

Science Identity Development and Community Service Perceptions from Girls within a STEM Summer Camp

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Introduction

As more information on climate change emerges, the number of education programs focused on fostering environmentally responsible behavior through community service has increased. These programs specifically cater to fostering a positive environmental identity and encouraging engagement in proenvironmental behaviors. However, climate change is a global phenomenon that should be addressed in all science programs. Yet there is little information available on the environmental identity development of campers who attend a summer science camp that is not specifically an environmental camp. Further, there is scant information on these campers' views of the environment and the purpose of community service and community-based conservation efforts. The purpose of this study is to better understand views of middle school girls who participate in a science camp that is not specifically connected to environmental science.

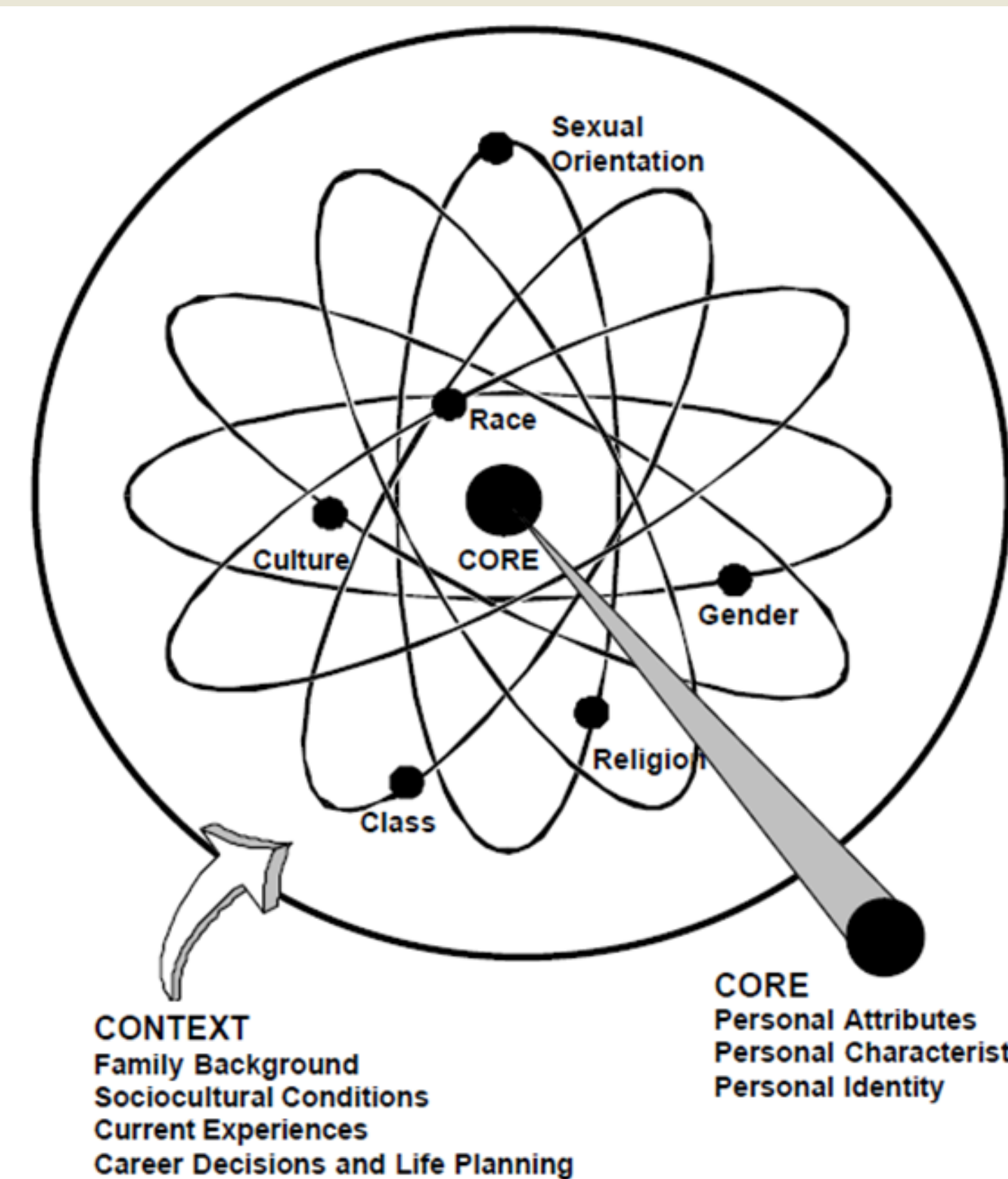
Research Questions

1. How do middle school girls participating in a two-week summer science camp define community service and community-based conservation efforts?

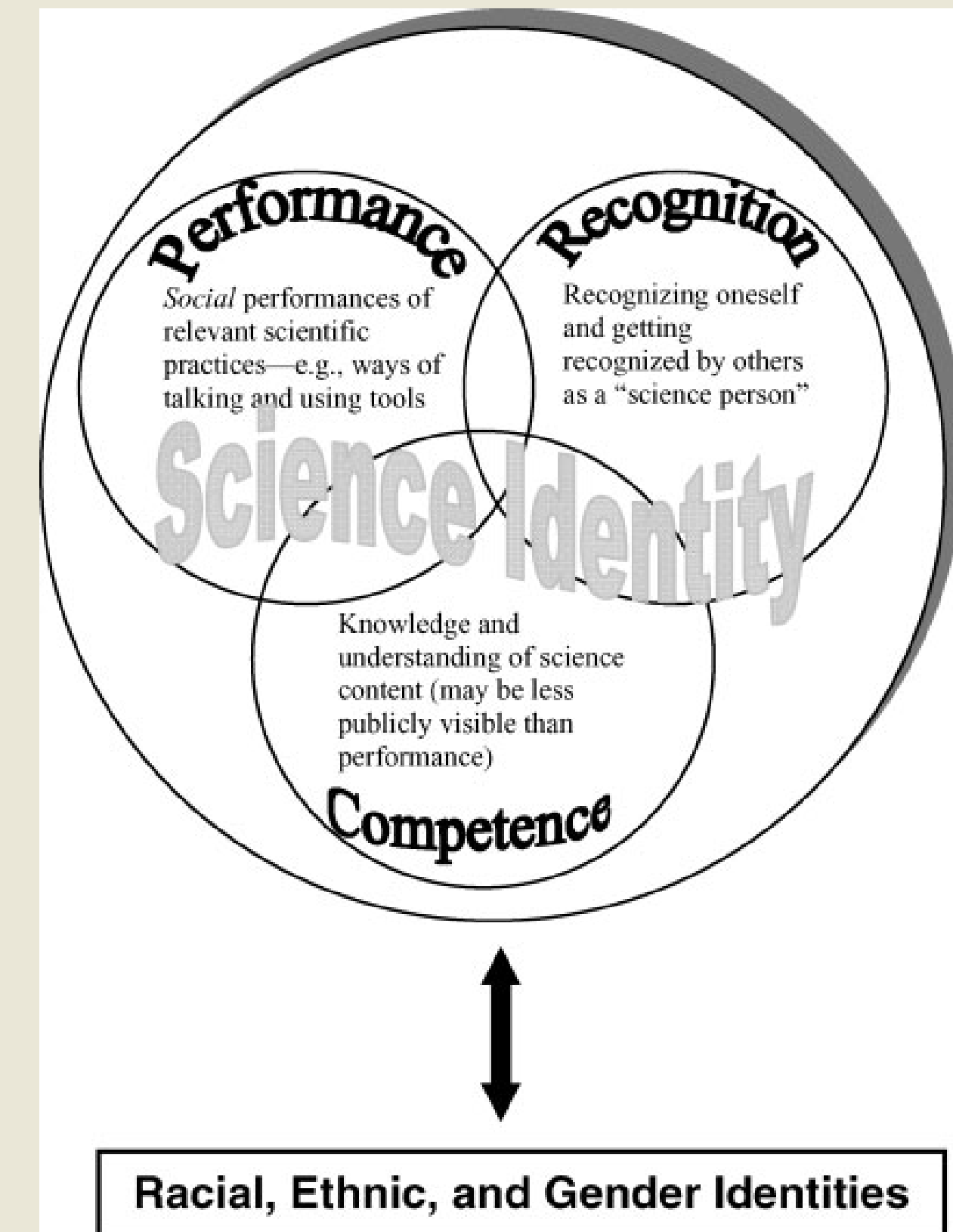
a. How do they see science in their community service and/or their community-based efforts? Is there a difference based on individual versus group conservation?

2. How do middle school girls talk about their identities as it relates to science and community service?

Theoretical Frameworks



Model of Multiple Dimensions of Identity (Jones & McEwen, 2000)



Model of science identity that guided initial analysis. (Carlone & Johnson, 2007)

Program Design

The local SciGirls program is a part of a national outreach effort to provide educators with research-based strategies for engaging girls in STEM, the SciGirls 7. These strategies include explicit attention to features in girls learning, including;

- Encouraging collaboration and open communication
- Using motivating and relevant hands-on projects
- Allowing different approaches to projects that accepts creativity and unique talents
- Providing role models to help girls gain confidence

Data Collection and Analysis

Data analyzed includes: SciGirls application, pre-survey, observation field notes, interview with the researcher at conclusion of the camp, student work - final poster presentations

For research question 1, I asked girls directly during interview. For second research question, I looked for markers of identity as girls talked about developing science competence, performing those competencies, and becoming recognized by role models (Carlone & Johnson, 2007)

Participants

Emily	Lisa	Trinity	Suzanne
White or Caucasian	American Indian or Alaska Native, Black or African American	Black or African American	Black or African American, White or Caucasian
Title 1 School	Title 1 School	Non Title 1 School	Non Title 1 School
Forensic Scientist	Veterinarian, Gastroenterologist, Pediatrician	Doctor - Find cures to children's cancers	Paleontologist, Archeologist, Marine Biologist, Geologist.

Smart Girls Cohort 2018: Ethnicity and Title 1		
	Smart Girls 1 (n= 24)	Smart Girls 2 (n= 17)
Asian	16.7% (n=4)	17.6% (n=3)
American Indian or Alaska Native	8.3% (n=2)	5.9% (n=1)
Black or African American	26.2% (n=7)	29.4% (n=5)
Hispanic or Latina	8.3% (n=2)	11.8% (n=2)
White	58.3% (n=14)	47.1% (n=8)
Attends a Title 1 School	58.3% (n=14)	47.1% (n=8)

Case Studies

	Emily	Trinity	Suzanne	Lisa
Community Service	Giving back to the community, preserving historical sites, protecting the environment, and helping people.	Honors Society has exposed her to service. Helping people, this can be in the form of providing goods or fundraising.	Either you are in trouble and need to perform community service or you want to help the community which includes donating and helping with food drives.	Means to volunteer somewhere, not destroying the environment, "conservation is a service".
Science in Community Service	Volunteers at nursing home. Sees no connection to science.	Started her own conservational club.	Likes helping out in the community but can't because of age.	Too young to volunteer at the vet clinic so she takes care of dogs in neighborhood. Also, picked up trash with her cousins along a dirt road.
Group or individual Service?	Group but the dynamics must be "balanced"	Prefers working in a group of volunteers who are helpful, smart, and thinks twice	Depends on the situation.	There's strength and safety in numbers.
Science Identity	"Science is what the world is made out of so to understand the world we need to understand science" (from presurvey)	Sees science as a "nerdy" hobby but admittedly loves science.]Can't imagine being a scientist but can see herself finding cures for diseases as a future career. Wants to help people.	Wants to volunteer because it could lead to employment and making money on a boat or someplace else she is interested in scientifically.	Absolutely loves science but is conflicted when every time she looks at the tv, there is a white man on there but no black people or females.

Discussion and Further Research

Overall, the girls in this study, all of whom are interested in going into a science field, do not see scientific links to the community work that they do. These four girls all define community, community service, and community-based conservation differently. While all girls would like to participate in group conservation efforts, all have encountered barriers with volunteering, most notably is the age requirement. Further qualitative research needed to understand reasons why girls who are interested in science don't participate in community service. This extends on previous findings that state the need to understand the barriers students face when attempting to participate in community service (Parker & Franco, 1999) but also acknowledges that science identity does play a factor in conservation efforts. To fully understand the reasons students don't engage in proenvironmental actions, researchers need to also investigate the salient identity that motivates girls to do so.



PURPOSE
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The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305B170017 to Florida State University. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.