



# Teaching Reproducibility

Michelle Neoh Jin Yee

# This week's article

Chopik, W. J., Bremner, R. H., Defever, A. M., & Keller, V. N. (2018). How (and whether) to teach undergraduates about the replication crisis in psychological science. *Teaching of psychology*, 45(2), 158-163.

Chopik et al (2018)\_teaching\_reproduceability.pdf - Adobe Acrobat Reader DC (32-bit)

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Faculty Forum

**How (and Whether) to Teach Undergraduates About the Replication Crisis in Psychological Science**

Teaching of Psychology  
2018, Vol. 45(2) 158-163  
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SOCIETY FOR THE TEACHING OF PSYCHOLOGY

SAGE

William J. Chopik<sup>1</sup>, Ryan H. Bremner<sup>2</sup>, Andrew M. Defever<sup>1</sup>, and Victor N. Keller<sup>1</sup>

**Abstract**  
Over the past 10 years, crises surrounding replication, fraud, and best practices in research methods have dominated discussions in the field of psychology. However, no research exists examining how to communicate these issues to undergraduates and what effect this has on their attitudes toward the field. We developed and validated a 1-hr lecture communicating issues surrounding the replication crisis and current recommendations to increase reproducibility. Pre- and post-lecture surveys suggest that the lecture serves as an excellent pedagogical tool. Following the lecture, students trusted psychological studies slightly less but saw greater similarities between psychology and natural science fields. We discuss challenges for instructors taking the initiative to communicate these issues to undergraduates in an evenhanded way.

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# What is the replication crisis?

- Results from scientific studies are difficult to/cannot be replicated
- Even those from “well-established” studies
- Many Labs, Reproducibility Project

# What is the replication crisis?

Many Labs 2: Investigating variation in replicability across samples and settings

<https://journals.sagepub.com/doi/full/10.1177/2515245918810225>

- “Conducted preregistered replications of 28 classic and contemporary published findings, with protocols that were peer reviewed in advance, to examine variation in effect magnitudes across samples and settings”

# Teaching about the replication crisis

1. “Not being taught to undergraduate students”  
Struggle with **introduction** and **integration** of topics into the lecture
2. Comprehension of the implications by students
3. “Lecture serves as an excellent pedagogical tool”
4. Materials are **available on OSF**

<https://osf.io/mh9pe/>

# Teaching about the replication crisis

5. "Effective in conveying the most important issues about this crisis"

- 97%: Media was not an accurate indicator of study reliability
- High levels of agreement with current suggestions

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Best Practices Pedagogy

Contributors: William J. Chopik, Ryan Bremner, Andrew M. Defever, Victor N. Keller  
 Date created: 2016-08-10 05:07 AM | Last Updated: 2018-11-02 07:01 AM  
 Category: Project  
 Description: Communicating the recent best practices discussions in an informative and accessible way.

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| Best Practices Pedagogy     |                     |
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| APSFinalReport.pdf          | 2018-11-02 07:01 AM |

Citation

Recent Activity

- William J. Chopik added file APSFinalReport.pdf to OSF Storage in Best Practices Pedagogy
- Victor N. Keller made Best Practices Pedagogy public

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Best Practices Pedagogy

Study: U.S. Flag 'Primes' Voters Toward Republican Viewpoints Just a glimpse at the American flag can sway voters, even Democrats, toward more Republican voting behavior, attitudes and beliefs, a new two-year study says. The authors, from the University of Chicago, Cornell University and Hebrew University, say the research proves the American flag has a powerful effect on voters. "A single exposure to an American flag resulted in a significant increase in participants' Republican voting intentions, voting behavior, political beliefs, and implicit and explicit attitudes, with some effects lasting eight months," reads the study titled, "Long-Term Effects of U.S. Flag Exposure on Republicanism." These results constitute the first evidence that nonconscious priming effects from exposure to a national flag can bias the citizenry toward one political party and can have considerable durability," the study says. In the study, first reported on by "U.S. News and World Report," participants, mostly Democratic-leaning, were asked to fill out a survey about their opinions on Democratic and Republican parties, leaders and their voting intentions. Half of the surveys contained a small American flag in the top left corner. They were given out just before the 2008 presidential election. Although 90 percent of participants said they wouldn't be influenced by the presence of a flag, the scholars found that the participants exposed to the flag had a bias toward the Republican Party and shifted their behaviors toward the Republican end of the spectrum. "A single exposure to a small American flag during deliberation about voting intentions prior to a general election led to significant and robust changes in participants' voting intentions, voting behavior, and political attitudes, all in the politically conservative direction," the study reads. To ensure that the party in

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Below are some questions about your attitudes toward psychology. How much do you agree or disagree with each statement? Please answer honestly.

I like psychology.

- strongly disagree
- disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- agree
- strongly agree

I think psychological research is similar to research in fields like chemistry, physics, or biology.

- strongly disagree
- disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- agree
- strongly agree

I think psychological research is similar to research in fields like philosophy, literature, or art.

- strongly disagree
- disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- agree
- strongly agree

BestPracticesLectureSlides - PowerPoint

Michelle Neoh

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1 BEST PRACTICES IN SOCIAL/PERSONALITY PSYCHOLOGY

2 HOW DO WE KNOW WHAT WE KNOW? 3-1-16

3 Outline for Today

- Best Practices
- Qualitative Research Methods (QRM)
- Quantitative Research Methods (QRM)
- Doing research ethically and responsibly
- Reliability and Replication Efforts
- History of research
- The future: Being a good consumer of psychological science

4 Incentives Structure

- Published work is important getting a job, getting tenure, being promoted, etc.
- As a result, the "top notch" criteria becomes just a means to an end, not an end in itself.
- Reducing the need to stay behind by publishing more papers with the following in mind:
  - The focus is researchers being unethical and sometimes worse...

5 Recent Cases of Research Misconduct

Slide 1 of 42 English (Singapore)

# Discussion Questions

- Share your experiences! How/where did you first learn about replication crisis/open science? What was most/least impactful or stood out to you the most?
- From your experience, what do you think can be some effective ways to raise awareness about the topic?
- What are some activities that we can incorporate in our teaching about the replication crisis/reproducibility?
- What are some skills/knowledge about open science practices and reproducibility that would be useful for new students/researchers? What are some things (you wished) you knew when you started your research?
- How can we encourage uptake of open science practices in new students/researchers?



# Key ideas

- Setting a precedent in the new generation of researchers

Entrenched mindsets or practices that we can change

<https://www.apa.org/ed/precollege/psn/2020/03/replication-crisis>

- Raising awareness and making information accessible

Empowering people with the knowledge and tools to make a change towards open science 😊

# Preview for next week:

Theory and Philosophy of Science (!Difficulty Warning!)  
by **Ng Li Ying**

Paul Meehl, Theory-Testing in Psychology and Physics: A  
Methodological Paradox (Philosophy of Science, 32, 2, 1967)

**29 April, 2-3pm**



Thank you! 😊

