Exploring the Gendered Space of Attributes that Predict Expectations of Success in STEM

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Undergraduate Degrees Awarded by Sex (2002-2012)



Source: National Science Foundation - Women, Minorities, and Persons with Disabilities in Science and Engineering (2014)

STEM Degrees Awarded by Sex (2002-2012)



Proportion of men and women receiving undergraduate degrees in STEM (2012).





- More men than women are computer science majors.
 - Is / in what way is CS seen as masculine?
- More women than men are psychology majors.
 - Is / in what way is psychology seen as feminine?
- What can be done to change these perceptions?

Multiple factors in college major selection

• Economic rationalist

- Ability sorting and returns to major (Arcidiacono 2004)
- Gender Impacts
 - Stereotypes and gendered perceptions of ability (Correll 2004)
- Personality factors
 - Personality mediates gender effects (Korpershoek et al. 2012)



Methods

- Online survey of undergraduates
 - n = 375; 63% male
- Ranked themselves as to how well they felt that a list of 19 attributes described them.
- Ranked the importance of these attributes for "success as an undergraduate" in four randomly selected fields
 - Anthropology, Geography, or Psychology
 - Computer Science, Engineering, or Mathematics
 - Biology, Chemistry, or Physics
 - Business, Education, Foreign Languages, or History

ability to multi-task	~	1. reflective	
collaborative	1	2. patient	
focused	1	3. intuitive	
willing to take risks	1		
assertive	~		
self-disciplined	1		
passionate	~		
confident	~		
competitive	\rightarrow		
attention to detail	1		
empathetic	1		
persistent	1		
systematic	~		
creative	1		
articulate	~		
dispassionate	1		

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As an aggregate, some self-described attributes are more **popular** (have a higher average rank) than others.

Ranked high

- passionate
- disciplined
- focused
- confident

Ranked low

- systematic
- risktaking
- assertive
- dispassionate

An attribute is masculine or feminine to the degree that women or men would differentially self-identify with that attribute.









There was a different pattern for the attributes that participants perceived as **important predictors of success**.

Ranked high

- focused
- detail oriented
- disciplined







Conclusions

- The attributes with the highest gender loading, competitiveness and empathy, are not seen as particularly important for success in STEM.
 - More subtly male-biased attributes like discipline and attention to detail are likely more important influences.
- Compared to their non-STEM counterparts:
 - STEM women self-describe as less confident.
 - STEM men self-describe as less competitive.
- The use of high female loading attributes like **creativity** and **passion** may be an effective avenue for marketing STEM.