Sense of belonging & representation in STEM

Katherine Rainey
Melissa Dancy
University of Colorado – Boulder

Roslyn Mickelson, Stephanie Moller, Elizabeth Stearns
University of North Carolina – Charlotte

NSF-STEP, DUE-0969286
Belonging in college & STEM

Belonging refers to one’s feeling of membership and acceptance in their field.¹

Sense of belonging is

❖ Correlated to both achievement and retention of underrepresented students
❖ Context-dependent

Data collection: interviews

- Interviews conducted with 317 college seniors within the North Carolina higher education system.
- Looked at the 107 who were STEM majors

Majors include:
- Biology/health science
- pSTEM

Students were asked the question(s):

- Do you feel like you belong in your major? Did you ever feel out of place?
Belonging by gender

Men (n=40)
- Belongs in STEM: 80%
- Mixed: 7%
- Does not belong in STEM: 13%

Women (n=67)
- Belongs in STEM: 63%
- Mixed: 27%
- Does not belong in STEM: 10%
Reasons cited for not belonging in STEM

<table>
<thead>
<tr>
<th>Lacks social identity</th>
<th>“[Other students] seemed to click with everybody else about stuff ... They would talk to me but I kind of felt like these people really aren’t my people.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacks personal interest</td>
<td>“I enjoy [my major] but if I’m going to have to do something for the rest of my life, I want to ... thoroughly enjoy it and have a passion for it.”</td>
</tr>
<tr>
<td>Lacks understanding</td>
<td>“I feel out of place because I think [other majors] know more than I do.”</td>
</tr>
</tbody>
</table>
Belonging by gender & race

- White men (n=28)
- White women (n=44)
- Black men (n=9)
- Black women (n=23)

Breakdown:
- Belongs in STEM
- Mixed
- Does not belong in STEM
Belonging by representation in major

White men (n=27)
White women - bio/health (n=24)
White women - pSTEM (n=19)
Black men (n=9)
Black women (n=22)

Belongs in STEM  Mixed  Does not belong in STEM
Belonging by representation of women in major

- **White women - bio/health (n=24)**
  - Belongs in STEM: 60%
  - Mixed: 40%
  - Does not belong in STEM: 0%

- **White women - pSTEM (n=19)**
  - Belongs in STEM: 60%
  - Mixed: 30%
  - Does not belong in STEM: 10%

- **Black women - bio/health (n=13)**
  - Belongs in STEM: 85%
  - Mixed: 10%
  - Does not belong in STEM: 5%

- **Black women - pSTEM (n=9)**
  - Belongs in STEM: 89%
  - Mixed: 10%
  - Does not belong in STEM: 1%
Belonging by representation

- **White men (n=27)**: 88% Belongs in STEM, 0% Mixed, 2% Does not belong in STEM
- **White women - bio/health (n=24)**: 71% Belongs in STEM, 24% Mixed, 5% Does not belong in STEM
- **White women - pSTEM (n=19)**: 68% Belongs in STEM, 32% Mixed, 0% Does not belong in STEM
- **Black women - bio/health (n=13)**: 54% Belongs in STEM, 38% Mixed, 8% Does not belong in STEM
- **Black men (n=9)**: 78% Belongs in STEM, 11% Mixed, 1% Does not belong in STEM
- **Black women - pSTEM (n=9)**: 56% Belongs in STEM, 44% Mixed, 0% Does not belong in STEM
Discussion

• White men report the highest sense of belonging: 100% of white men reported feeling they belonged in their STEM major.

• Black students have the lowest reporting of belonging.

• Women are more likely to have mixed responses about their sense of belonging than men are.

• Differences between women’s sense of belonging is dependent on representation of women in their major.

Representation in one’s major, based on both race and gender, has an impact on sense of belonging.

When considering belonging of students in STEM, analysis based on both gender and race must be used.