A Social Science Primer
Knowing a bit of the “why” can help with the “how”
Some useful concepts to “think with”

Schemas / Identity / Stereotypes
Fixed Mindset vs. Growth Mindset
The Ecological Fallacy
Bias and Unconscious Bias
SCHEMAS, IDENTITY, and STEREOTYPES
What are some of your schemas?

QUICK!!!! Don’t think....

What do you think of or who or what do you see, when you hear:

- Montana
- Creative
- Vacation
- Criminal
- Professor
- Doctor
“SCHEMAS”

Simplified mental structures we use to organize our *knowledge* of the world around us.

They are shared, to some extent (i.e., social).

They are a kind of stereotype, or rather, stereotypes are a kind of schema.
You use “Schemas” to even think about yourself!

WHO ARE YOU?

Quickly generate a list of SINGLE WORDS that describe you.
**Personal Identity** = how you think of yourself as unique or as an individual.

**Social Identity** = how you are recognized or “known” by others.

Identities can be lifelong/fleeting, core/peripheral, wanted/unwanted.

“MALE” and “FEMALE” have historically been key social identities.
We have “Schemas” about professions and jobs
Google Search: genius programmer

IT MUST BE THE BEARD

Programming language developers grouped by facial hair

ADA, C#, COBOL, ERLANG, FORTRAN, HASKELL, & PROLOGUE

BASIC, PERL, SIMULA, & SMALLTALK

PHP & RUBY ON RAILS

C, C++, JAVA, LISP, & PASCAL

ncwit.org
Search: genius programmer
But the original programmers & computer scientists were women.
Children quickly pick up that computer science, is what men do

When students conjure up an image of a computer scientist, they tend to imagine a male who is unattractive, pale and thin, and wearing glasses (Mercier et al. 2006).

1st graders in a recent study--girls and boys alike--thought boys were better at programming and robots. (Masters et al, 2017)

"Stereotypes get inside our heads in subtle ways. When you see a computer scientist on television or in a book, it's usually a man—probably a white man or an Asian man," said Master. "Every little instance of that builds up into these big stereotypes inside our heads. To counteract them is very, very difficult."

– UW psychologist Allison Masters
Stereotypes

generalized beliefs about the characteristics
Growth Mindset vs. Fixed Mindset
Fields Have Dominant Mindsets

“Being a top scholar in [field] requires a special aptitude that just can't be taught”

“When it comes to [field] the most important factors for success are motivation and sustained effort; raw ability is secondary”

\[ r = -0.64, p = 0.025 \]

(n=1,820) in 30 disciplines

Leslie, Cimpian, Meyer, & Freeland, 2015
A “Fixed Mindset” Amplifies the Impact of Stereotypes
Current cultural stereotypes imply that . . .

1) Computing is something that that particular kinds of men [should] do

2) computing ability is innate and fixed.
Behavior Interpreted through Stereotypes
But women & men are different, right?

**EXAMPLE: Median Height (U.S.)**

*What’s your guess?*

- Women 5’ 4”
- Men 5’ 9½”
But women & men are different, right?

Don’t commit an “Ecological Fallacy”

...when you make conclusions about individuals based only on analyses of group data.
An **exception fallacy** occurs when you reach a group conclusion on the basis of exceptional cases.

Riegle-Crumb & King, 2010; Trusty, 2002
CONFIRMATION BIAS
the tendency to interpret new evidence as confirmation of one's existing beliefs or theories.
Are we aware of these beliefs? Often NOT!

“unconscious bias”
Implicit Bias Example 1
Orchestra auditions

Traditionally? Face-to-face
Now? BEHIND A CURTAIN
Why?
When behind a curtain (no gender cues available):
• Women’s probability of advancing out of preliminary rounds increased by 50%
• Increased the percentage of new orchestral hires that were women between 25-46%.

Swedish Medical Research Council review of post-doctoral fellowship applications:

Women needed to produce more than 99 “impact factors” to be judged as competent as men who had only 20 impact factors.

Identical resume evaluation: Case #1

Participants: 238 academic psychologists, ~50/50 male/female

Male applicant received better evaluations and was more likely to be hired than the female applicant.

Participants: Human resource managers who had placed ads (including those designated “equal opportunity employers”).

White-sounding names triggered 50% more requests for interviews.

TIE IT ALL TOGETHER
Why are Girls & Women Less Likely to Pursue CS?

Perceptions of Occupations
- It’s “Male”
- “Engineers don’t care”
  community, society, lives
- “Fix things” “not creative”
- Work alone

Experience of Bias (Conscious & Unconscious)
- Unconscious beliefs about who belongs
- Harassment
- Micro-inequities (intended and unintended)
- Stereotype threat

Gendering
- High standards and proving they are “good enough”
- Self-efficacy
- Career expectations: contributing to society
Student Support Programs can be:

- Resource intensive
- Not easily scalable
- May stigmatize & exclude!

They may be necessary NOW but think of them as stop-gaps and temporary.

#1. Because the individual student has “deficiencies,” math, spatial reasoning, study skills, connections

#2. Because the context is not good, you provide “life boats,” e.g., women’s groups, women’s teas, stereotype threat training
So What Can YOU Do?
ADDITIONAL RESOURCES

Critical Listening Guide (Promo Card and online: https://www.ncwit.org/resources/critical-listening-guide

Interrupting Bias in Academic Settings (card), also: https://www.ncwit.org/resources/interrupting-bias-academic-settings


Institutional Barriers: https://www.ncwit.org/resources/institutional-barriers-their-effects-how-can-i-talk-colleagues-about-these-issues-1