

Information Inequality

Gender Gaps in Knowledge

Molly King

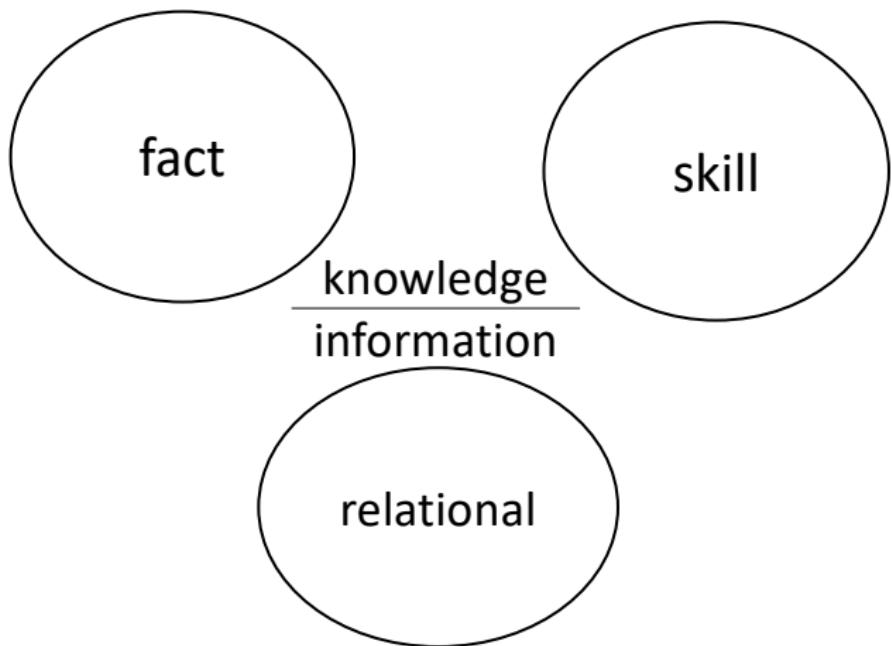
Stanford University

March 31, 2019



(Related theory: Hidalgo 2015, Simon 1971 | Cartoon credit: Loren Fishman | cartoonstock.com)

Types of Knowledge



Research Questions

Is there a gender gap in knowledge?

Does the gender gap in knowledge vary by domain?

What social process(es) explain(s) this gap?

Data

Data Source	No. Datasets	No. Questions
General Social Survey	5	40
Pew Research Center	20	222
USC's Understanding America Study	3	48
Rand American Life Panel	2	24
National Financial Capability Studies	3	16
Kaiser Family Foundation	1	7
Health Information National Trends Survey	7	125
Integrated Health Interview Series	1	12
21st Century Americanism survey	1	4
Global Views American Public Opinion	1	2
Outlook on Life Survey	1	6
National Politics Study	1	5
Chicago Survey of Amer. Public Opinion	1	2
Total	48	513

Domains

physical science
biological science
technology
math
literature
social science
natural world
geography
domestic politics
foreign politics
economics
finance
health
religion
war
current events

What's Missing?

- human development
- child care
- elder care
- household maintenance
- cooking
- car maintenance
- art
- music

Model

Factors	=	Outcome
Gender		Probability
Income		that you get
Race / Ethnicity	x 513	the question
Age + age^2		correct
Education		

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Hypotheses

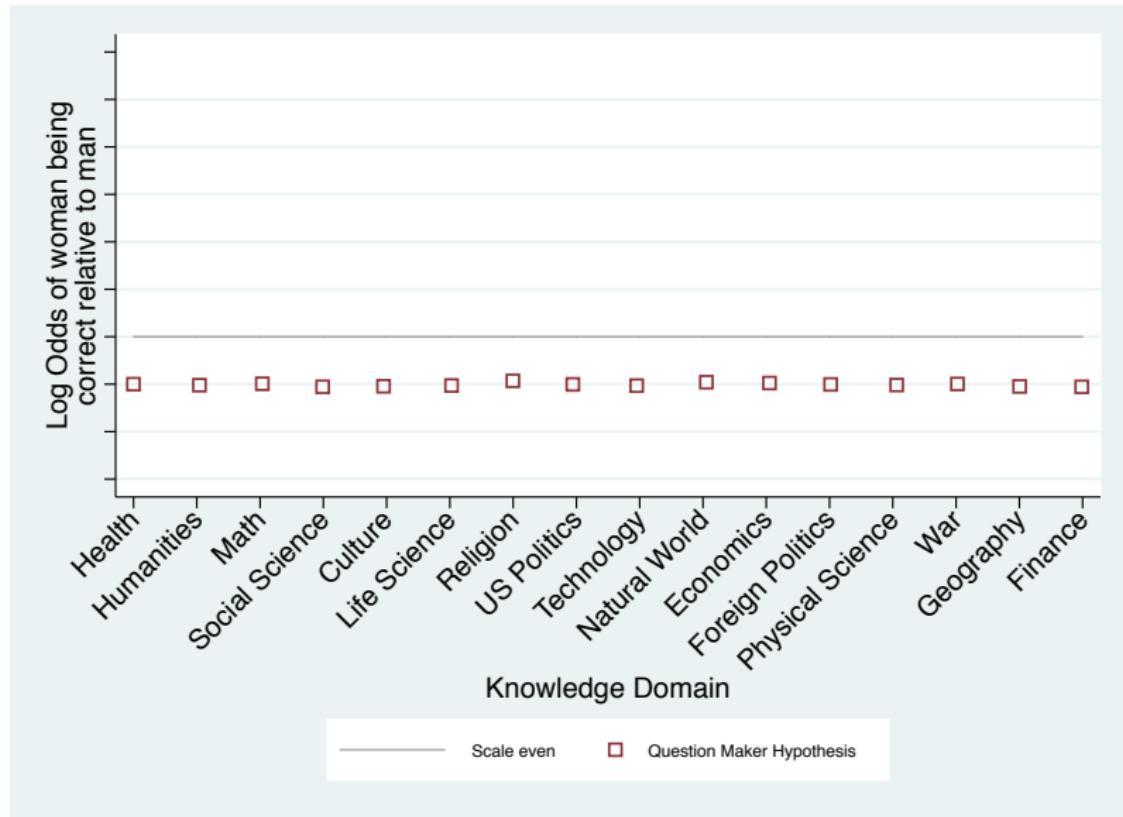
- Question Maker Bias
- Socialized Essentialism

Hypothesis: Question Maker Bias

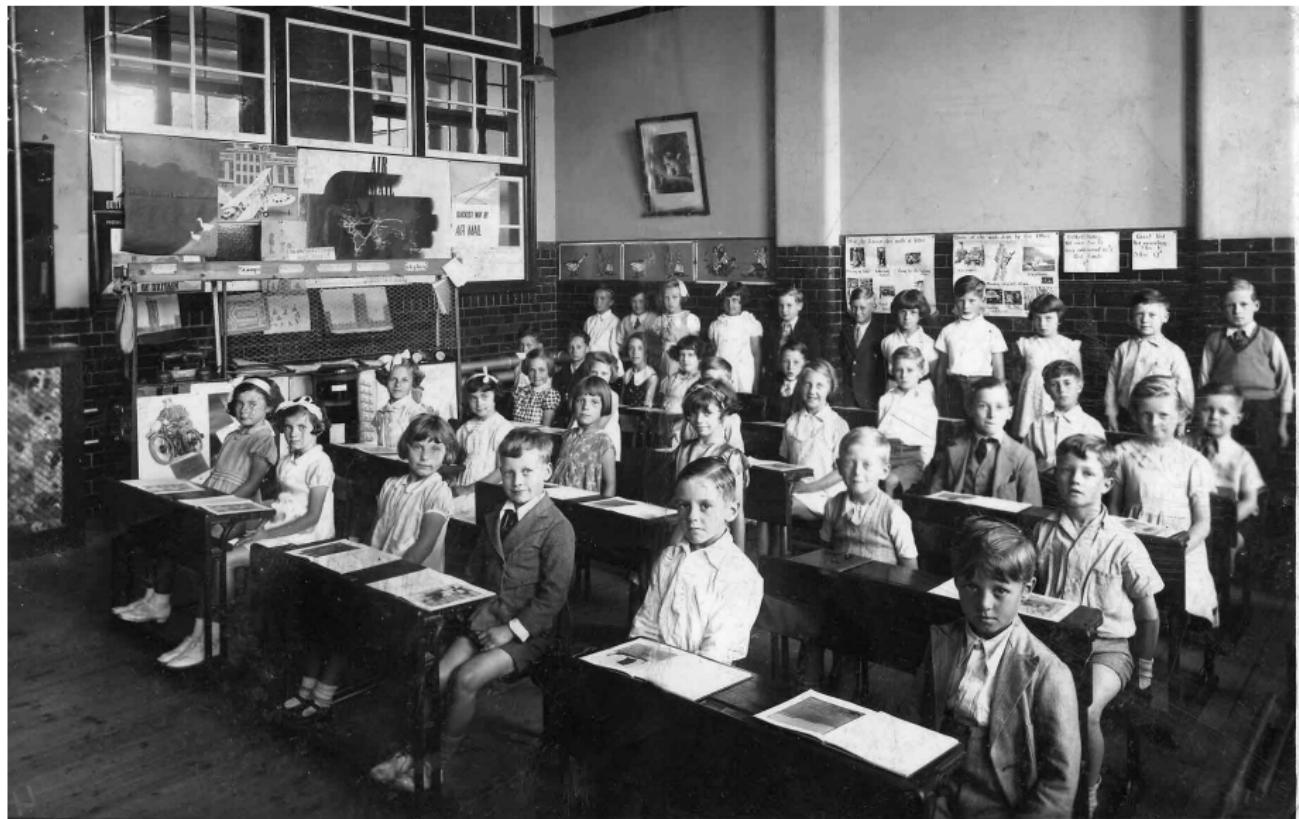


(Photo credit: Wellcome Images)

Hypothesis: Question Maker Bias

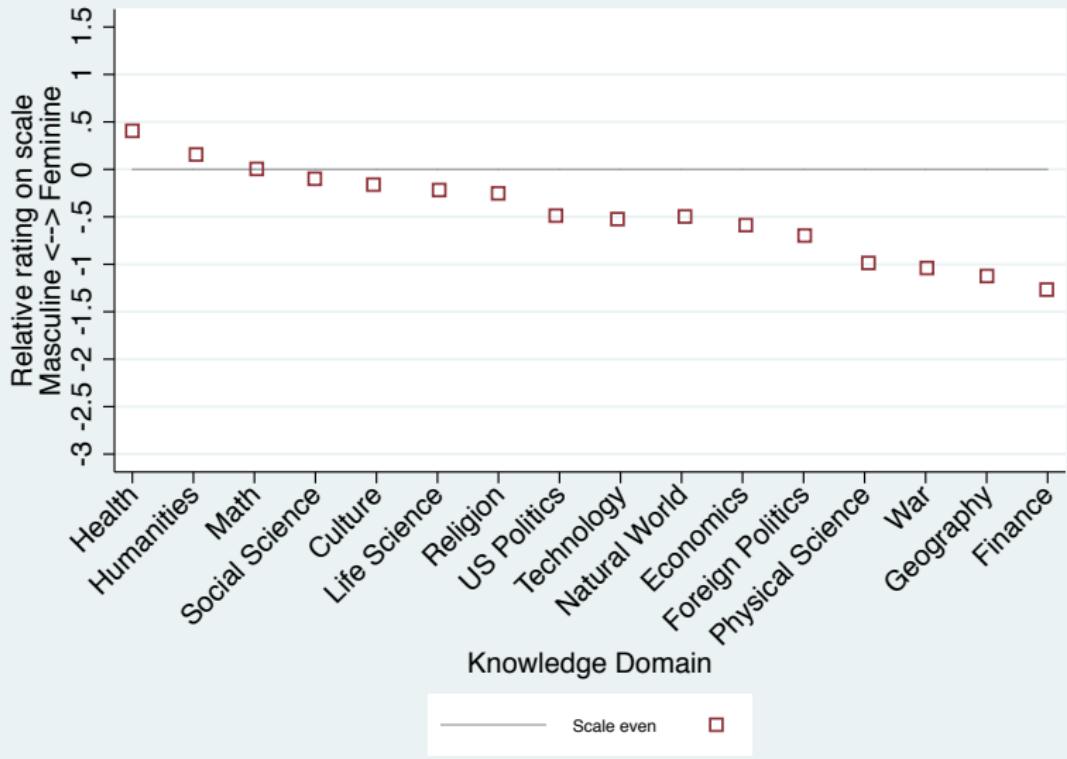


Hypothesis: Socialized Essentialism

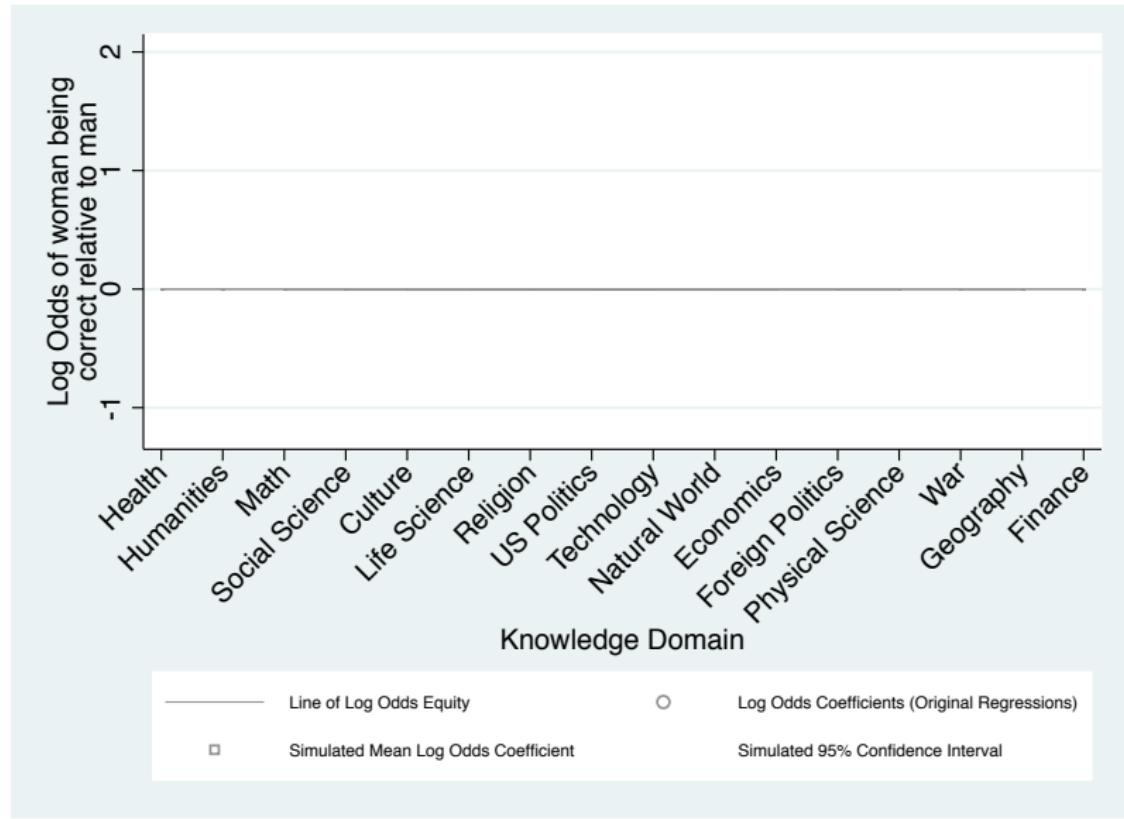


(Related theory: Ridgeway 2006, West 1987, Cech 2013, Charles 2009 | Photo credit:

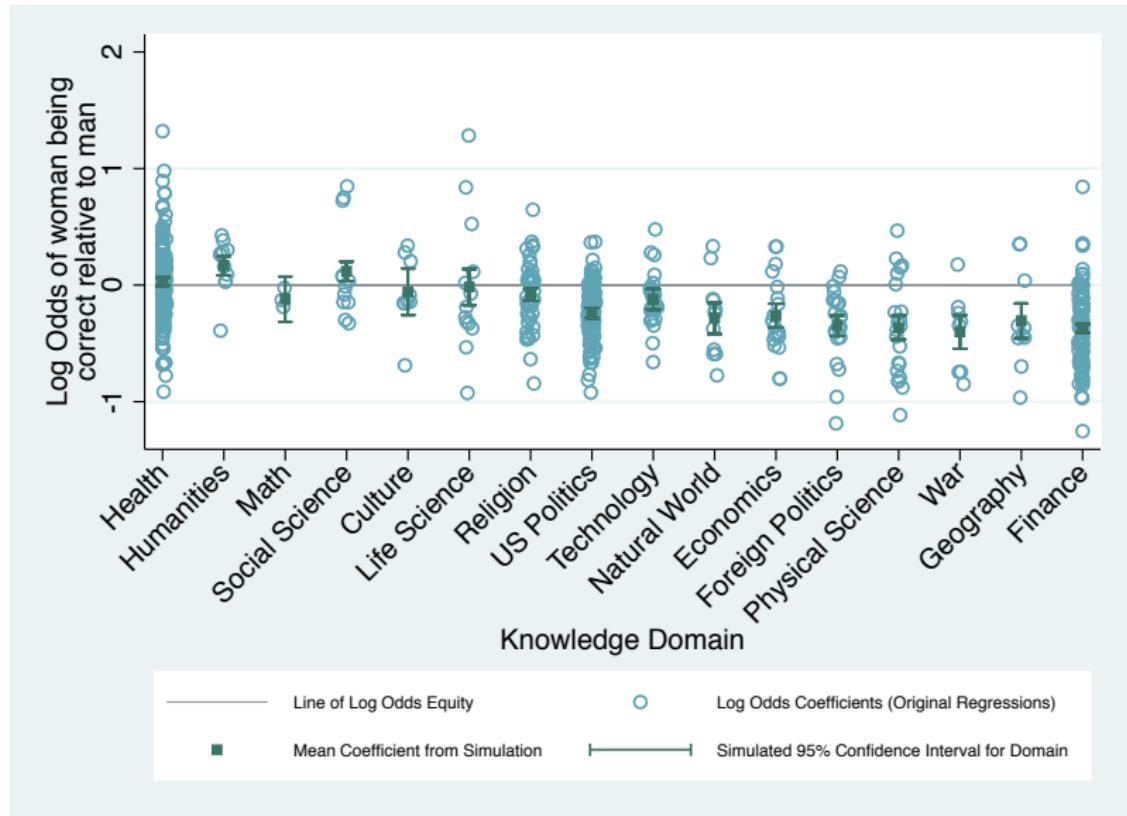
Hypothesis: Socialized Essentialism



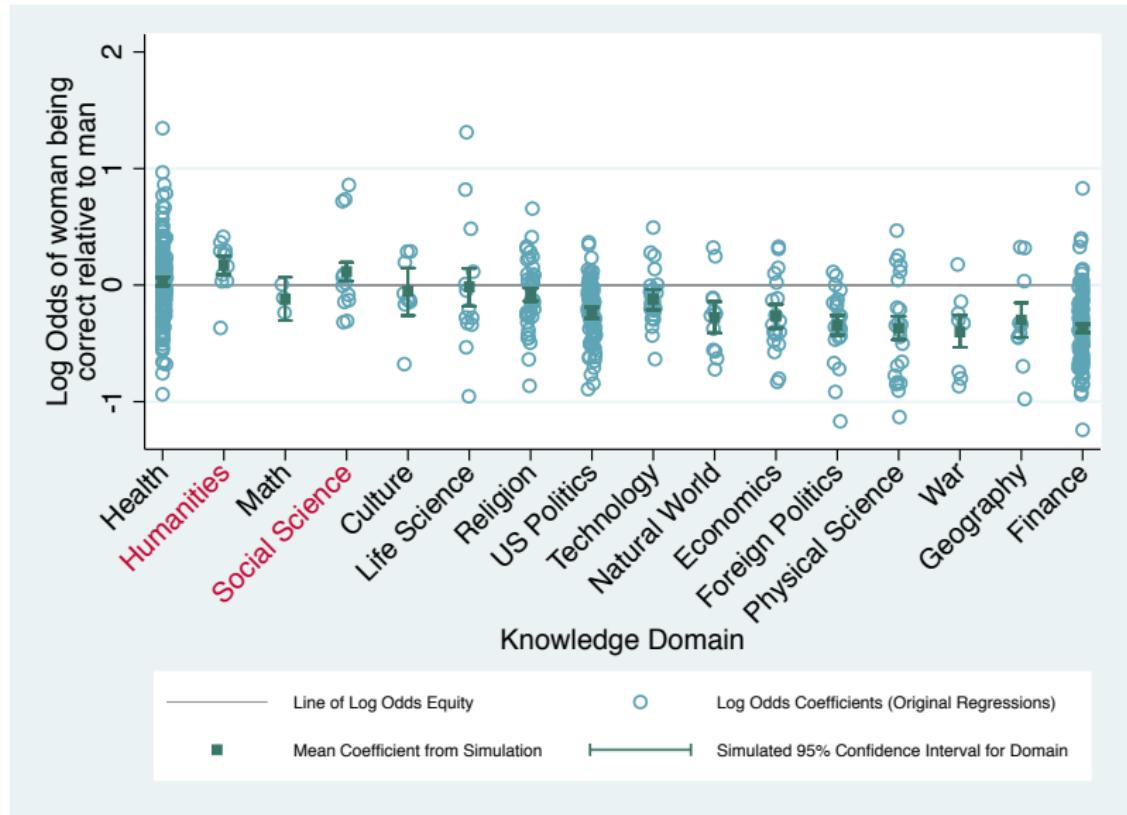
Domains Across X-Axis



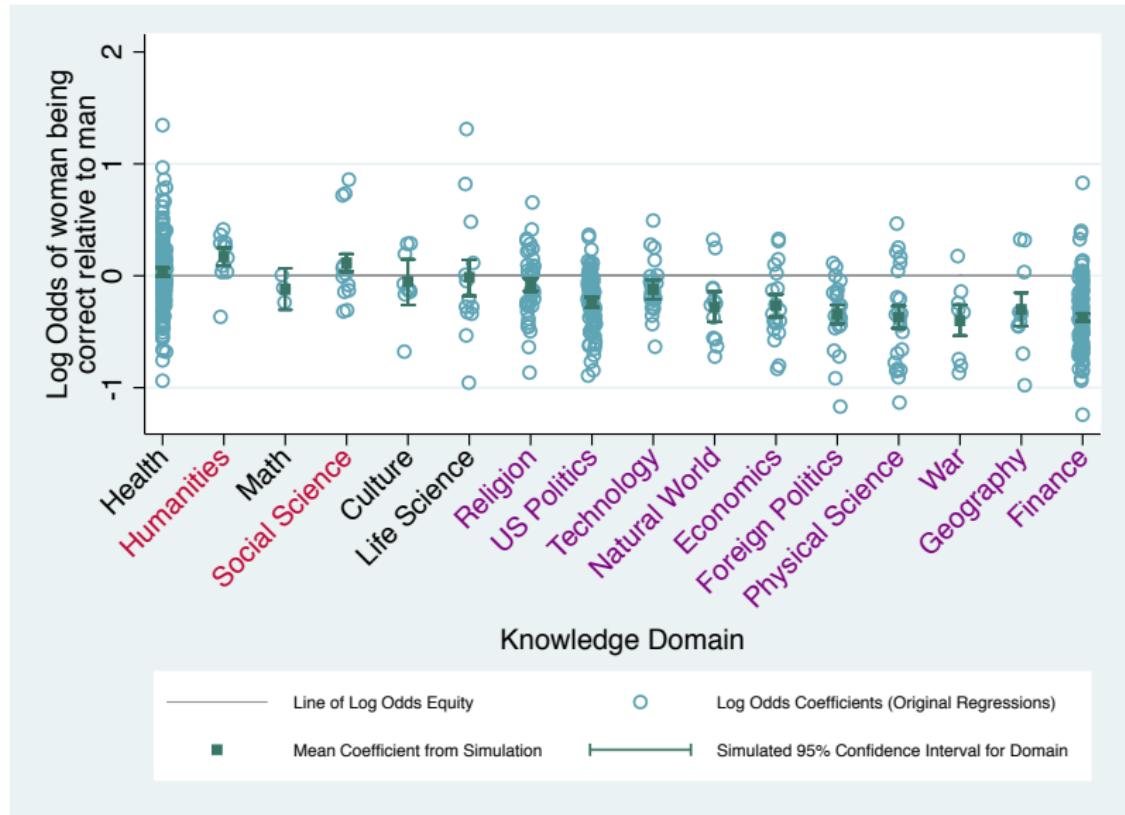
Each Model as a Data Point



No mean gender difference in 4/16 domains



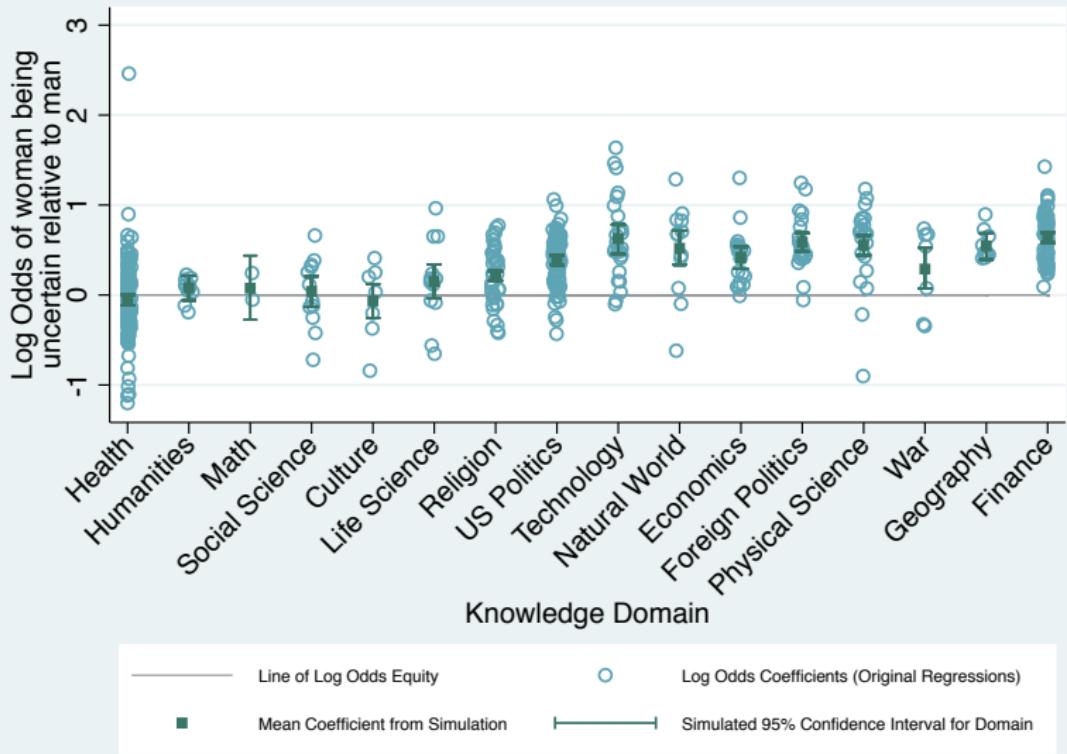
Men have greater knowledge in 10/16 domains



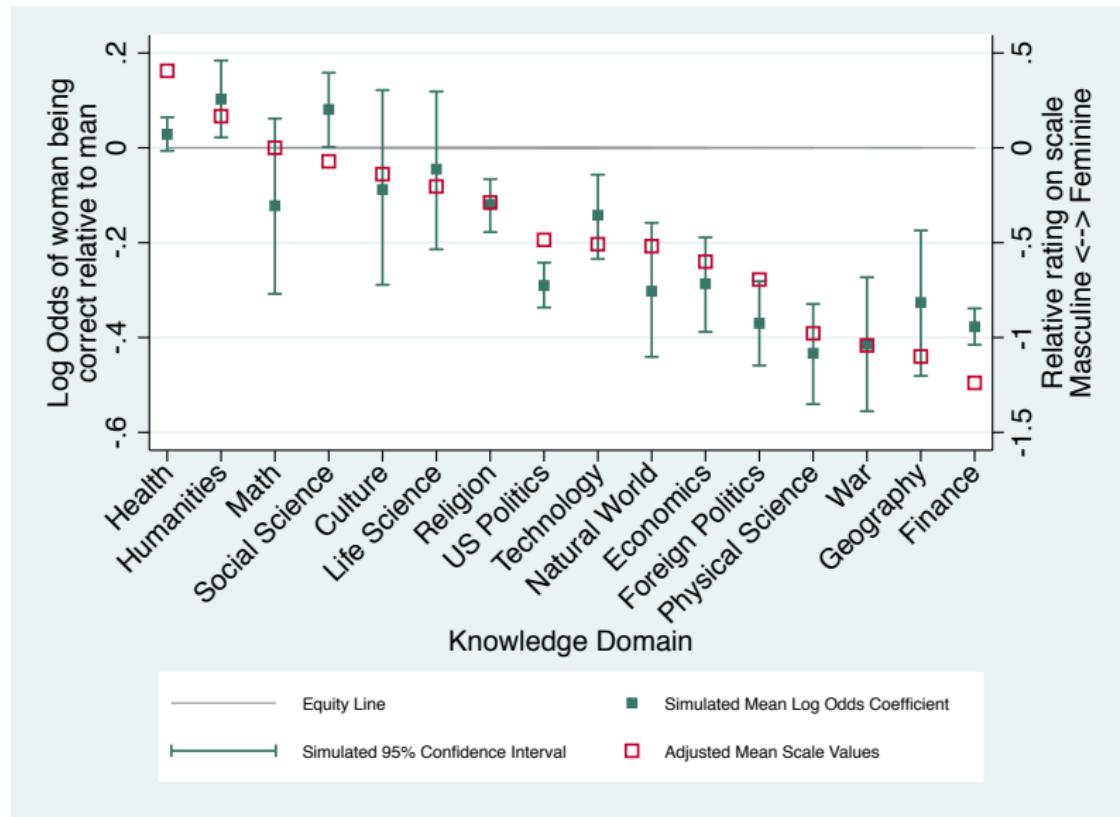
Result holds when controlling for education



Women answer more questions “don’t know”



Results: Socialized Essentialism



Thank You

Molly M. King

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Information & Status Differences

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Leisure Time



(Related theory: Parker 2011 | Photo credit: East Riding Archives)

Socialization



(Related theory: Ridgeway 2006, West 1987, Cech 2013, Charles 2009 | Photo credit:

Gender Segregated Networks



(Related theory: Lutter 2015, Marin 2012, DiMaggio & Garip 2012 | Photo credit:

<https://www.pps-mag.com>)

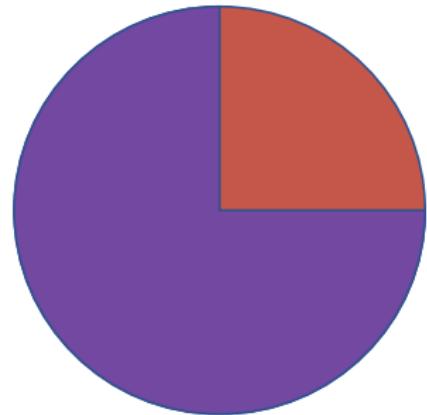
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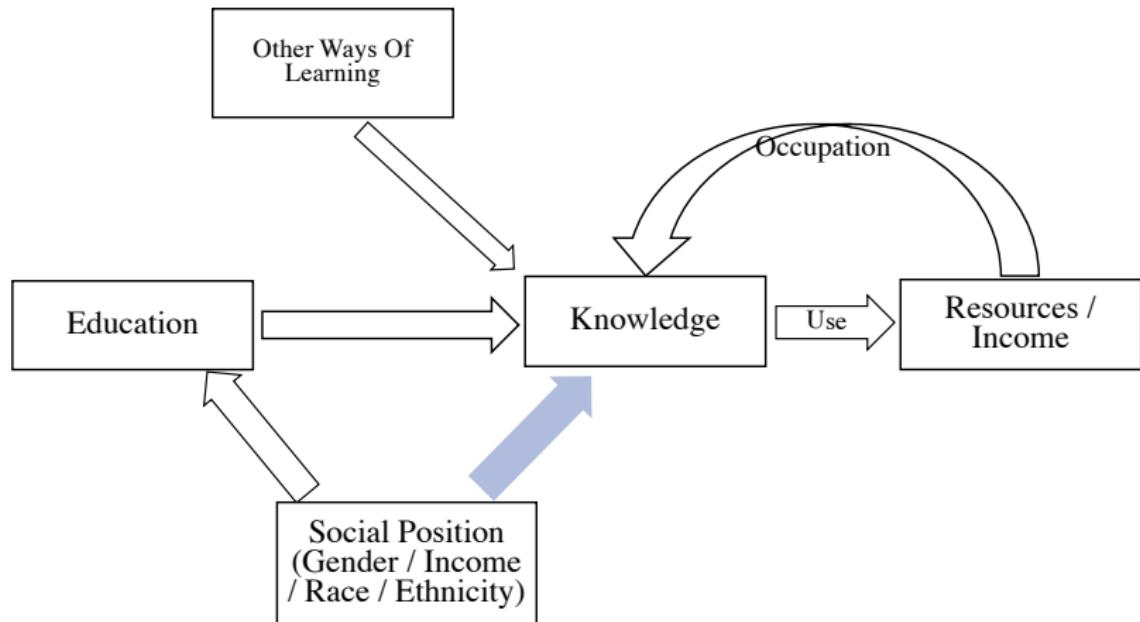
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Next: Exploring Mechanisms



Assert Gender?
or
Adapt to Majority Knowledge?

Acquisition and use of knowledge



Data Search & Selection

Databases searched:

- ICPSR – 4,581 surveys reviewed
- Data.gov – 1,117 surveys reviewed

Inclusion criteria:

- survey search includes the term “knowledge”
- years 2005 – 2015
- U.S. nationally representative on race, gender, age

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Data Structure

sc_earthsun	Linearized				
	Odds Ratio	Std. Err.	t	P> t	
female	.4518979	.0450369	-7.97	0.000	
race_hisp	.7261311	.150449	-1.17	0.243	
race_black	.3949817	.0374355	-9.80	0.000	
race_asian	1.91988	.0824735	+17	0.000	
race_other	.7465925	.0794548	-2.75	0.007	
dV_fincG_1k	1.001214	.0005461	2.22	0.027	
edu_HS	1.673856	.000793	9.58	0.000	
edu_someCol	2.300979	.0567248	33.80	0.000	
edu_colPlus	6.263558	.5777689	19.89	0.000	
_cons	3.218947	.2726742	13.80	0.000	

DOMAIN	Literature		Science		
STATUS	L1	L2	S1	S2	S3
Gender (G)	GL1	GL2	GS1	GS2	GS3
Class (C)	CL1	CL2	CS1	CS2	CS3
Race (R)	RL1	RL2	RS1	RS2	RS3

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Logit Details

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Adjusting for Multiple Comparisons

<u>P-VALUE</u>	<u>INTERPRETATION</u>
0.001	
0.01	
0.02	HIGHLY SIGNIFICANT
0.03	
0.04	
0.049	SIGNIFICANT
0.050	OH CRAP. REDO CALCULATIONS.
0.051	
0.06	ON THE EDGE OF SIGNIFICANCE
0.07	
0.08	HIGHLY SUGGESTIVE, SIGNIFICANT AT THE $p < 0.10$ LEVEL
0.09	
0.099	HEY, LOOK AT
≥ 0.1	THIS INTERESTING SUBGROUP ANALYSIS

Confidence Interval Simulations

Draw 1000 repetitions from a standard normal distribution, generate a distribution of 1000 possible coefficients for each knowledge question:

$$\hat{\beta}_i = \beta + (SE * x_i),$$

where $x_i \sim N(0, 1)$.

Order all $\hat{\beta}_i$ such that

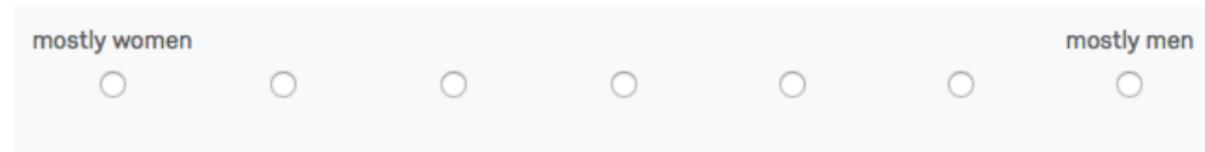
$$\hat{\beta}_i \leq \hat{\beta}_{i+1}$$

Find value of $\hat{\beta}_i$ at the 2.5th percentile and the 97.5th percentile.

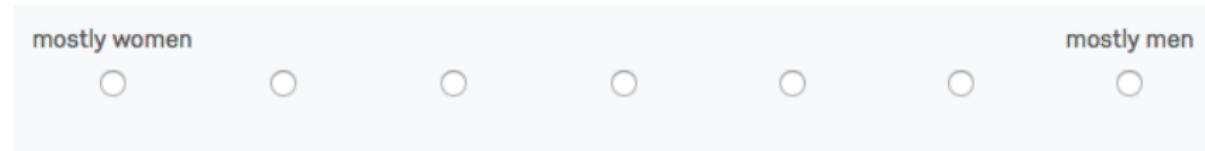
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My Survey: Gendered Perception of Knowledge Questions

- Who mostly watches news about X?



- Who mostly talks to their friends about X?



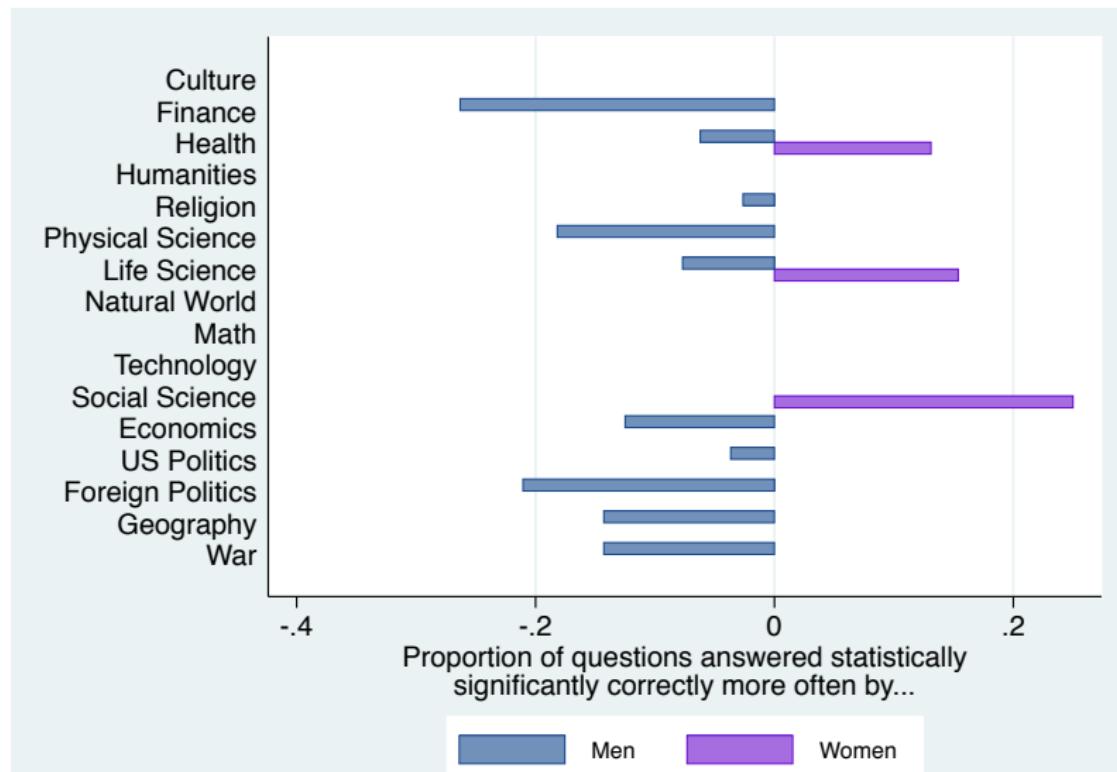
- Who do most people in our society think has more knowledge about X?



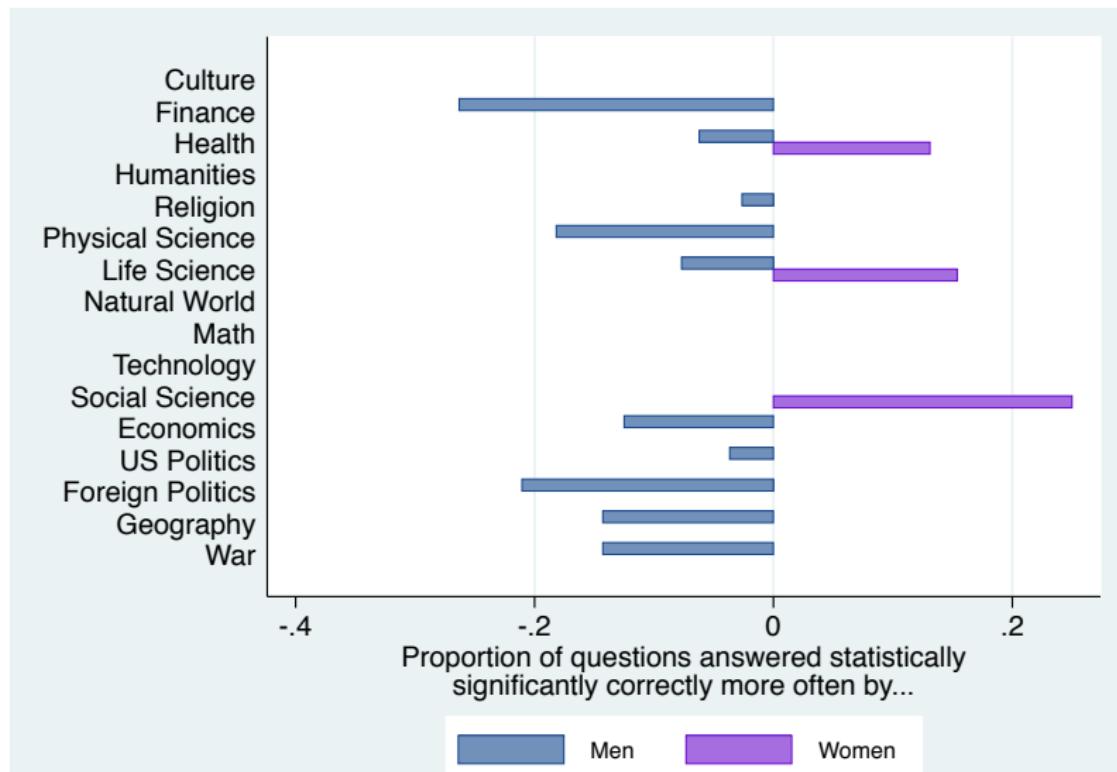
Mean significance vs. Question significance



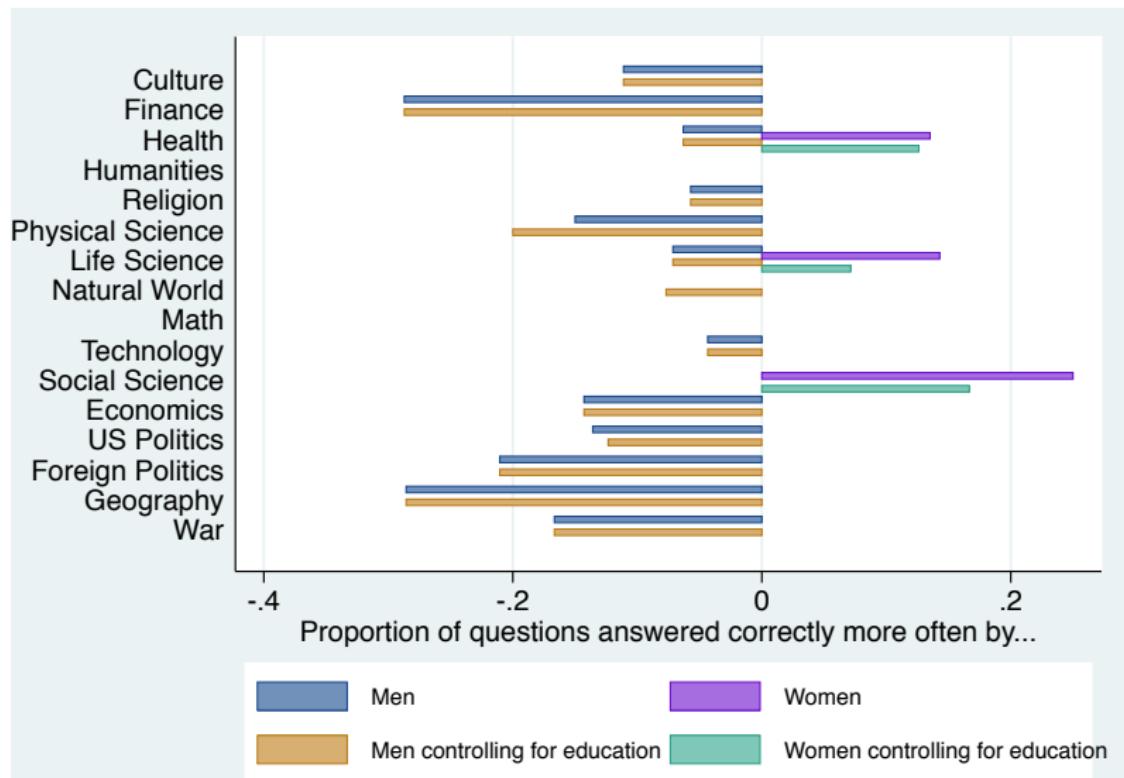
Men answer greater proportion of questions correctly in 65% of domains



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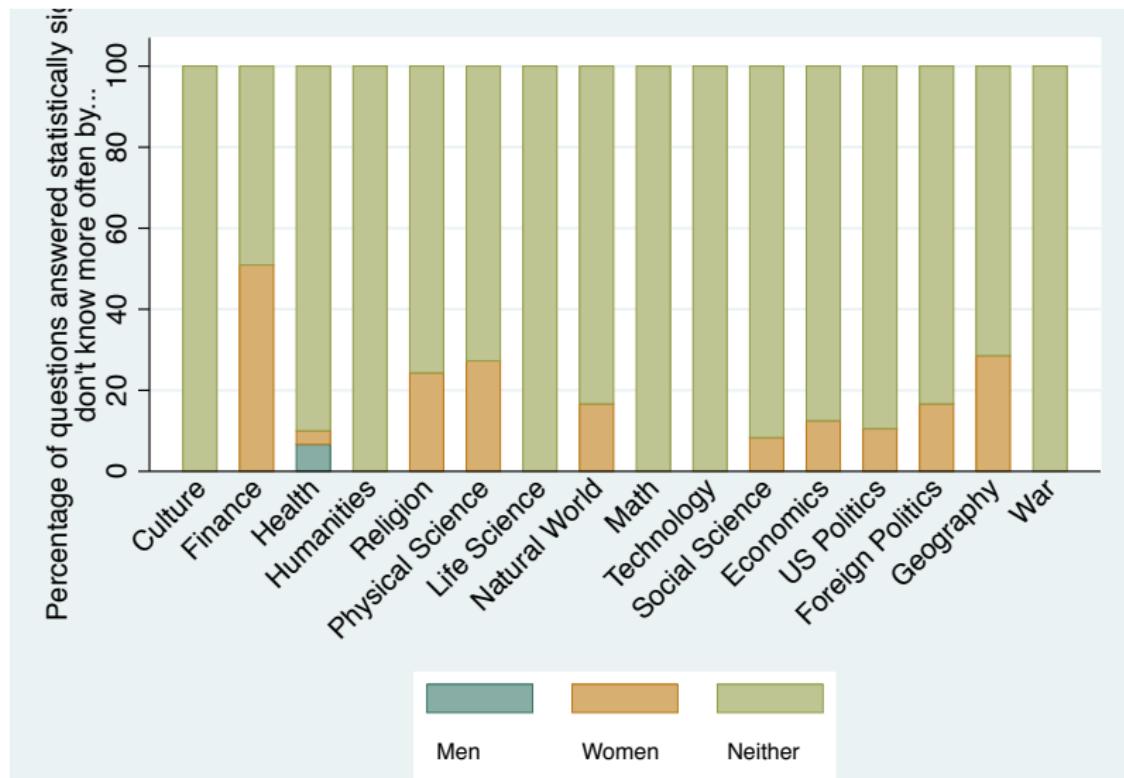
Controlling for education, men answer greater proportion of questions correctly in 63% domains



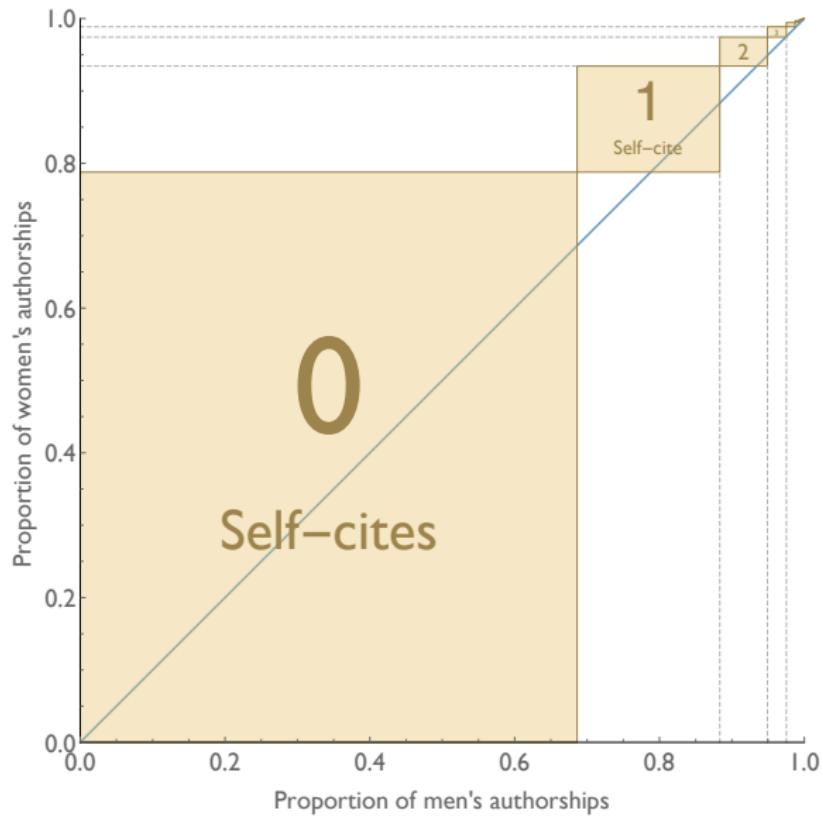
“Don’t Know” Model

$$\begin{array}{c} \text{Factors} \\ \hline \text{Gender} \\ \text{Income} \\ \text{Race / Ethnicity} \\ \text{Age} + age^2 \\ (\text{Education}) \end{array} = \begin{array}{c} \text{Outcome} \\ \hline \text{Probability} \\ \text{that you} \\ \text{answer} \\ \text{“don’t know”} \end{array}$$

Controlling for education, women answer greater proportion of questions “don’t know”

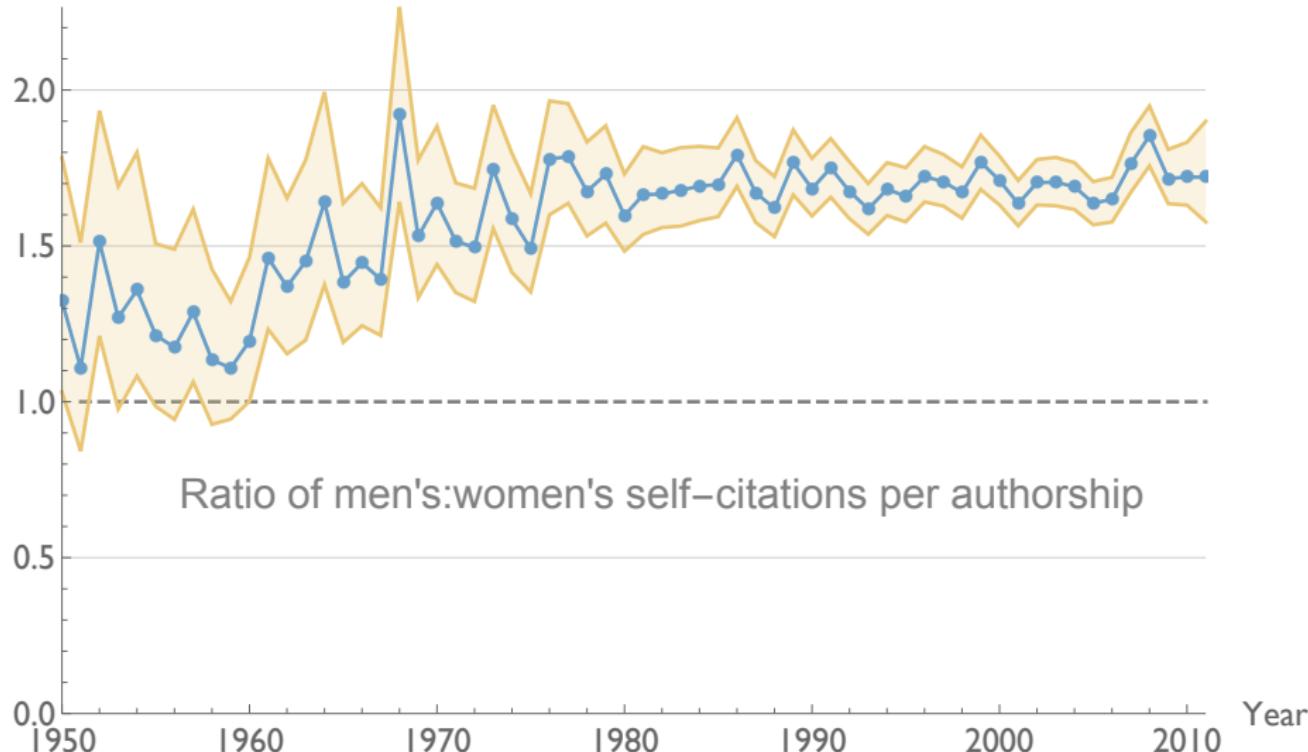


Gender & Self Citation: Proportion with Self Citation



Gender & Self Citation: Ratio

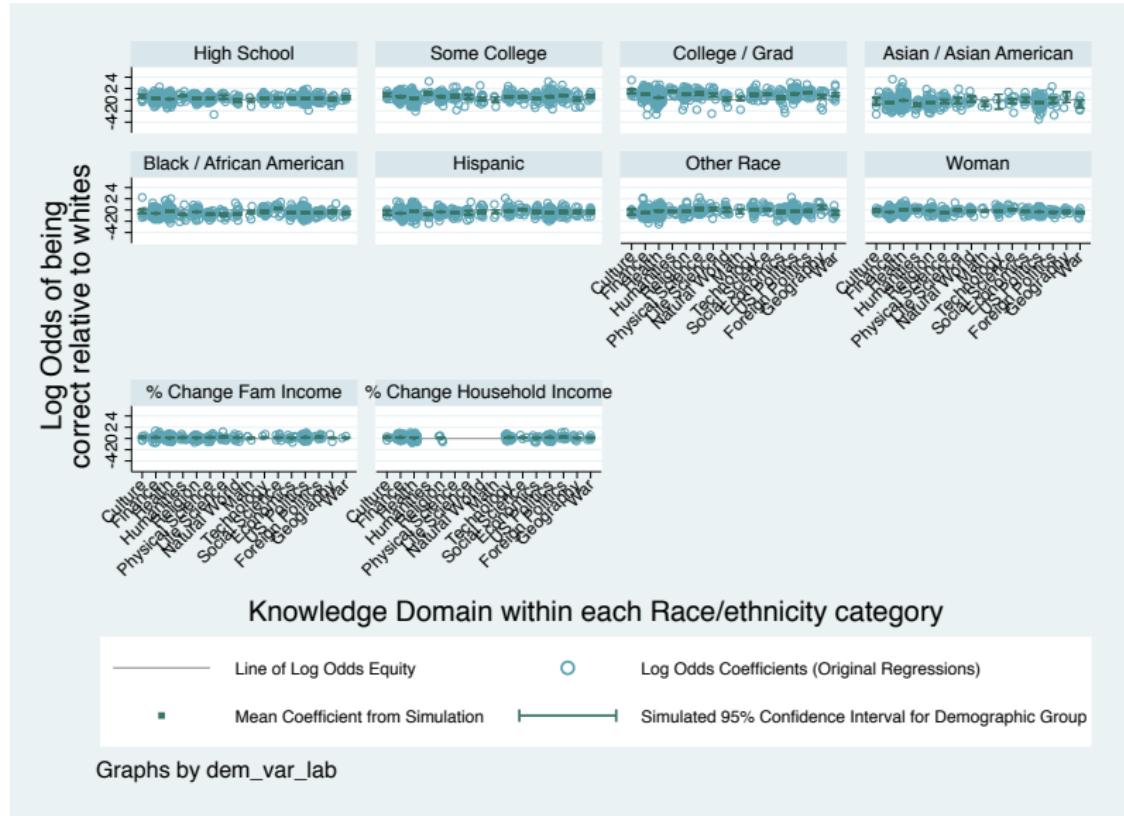
Ratio M:W



Items in Each Domain

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Correct Knowledge by Race



Results with Linear Probability Models

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