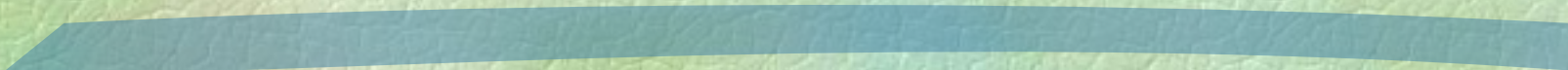


# Gender, Math, and the FCI



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# Gender Gap

A strong gender gap exists on FCI scores in which male students out-perform female students. (Data from 8 different institutions)

	Pre % (S.E)	Post % (S.E.)	<g> (S.E.)
Women (N=780)	35.6 (.5)	57.4 (.7)	0.34 (.01)
Men (N=1997)	50.3 (.4)	68.6 (.5)	0.39 (.01)

McCullough, 2002. *Gender, Educational Reform, and Instructional Assessment: Part I*. Paper presented at the American Association of Physics Teachers Meeting in Philadelphia, PA. January 2002. Available at <http://physics.uwstout.edu/staff/mccullough/physicseduc.htm>.

Crouch, C. H. (2002). *Gender, Educational Reform, and Instructional Assessment: Part II*. Paper presented at the American Association of Physics Teachers Meeting in Philadelphia, PA. January 2002. Available at [http://mazor-www.harvard.edu/talks/talks.taf?\\_function=detail&id=417](http://mazor-www.harvard.edu/talks/talks.taf?_function=detail&id=417)

# Mind the Gap

*Why does this gender gap exist?*

Are men better than women at physics?

Are women poorer test-takers?

Is the test biased against women?

Do women have weaker backgrounds in math and physics?

→ Let's look at math background

# Methodology

300 non-physics students at UW-Stout  
English and sociology classes (administering  
this was very fun!)

Voluntary, anonymous, ungraded testing

Given either the original FCI or a more  
female-centric version (McCullough, 2001)

After the test, asked 9 demographic questions

McCullough, 2001. *A Gender Context for the Force Concept Inventory*. Paper presented at the American Association of Physics Teachers Meeting in San Diego, CA. January 2001. Available at <http://physics.uwstout.edu/staff/mccullough/physicseduc.htm>

# Sample —UW-Stout

312 English and sociology students

45% first-years, 32% sophomores, 13% juniors,  
10% seniors

59% women, 41% men

30 different majors, only 43 undecided

64% of women and 53% of men had no  
previous physics experience

34% of women and 30% of men had high  
school physics

# Math level and FCI score

Avg. % score (N)	Males/ GFCI	Females/ GFCI	Males/ FCI	Females/ FCI
Pre- algebra	22 (6)	31 (4)	34 (6)	20 (12)
Algebra	25 (7)	21 (7)	27 (6)	19 (20)
Geometry	26 (30)	22 (42)	31 (19)	20 (48)
Calculus	33 (20)	21 (18)	33 (16)	23 (16)
Diff. Eqns.	59 (2)	38 (1)	60 (1)	
Other	25 (4)	23 (6)	33 (2)	25 (2)

Math level did not influence FCI score; nor did it interact with gender; gender gap seen

# High school math and FCI score

Avg. % score (N)	Males/ GFCI	Females/ GFCI	Males/ FCI	Females/ FCI
1		13 (1)		7 (1)
2	28 (6)	14 (2)	27 (2)	19 (6)
2.5				10 (1)
3	26 (30)	24 (24)	30 (17)	20 (45)
3.5		27 (2)		27 (4)
4	29 (30)	21 (49)	34 (29)	21 (37)
4.5	59 (1)			
5	44 (2)	25 (1)	30 (1)	33 (2)
5.5				27 (1)
6				27 (1)

Number of high school math courses taken did not influence FCI score; nor did it interact with gender; gender gap seen

# College math and FCI score

Number of college math courses taken did not influence FCI score; nor did it interact with gender; gender gap seen

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Avg. % score (N)	Males/ GFCI	Females/ GFCI	Males/ FCI	Females/ FCI
0	25 (21)	24 (36)	29 (12)	21 (35)
1	28 (26)	20 (28)	36 (21)	22 (30)
2	29 (12)	21 (11)	27 (10)	19 (22)
3	31 (7)	23 (2)	28 (2)	20 (8)
4	43 (4)	33 (2)	42 (3)	20 (2)
5			13 (1)	13 (2)
6			40 (1)	10 (1)



# Conclusion:

## Math background and FCI score

Math background does not have an effect on FCI score for this sample

An ANOVA analysis of the data suggests the same conclusion: math doesn't make a significant difference

Math and gender did not interact for this sample; but gender gap did show up

→ Math background doesn't explain gender gap