

The FCI and Context: Gender and Non-Physics Students



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Gender Gap

A significant gender gap exists on FCI scores in which male students out-perform female students*

	Pre % (SE)	Post % (SE)	<g> (SE)
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 & Crouch, AAPT Meeting Philadelphia January 2002

Mind the Gap

Why does this gender gap exist?

- Are men better than women at physics?
- Are women poorer test-takers?
- Do women have weaker backgrounds in math and physics?
- Is the test biased against women? Is there a male context to the test?

Can context affect student response?

Context and FCI

Try the FCI with new contexts: female-oriented and daily-life contexts for the questions*

Also, could the physics classroom be providing a male context for the test?

What if students take the test in a non-physics context? How would English students perform on the FCI?

Non-physics students

334 non-physics students in English, sociology and women's studies classrooms

Anonymous, ungraded, voluntary (high return rate)

No gender prompting; prompted for physics

Demographic questions at end of test

Overall results

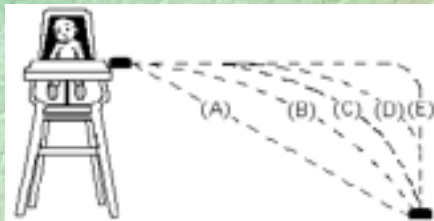
<i>Avg. % correct (N)</i>	Female/ FCI	Female/ GFCI	Male/ FCI	Male/ GFCI
Stout non- physics	22 (106)	22 (79)	34 (56)	28 (71)
SIUE non- physics	27 (8)	25 (8)	23 (2)	45 (4)
Stout physics			33 (25)	29 (25)
SIUE physics (calc.)	29 (16)		41 (76)	
SIUE physics (alg.)		28 (51)		33 (30)

Overall results

<i>Avg. % correct (N)</i>	Female/ FCI	Female/ GFCI	Male/ FCI	Male/ GFCI
Iowa (alg.)	33 (41)	35 (44)	39 (72)	42 (65)
Iowa (alg.)	26 (63)	27 (69)	35 (55)	34 (46)
Iowa (calc.)	37 (41)	40 (40)	48 (194)	48 (193)

Particular Questions

Cannonball path/
baby bowl path;
question #12/#17

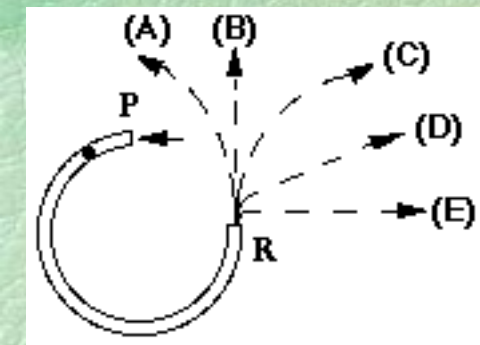
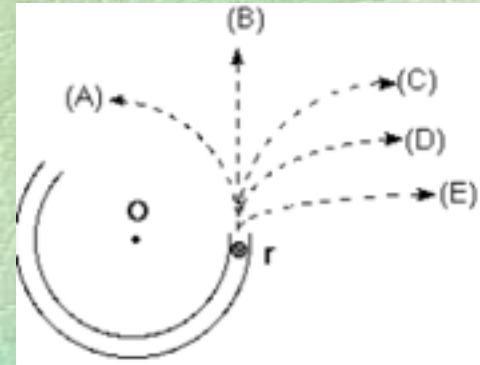


# 12/ # 17 % getting correct	F/ FCI	F/ GFCI	M/ FCI	M/ GFCI
Stout non- physics	34	51	66	66
Stout physics			64	92
Iowa algebra	51	57	71	74
Iowa calculus	46	55	84	63
SIUE algebra		67		83
SIUE calculus	50		74	

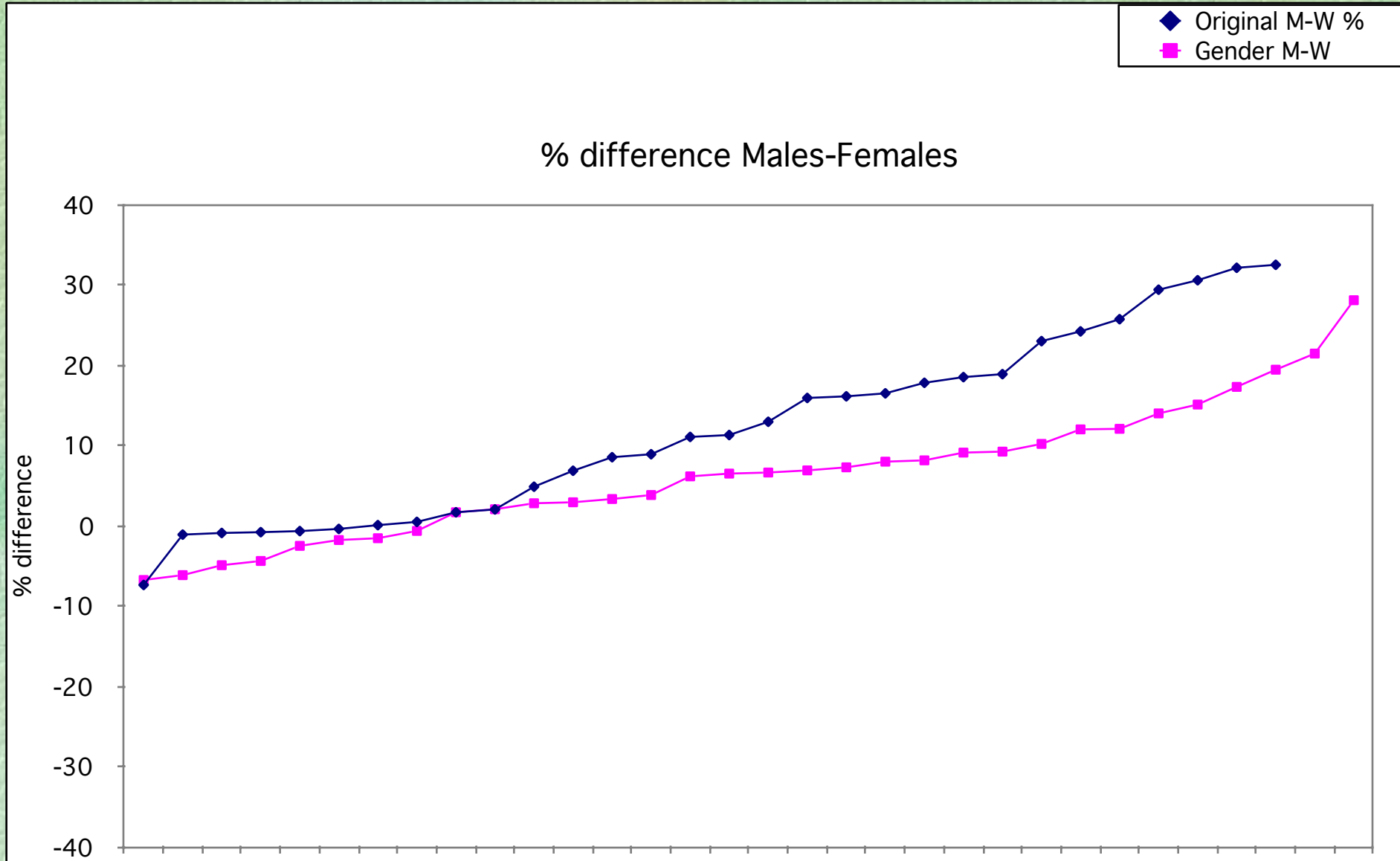
Particular Questions

Ball in channel/
water-slide; question
#6/#10

# 12/ # 17 % getting correct	F/ FCI	F/ GFCI	M/ FCI	M/ GFCI
Stout non- physics	46	53	77	67
Stout physics			72	80
Iowa algebra	63	77	76	88
Iowa calculus	61	83	83	89
SIUE algebra		69		77
SIUE calculus	56		84	



Minding the gap



Conclusions

Non-physics students don't appear to respond differently other than lower scores

Gender interaction patterns aren't consistent across different populations

Particular items show strikingly different response patterns

Thank you!

David Meltzer, Iowa State University

Tom Foster and Kim Shaw, Southern Illinois
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Emily James, Exeter Academy

Lynn Aldrich, College Misericordia

Pat Kenealy, Cal State-Long Beach

UW-Stout English & Sociology professors

Your name here!