

Being and Becoming: Gender and Identity Formation of Engineering Students

Center for the Advancement of Engineering Education

Debbie Chachra, Franklin W. Olin College of Engineering

Deborah Kilgore, University of Washington

Heidi Loshbaugh, Colorado School of Mines

Janice McCain, Howard University

Helen Chen, Stanford University

Engineering identity



© Rachel Hauraney

www.carleton.ca

Group identification

Survey constructs: Centrality
Private Regard
Public Regard
Group Identification

Based on Multidimensional Inventory of Black Identity
and Group Identification Scale

[Sellers *et al.* 1997; Brown *et al.* 1986, Hinkle *et al.* 1989]

Survey results

First-years and sophomores only.
Few differences by gender.

During sophomore year:

Women reported a higher degree of centrality of identity than men ($p < 0.1$).

Men reported a higher perception of public regard for engineers ($p = 0.07$).

What is engineering?

Does everyone define and perceive engineering similarly?

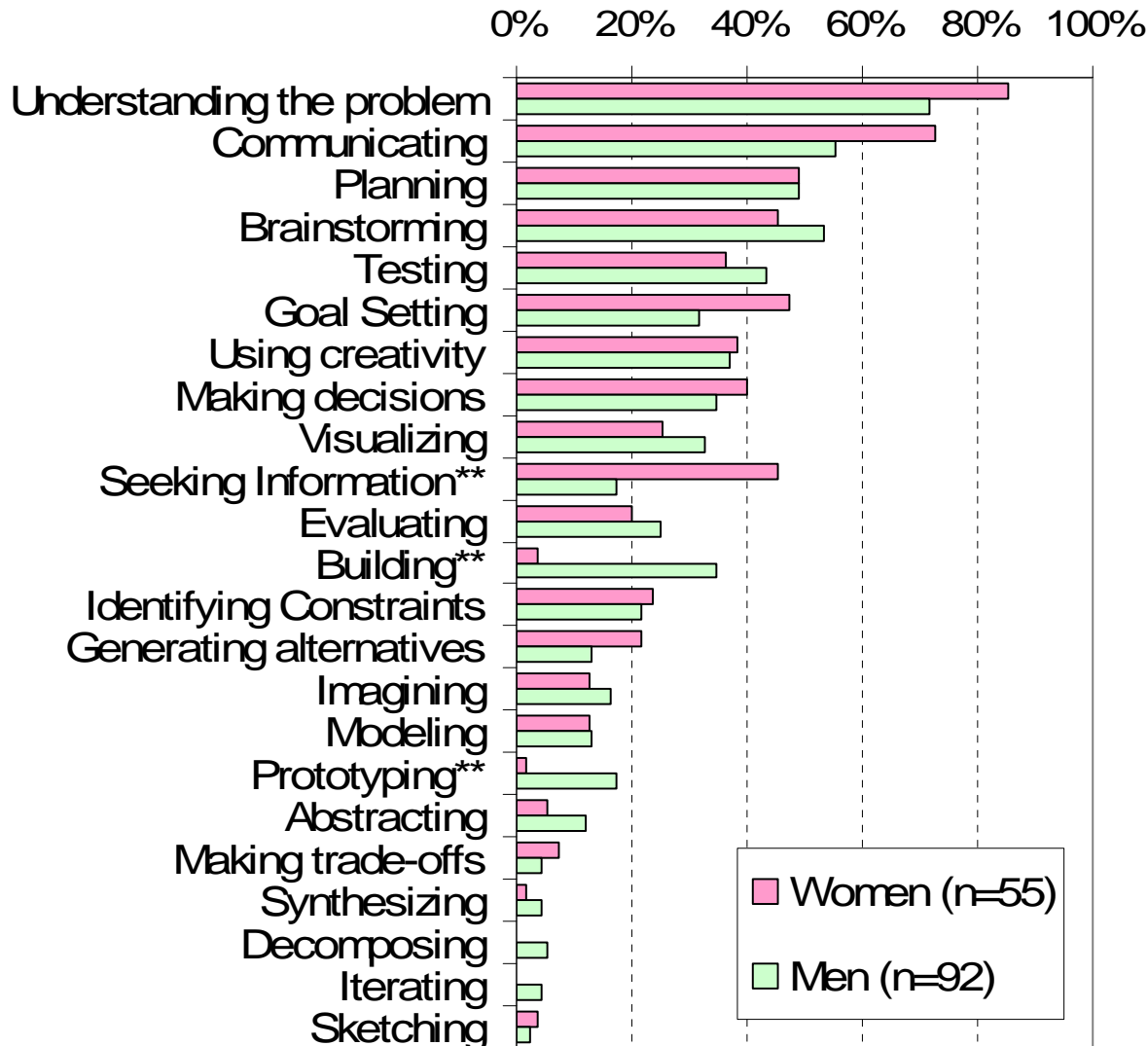
Tension between 'technicist' view and technical/social practice [Faulkner 2007]

Perception changes over time

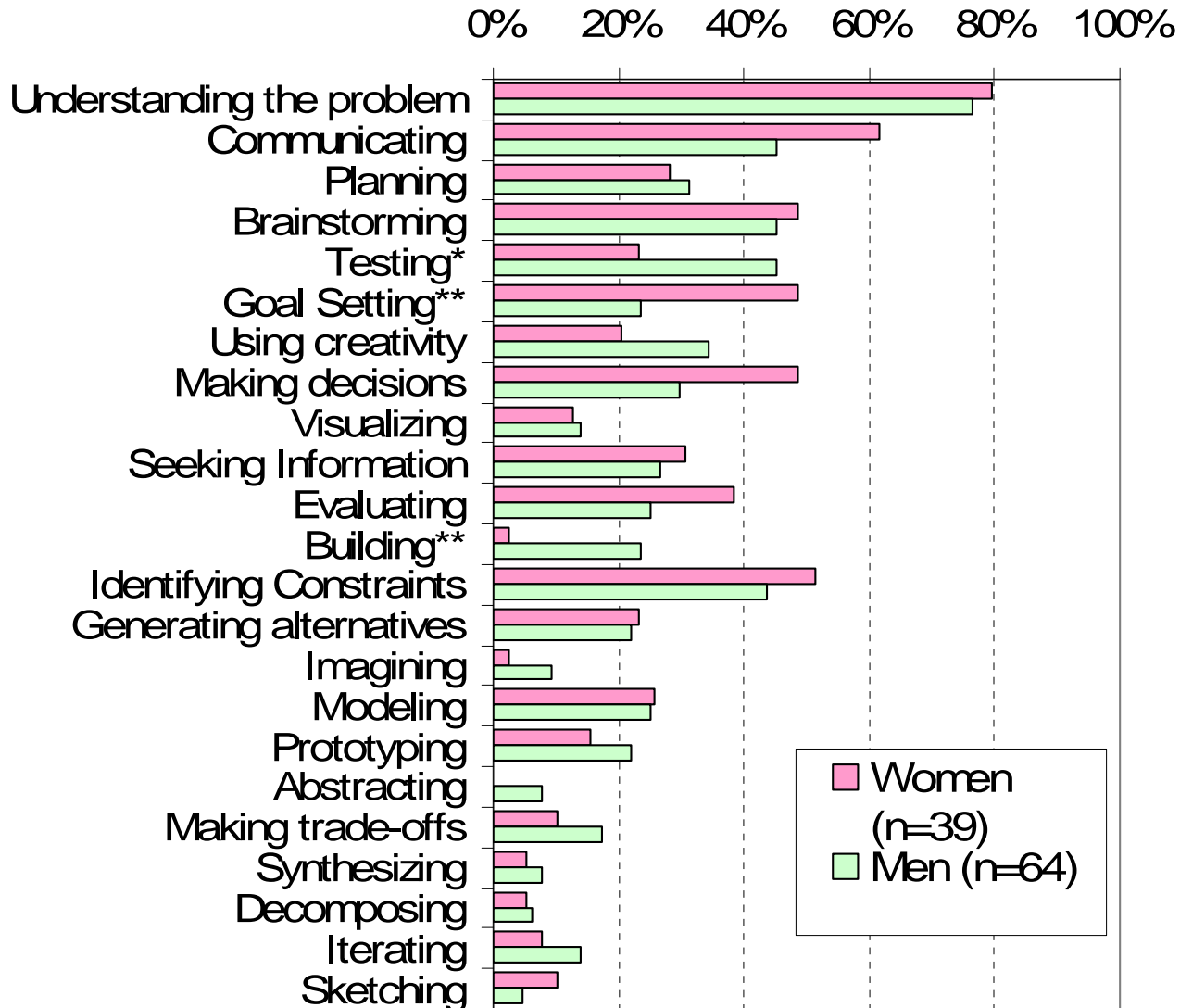
“In your own words, would you please define engineering?”

	First-year	Junior
Designing/creating/building	40.5%	22.0%
Application of math and science	21.6%	19.5%
Problem solving	20.3%	28.0%
Improving humankind	8.1%	13.4%

Important design activities: first-year



Important design activities: fourth-year



Gender and engineering activities

[G]uys are different from girls, like when we are working on projects and stuff, and sometimes there's – they have like one track mind where it's like let's just get through this and then we can go. And then – but then I guess when I'm in a group then I sort of have to pay attention to the little details surrounding it, like, oh, what about this, what about this, and maybe we have done this – maybe not get through everything in one sitting as they would like, but then consider more of the big picture sometimes.

What does all this mean?

Engineering identity is a moving target;
perception changes with time.

Men and women may not define engineering
similarly.

How does this affect engineering identity?

Implications for recruitment and retention?



Revenge of the Nerdette

As geeks become chic in all levels of society, an unlikely subset is starting to roar. Meet the Nerd Girls: they're smart, they're techie and they're hot.

Newsweek (June 16, 2008)

Acknowledgement

This material is based on work supported by the National Science Foundation under Grant No. ESI-0227558, which funds the Center for the Advancement of Engineering Education (CAEE). Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



CAEE is a collaboration of five partner universities: Colorado School of Mines, Howard University, Stanford University, University of Minnesota, and University of Washington.