

Women in Science

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Pretest

What are the differences in achievement between males and females

- in K-12,
- in college STEM courses, and
- in STEM careers?

Why?



But aren't boys falling behind?

Opinionator

Exclusive Online Commentary From The Times

THE GREAT DIVIDE | February 2, 2013, 2:00 pm | 31 Comments

The Boys at the Back

By CHRISTINA HOFF SOMMERS



Boys in K-12 are less likely to

- Get good grades
- Take advanced classes
- Attend college

Statistics on Women in STEM careers



More women than men leave science and engineering.

(AAUP, May-June, 2009)

Women make up 24% of STEM jobs

(USA Today, 1 Aug 2012)

Women make up fewer than 12% of working engineers and physicists.

(CNN, 1 Oct 2012)

UD student slicing a mussel shell.

But why?

Larry Summers says:



**“in the special case of
science and engineering,
there are issues of
intrinsic aptitude”**

An alternative explanation

Study in *Proceedings of National Academy of Sciences*

DEMOGRAPHICS

Participant ID #: 149

Name: Jennifer [REDACTED]

Gender: Female

Ethnic background: Caucasian

Age: 22

Degree: Bachelors of Science, obtained May 2011 from [REDACTED] University

BACKGROUND

GPA: 3.2

GRE score: 650 verbal, 780 quant

Awards/honors: President's Service Award, Rotary Club College Scholarship

Previous research experience: 2 years as a research assistant working with 2 different faculty mentors

Academic standing: appears from Jennifer's transcript that she was in good standing upon graduation, but withdrew from 1 class prior to final

Letters of recommendation: 3 (2 from former faculty research supervisors, 1 from an intro science course professor), all supportive

Future plans: apply to doctoral programs

Extracurricular activities: student government, college learning center tutor

Position sought: Lab Manager

Position duration: 2 years, with possibility of renewal pending satisfactory performance

- Double-blind, randomized experiment
- Job qualifications identical, with only the gender changed
- “Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant.”

“The average starting salary offered to Jennifer was \$26,508. To John it was \$30,328.”

Science faculty's subtle gender biases favor male students
Corinne A. Moss-Racusin, John F. Dovidio, Victoria L. Brescoll,
Mark J. Graham, and Jo Handelsmana

“No learning occurs without a significant relationship.”



Creating a framework

Hourly wages



Scholarships



Incentives

Our best so far

1. Proposal
2. Data collection
3. Presentation



Proposal format

1. Introduction

Background information

Objective/hypothesis

2. Methods

3. Expected Significance

4. Budget

Example:

IV. Budget and Justification			
Item	Amount/Number		Cost
A. Chemicals (Soil Testing)			
1. Phosphorus			\$ 25.00
2. Potassium			\$25.00
3. Nitrogen			\$25.00
B. Sampling Equipment			
1. Daubenmire Square			\$20.15
2. Sample bags	1 Box (50 Bags)		\$1.59
3. Soil Collector			\$ 50.00
4. Soil Tins			\$75.00
C. Gas/Fuel ¹			
1. Car	2 gallons x trip 2		\$14.76
Total Requested			\$236.50

Outcomes

- 2 *Best Poster* awards, MRRC
- Med school admission, multiple grad school admissions
- Multiple changes in focus for future
- Multiple Vista/Americorps placements
- Jobs in science, including museums, government, and teaching
- Retention



Back to the Pretest: The Why Question



What does America value?

- Order and creativity
- Family and long working hours
- Diversity and familiarity

Back to Larry Summers

“I would like nothing better than to be proved wrong”



PHOTO: PATRICK D. McDERMOTT/UPI/LANDOV