

# iREDS

(Institutional Re-engineering of  
Ethical Discourse in STEM)

Dena Plemmons, PhD  
Graduate Division

Kevin Esterling, PhD  
Political Science  
Department

University of  
California, Riverside

June 5<sup>th</sup>, 2019

## Acknowledgements

- This project was funded by the Cultivating Cultures of Ethical Stem Program of the National Science Foundation (SES-1540440) and by generous support from the Graduate Division of the University of California, Riverside.
- I'd like to acknowledge and thank the entire research team, listed alphabetically: Erica Baranski, Joseph Childers, Tim Errington, Kevin Esterling (project PI), Kyle Harp-Rushing, David Lo, Juliet McMullin, Brian Nosek, Courtney Soderberg

## Rationale

- We assert that if labs more routinely talk to each other about ethics, then lab members will be more likely to self-consciously behave in ways that are not only scientifically credible but also ethically defensible.

# Objectives

- To instill a culture of ethics and communication as an integral facet of productive research.
- To give research teams a structured and facilitated opportunity to intentionally and explicitly discuss the ethical dimensions of specific practices of projects within their labs.

# Approach

- The Institutional Re-organization of Ethical Discourse in STEM (iREDS) was designed as a randomized control field trial among science and engineering labs at the University of California, Riverside.
- The intervention curriculum was integrated with a free, web-based collaboration tool, the Open Science Framework (OSF) that has been developed by the Center for Open Science (COS).
- The intervention curriculum used a peer-engaged, decentralized approach
- Substantively, in this project we focused the training on two topics that have a good fit with the OSF platform: authorship attribution and data management

# Approach

- The RCT design enabled a between-lab comparison among randomly assigned intervention groups.
  - To ensure balance within departments, our randomization procedure required that the first lab within a department was randomized to one arm, and the subsequent labs within the department were sequentially enrolled in the opposite arm from the previously enrolled lab
- Labs assigned to the control condition were asked only to fill out pre- and post- surveys, 6 months apart. Labs assigned to the intervention condition were also were asked to fill out the pre- and post surveys, and in between the two surveys received the intervention.

# Demographics

	<b>Control</b>	<b>Experiment</b>
Female	52% (44)	42% (38)
Male	48% (40)	57% (52)
Ethnicity		
African American	2% (2)	2% (2)
Asian	34% (29)	22% (20)
Hispanic	15% (13)	19% (17)
White	39% (33)	48% (44)
Other	4% (3)	2% (2)
Prefer not to answer	5% (4)	7% (6)
Total N	84	91

# Demographics

	Control	Experiment
Department		
Biology (2)	7% (16)	8% (7)
Cell Biology (2)	11% (9)	3% (3)
Biochemistry (5)	10% (8)	3% (3)
Chemistry (5)	17% (14)	17% (16)
Earth Sciences (2)	5% (4)	5% (4)
Plant Pathology (3)	12% (10)	8% (7)
Environmental Sciences (6)	20% (17)	14% (13)
Engineering (5)	4% (3)	26% (24)
Other (2)	15% (13)	4% (4)
Lab position		
Primary Investigator	19% (16)	15% (14)
Post-doc	6% (5)	8% (7)
Graduate Student	44% (37)	60% (55)
Undergraduate	21% (18)	5% (5)
Research scientist	6% (5)	5% (5)
Support Staff	0%	3% (3)
Other	4% (3)	2% (2)



## Survey/single item

- Does your lab have an established authorship plan governing the assignment and order of authors for manuscripts? (1 = yes, 0 = no)
- Does your lab have a data management policy? (1 = yes, 0 = no)
- Have you changed your views about ethical research practices based on discussion within your lab? (1 = my views haven't changed at all, 2 = my views have not changed too much, 3 = my views have changed a little, 4 = my views have changed a fair amount, 5 = my views have changed a lot).

# Single Item Results

	Dichotomous Model (yes/no response)		Ordered Model (scale responses)
	Data <sup>1</sup> Management Policy	Authorship <sup>2</sup> Policy	Ethical <sup>3</sup> Views
<b>Training (DID Estimand)</b>	<b>0.039</b>	<b>2.137*</b>	<b>0.761*</b>

Note. \*p < .05

<sup>1</sup> Item: Does your lab have a data management policy? (1 = yes, 0 = no)

<sup>2</sup> Item: Does your lab have a data management policy? (1 = yes, 0 = no)

<sup>3</sup> Item: Have you changed your views about ethical research practices based on discussion within your lab? (1 = My views haven't changed at all, to 5 = My views have changed a lot)

## Survey/scales (examples)

### *Relevance of Ethics Discourse* scale:

- How relevant to your area of work is learning about ethical research practices? (1 = completely irrelevant to 5 = completely relevant)
- To what extent do you agree that seeking others in your department to discuss ethical research practice is your responsibility as a scientist? (1 = strongly disagree, to 5 = strongly agree)
- To what extent do you agree that seeking out others in your lab to discuss ethical research practices is your responsibility as a scientist? (1 = strongly disagree, to 5 = strongly agree)
- Do you have discussions with members of other labs regarding ethical research practices? (1 = never to 5 = always)

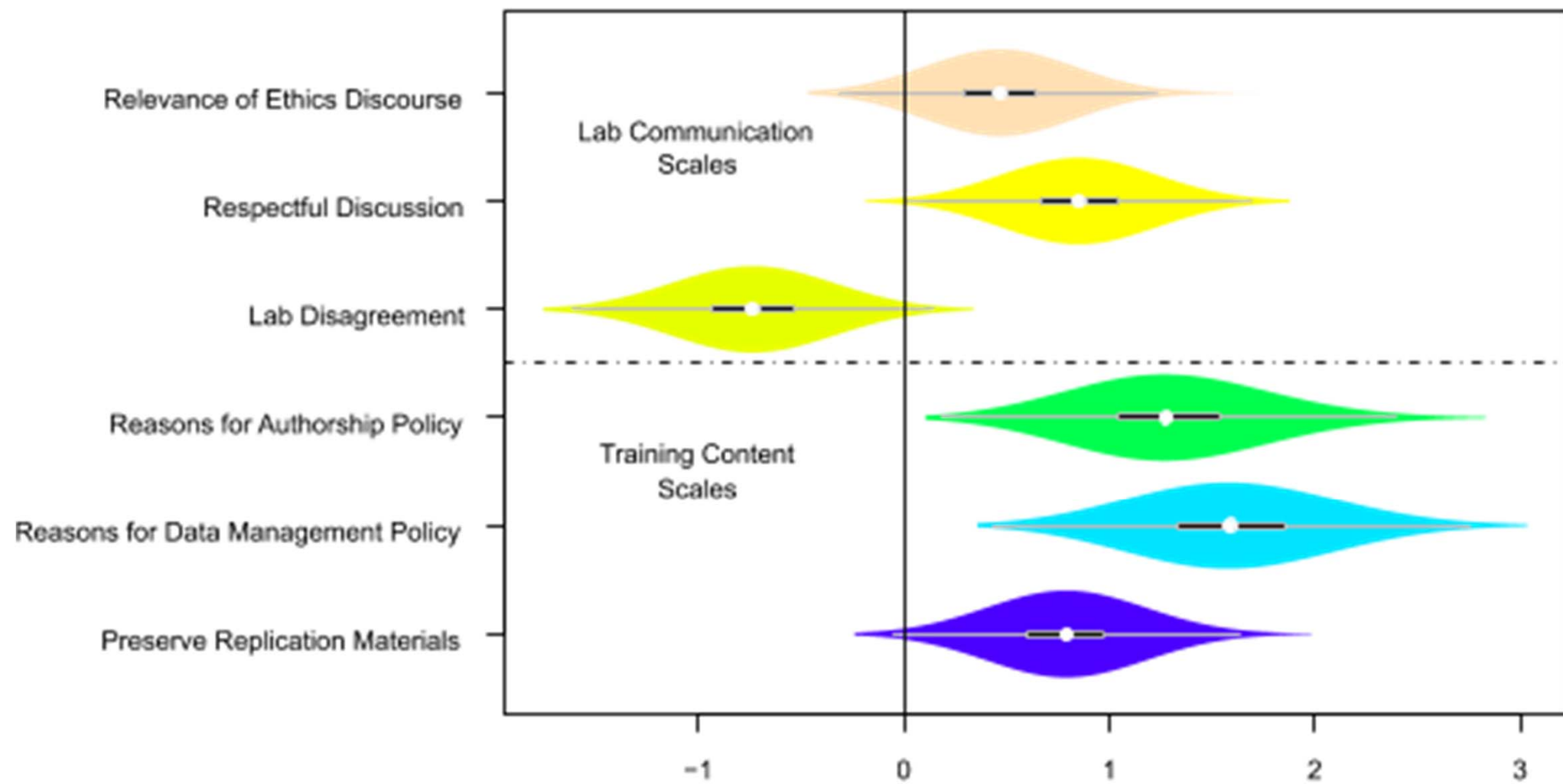
## Survey/scales (examples)

*Reasons for authorship policy scale:*

(1 = I don't understand the rationale at all, to 5 = I mostly understand the rationale)

- Do you understand the rationale for having an authorship plan in your lab?
- Do you understand the importance of having an authorship plan in your lab?
- Do you understand the implications for having an authorship plan in your lab?

### Difference-in-Differences Effect Estimates



## Ongoing analyses

- Back end analytics for those labs who continued to use the OSF after the intervention
- There was also an ethnographic component to this project, which will be reported separately, and which will help provide context for some of this quantitative data

## Conclusion

The goal of the iREDS training was to make discussions within labs about ethical research practices a day-to-day part of STEM research.

We are hopeful that our project will lead researchers to be more engaged in discussions surrounding the ethical implications of their research, which in turn should lead to a culture of more ethically sound science within labs and departments.