.g. families, science outreach).
- Science students’ trajectories into post-secondary science are characterized as expected, persistent or taking new directions.
- Access to resources that contribute to students’ accumulation of science capital is not sufficient for sustained engagement in science.
- Engaging students in science outreach that includes a critical awareness of their own science capital can benefit students.

INTRODUCTION. This research investigates the experiences and resources that make science thinkable for undergraduate science majors as they engage in post-secondary science contexts. We regard these experiences and resources as contributing to science majors’ *science capital* (Archer et al., 2015), and we suggest that science capital accumulates over time across identity trajectories. Using a multiple case study approach, we characterize seven undergraduate science majors’ identity trajectories that they narrate through their stories of experiences with science in school, out of school and into post-secondary education. Participants in this study were engaged in science outreach, and we collected questionnaire, video diary and interview data related to their science experiences and outreach experiences. Thematic analysis focused on episodes where science majors identified resources that facilitated moments where they felt more, or less like a science person (Carlone & Johnson, 2007).

FINDINGS. We found that science majors draw on conflicting narratives to make sense of their selves as science people. Science majors narrated science as a natural choice for them, but also that success in science required hard work, suggesting that they earned their positions in science through hard work and dedication. Our findings demonstrate a tension between the “natural choice” and “science takes hard work” narratives that construct the doxa (the accepted “way things are”) of an ideal scientist as someone who is naturally inclined towards science yet also hard-working, which does not account for accumulated capital or its exchange and use

in post-secondary contexts. We found that accumulated science capital appeared to play a role in constructing the idea a participant articulated that “anybody can do science if they are brave enough to take that path.” This idea was not universally experienced by all participants. The data suggest that although the science majors all entered post-secondary contexts with sufficient capital-forming experiences to see themselves as science people, the transition into science was experienced differently across participants depending on the forms of science capital they arrived with, and whether they carried use or exchange value in the new learning environment.

TAKEAWAYS. This study contributes to our understanding of how science capital operates along identity trajectories into post-secondary science and demonstrates that simply having access to resources that contribute to students’ accumulation of science capital is not sufficient for sustained engagement in science. We argue that a science capital approach to teaching in formal and informal contexts, such as outreach, will benefit students if it includes a critical awareness of the cultural expectations of science as difficult and requiring hard work but also ‘natural ability’ and works to deconstruct its elite status.

Carlone & Johnson. (2007). *JRST*, 44, 1187-1218.

Archer, Dawson, DeWitt, Seakins & Wong. (2015). *JRST*, 52, 922-948