

Open science, replication, and teaching psychology

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Replication: What are its roles in science?

- ▶ Establish reliability and validity of methods and measures
- ▶ Uncover enduring, stable explanations for phenomena
- ▶ Account for potential sources of bias
 - ▶ Researcher biases, p-hacking
 - ▶ The file drawer problem
- ▶ To confirm results were not a fluke, e.g. a Type I error

Open Science Framework

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

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Reproducibility Project: Psychology

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Reproducibility Project: Psychology

Public


 66

 14



Contributors: Alexander A. Aarts, Christopher Jon Anderson, Joanna Anderson, Marcel A.L.M. van Assen, Peter Raymond Attridge, Angela Attwood, Jordan Axt, Molly Babel, Štěpán Bahník, Erica Baranski, Michael Barnett-Cowan, Elizabeth Bartmess, Jennifer Beer, Raoul Bell, Heather Bentley, Don van den Bergh, Leah Beyan, Bobby den Bezemer, Denny Borsboom, Annick Bosch, Frank Bosco, Sara Bowman, Mark Brandt, Erin Braswell, Hilmar Brohmer, Benjamin T. Brown, Kristina Brown, Jovita Brüning, Ann Calhoun-Sauls,

Date Created: 2012-04-01 08:49 AM | Last Updated: 2015-09-14 04:19 PM

Category: Project 

Wiki 

Estimating the Reproducibility of Psychological Science

Open Science Collaboration

Abstract: Reproducibility is a defining feature of science, but the extent to which it characterizes current research is unknown. We conducted replications of 100 experimental and correlational studies published in three psychology journals using high-powered designs and original materials when available. Replicati...

Citation

osf.io/ezcuj ▾

Components

 Summary Report: Science (2015) ▾

Nosek, Cohoon & Kidwell

26 contributions

RESEARCH ARTICLE

PSYCHOLOGY

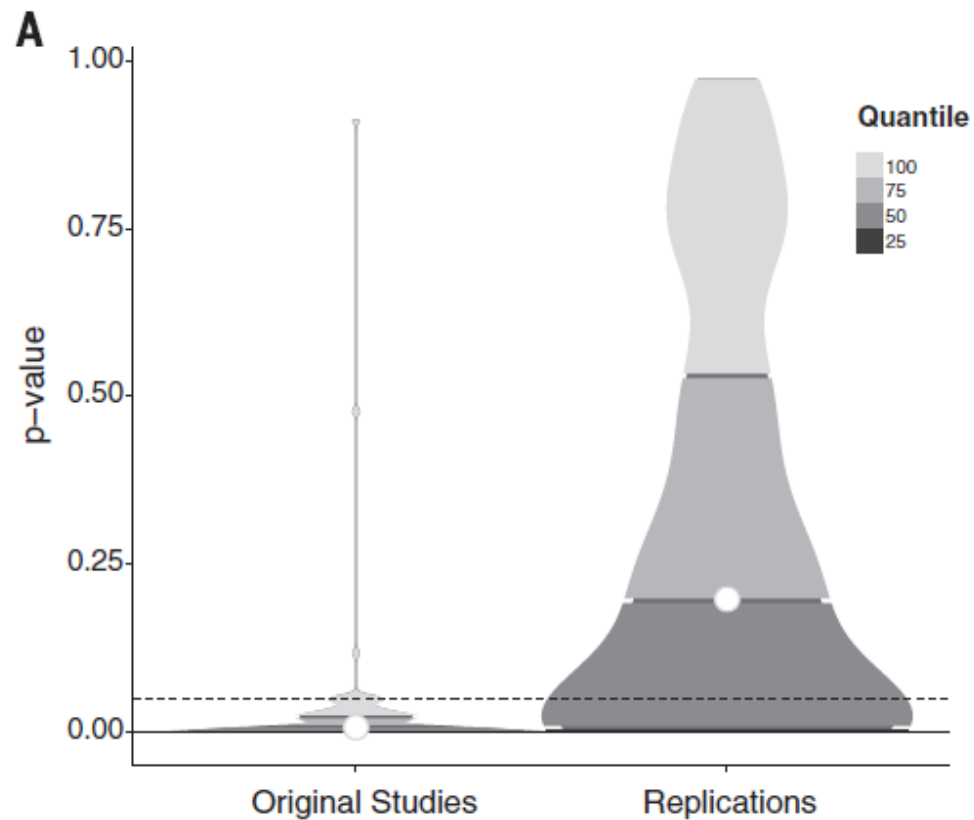
Estimating the reproducibility of psychological science

Open Science Collaboration*†

SCIENCE sciencemag.org

28 AUGUST 2015 • VOL 349 ISSUE 6251

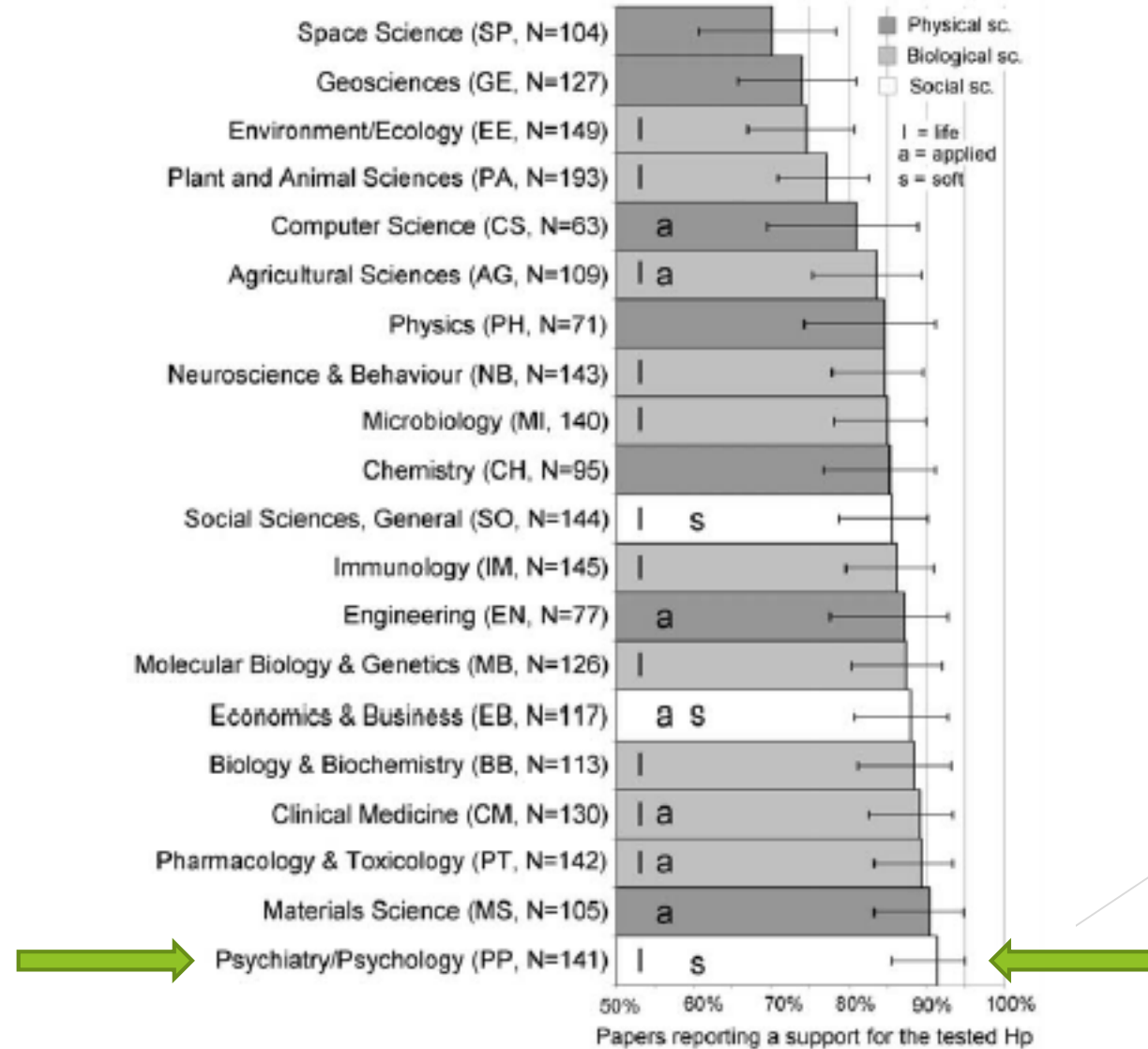
	Replications $P < 0.05$ in original direction	Percent
Overall	35/97	36
JPSP, social	7/31	23
JEP:LMC, cognitive	13/27	48
PSCI, social	7/24	29
PSCI, cognitive	8/15	53



“Positive” Results Increase Down the Hierarchy of the Sciences

Daniele Fanelli*

INNOGEN and ISSTI-Institute for the Study of Science, Technology & Innovation, The University of Edinburgh, Edinburgh, United Kingdom




What now?

Why do we fear snakes?

...



Experimental condition	Conditioned stimulus	Unconditioned stimulus (shock)	Result
Nonthreatening	 →		Low conditioned fear
Acquired threat	 →		Moderate conditioned fear
Biological threat	 →		High conditioned fear

Research Article

Detecting the Snake in the Grass

Attention to Fear-Relevant Stimuli by Adults and Young Children

Vanessa LoBue and Judy S. DeLoache

University of Virginia



Fig. 1. A preschool child identifying the single flower target among eight snake distractors by touching the flower image on a touch-screen monitor.

Open Science Framework

Replication of LoBue & DeLoache (2008, PS, Study 3)

Reproducibility Project: Psychology /
Replication of LoBue & DeLoache (2008, PS, Study 3)

Contributors: Leslie Crambuel Alvarez, Tiviar Martinez, Keylynn Zun, Megan Tapia, H Nathan Phipps
Date Created: 2013-01-21 11:11 AM | Last Updated: 2015-07-15 11:51 AM
Category: Project

Wiki

Original Citation. LoBue, V., & DeLoache, J.S. (2008). Detecting the snake in the grass: Attention to fear-relevant stimuli by adults and children. *Psychological Science*, 19, 284-289.

Target of Replication. Of the three studies reported, this replication targets "Experiment 3" in which 3-year-old children and their parents are asked to identify either a fear-relevant stimuli (photograph of a snake among caterpillars) or a fear-irrelevant st.

Citation: [csl/and7eg](#)

Components

- Study Materials
 - Crambuel Alvarez
 - 12 contributions
- Data
 - Crambuel Alvarez
 - 9 contributions
- Analysis Audit
 - Hubert
 - 8 contributions

Files

Project: Replication of LoBue & DeLoache (2008, PS, Study 3)

- OSF Storage
- LoBue & DeLoache replication FINAL REPORT 2015.docx
- LoBue Commentary on Replication.docx
- Component: Study Materials
- OSF Storage

Adaptive Memory

The Comparative Value of Survival Processing

James S. Nairne, Josefa N.S. Pandeirada, and Sarah R. Thompson

Purdue University

original study

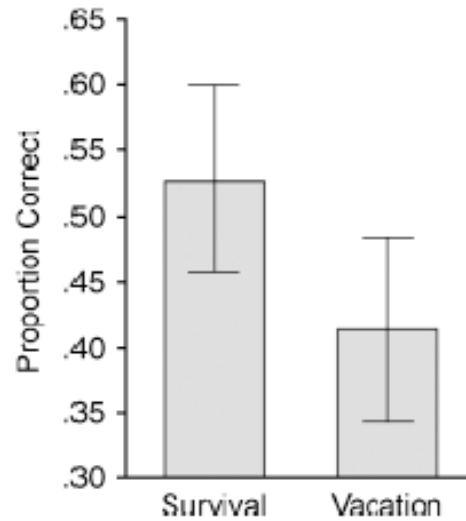


Fig. 2. Average proportion of words recalled for each scenario in Experiment 2. Error bars represent 95% confidence intervals (as per Masson & Loftus, 2003).

replication

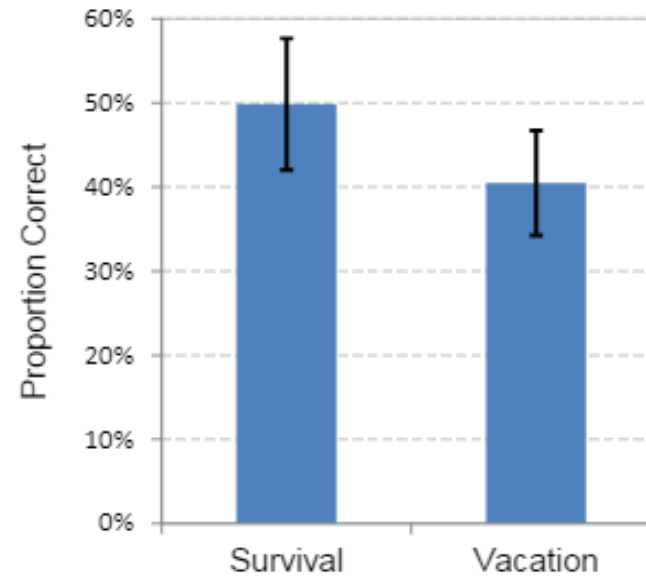


Figure 1: Average proportion of words recalled for each scenario in Experiment 2. Error bars indicate 95% confidence intervals.

Too Impatient to Smell the Roses: Exposure to Fast Food Impedes Happiness

Social Psychological and
Personality Science
2014, Vol. 5(5) 534-541
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Julian House¹, Sanford E. DeVoe¹, and Chen-Bo Zhong¹

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How a fast-food sign changes your day


Pepe Bustamante tucks a newspaper under his arm and heads for the golden arches, thinking about an Egg McMuffin.

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Top News

- ▶ Updated Niqab issue heats up ahead of tonight's French-language debate
- ▶ Too early to say if man charged in Vaughan crash will plead not guilty

Keeping One's Distance

The Influence of Spatial Distance Cues on Affect and Evaluation

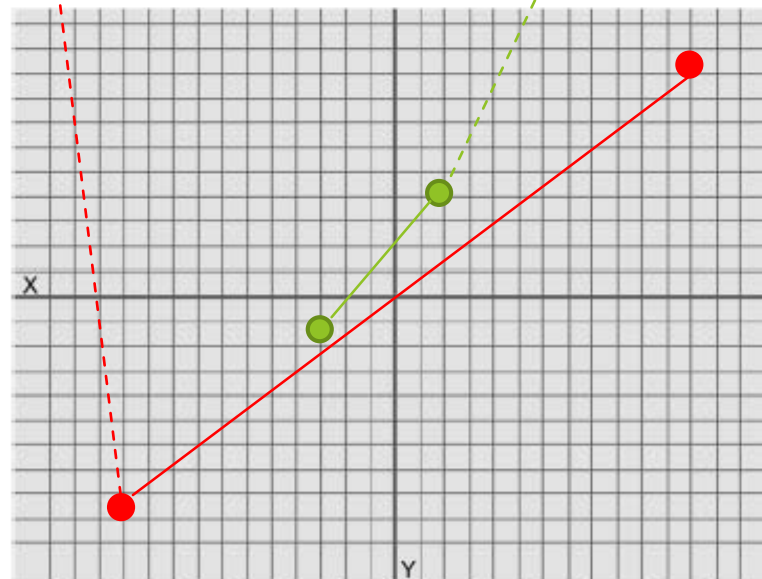
Lawrence E. Williams and John A. Bargh

Yale University

- ▶ Does physical distance affect psychological distance?
 - ▶ Sensation and perception
 - ▶ Thought and language
 - ▶ Social psychology
- ▶ Close: place a point at (2,4) and (-3,-1)
- ▶ Distance: Place a point at (12,10) and (-11, -8)

Rate the strength of your bond to your family and hometown:

1 5 7
Not strong extremely strong



Neuroimaging

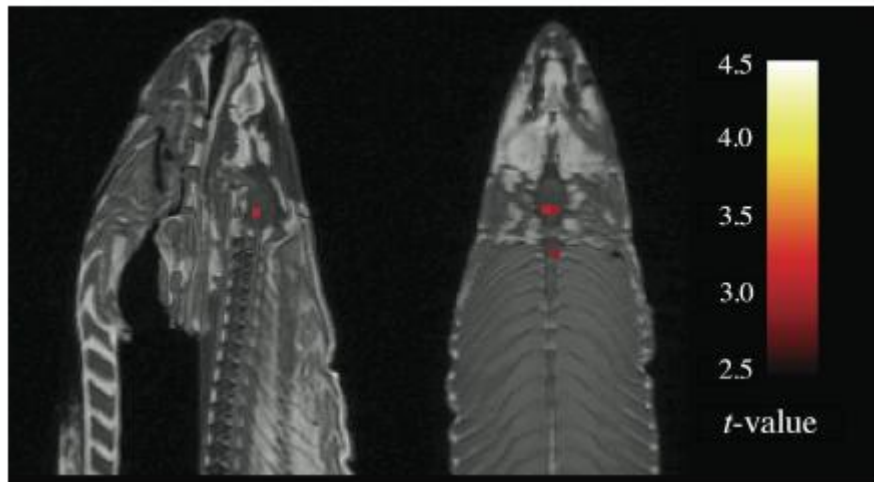


Neural correlates of interspecies perspective taking in the post-mortem Atlantic Salmon: An argument for multiple comparisons correction

Craig M. Bennett¹, Abigail A. Baird², Michael B. Miller¹, and George L. Wolford³

¹ Psychology Department, University of California Santa Barbara, Santa Barbara, CA; ² Department of Psychology, Vassar College, Poughkeepsie, NY;

³ Department of Psychological & Brain Sciences, Dartmouth College, Hanover, NH



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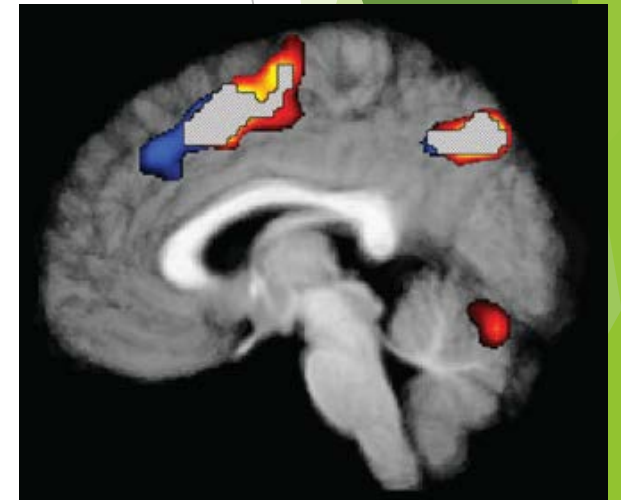
Issue: *The Year in Cognitive Neuroscience*

How reliable are the results from functional magnetic resonance imaging?

Craig M. Bennett and Michael B. Miller

Department of Psychology, University of California at Santa Barbara, Santa Barbara, California

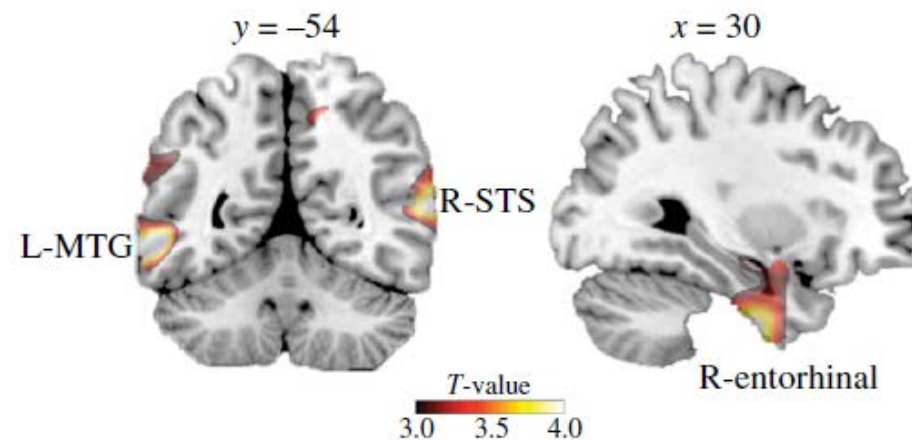
Address for correspondence: Craig M. Bennett, Department of Psychology, University of California, Santa Barbara, Santa Barbara, CA 93106, USA. bennett@psych.ucsb.edu





Online social network size is reflected in human brain structure

R. Kanai^{1,*}, B. Bahrami^{1,2,3,4}, R. Roylance⁵ and G. Rees^{1,2}



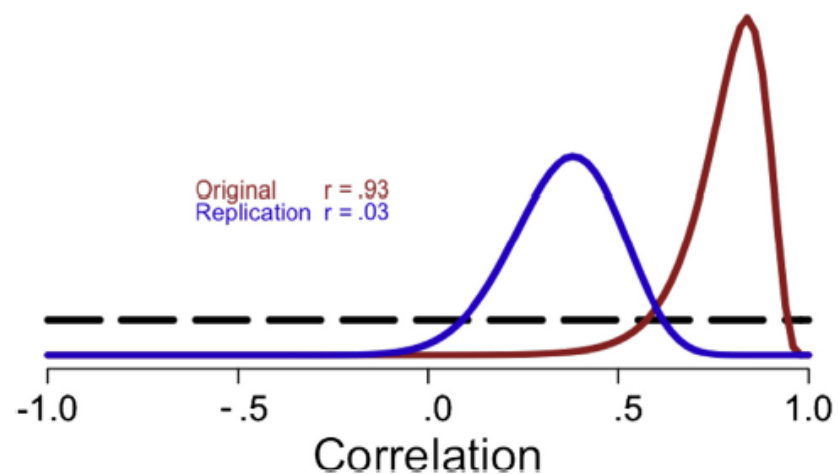
Research report

A purely confirmatory replication study of structural brain-behavior correlations

Wouter Boekel^{a,*}, Eric-Jan Wagenmakers^a, Luam Belay^a,
 Josine Verhagen^a, Scott Brown^b and Birte U. Forstmann^a

^a University of Amsterdam, Amsterdam, The Netherlands

^b University of Newcastle, Australia



Replication: Interpretation

- ▶ Fidelity of methods
- ▶ Statistical significance vs. effect sizes
- ▶ Researcher biases (for both original & replication studies)
- ▶ Pitfalls:
 - ▶ All-or-none thinking
 - ▶ Confirmation bias
 - ▶ Replications as votes

Is Psychology Suffering From a Replication Crisis?

What Does "Failure to Replicate" Really Mean?

Scott E. Maxwell *University of Notre Dame*
Michael Y. Lau *Teachers College, Columbia University*
George S. Howard *University of Notre Dame*

September 2015 • American Psychologist
© 2015 American Psychological Association 0893-3200/15/\$12.00
Vol. 70, No. 6, 487-508 <http://dx.doi.org/10.1037/xap0000001>

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the left and right sides of the frame, creating a modern, layered effect. The central area is a plain white space where the text is located.

Implications for our teaching

OMG IS SCIENCE BROKEN?!

What do we tell our students?!

- ▶ Replication is useful in teaching scientific and critical thinking
 - ▶ Explain its roles in science
 - ▶ Discuss how to cautiously and correctly interpret replication efforts
- ▶ Replication can help us directly address course content
 - ▶ The study in your textbook has been replicated
 - ▶ The study in your textbook did not replicate
 - ▶ No direct replication attempts reported
- ▶ As we often say, teach the controversy

Essay

Contesting the "Nature" Of Con... and Zimbardo's Studies Really S

S. Alexander Haslam^{1*}, Stephen D. Reicher²

¹School of Psychology, University of Queensland, St. Lucia, Australia, ²School of Psychology,



COLLAPSE MENU



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st News

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at LSE

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ethics of prison studies

New PLoS ONE paper
restages and reinterrogates
Milgram's Ota paradigm

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grant is not a migrant by
other name

Replication in Introductory Psychology

- ▶ (is done)...to increase confidence in the validity of the original findings
- ▶ (is the) repetition of a research study to confirm the results
- ▶ repeating a study or experiment to see if the same results will be obtained in an effort to demonstrate reliability of results
- ▶ a process of repeating a study and finding a similar outcome each time
- ▶ to repeat or duplicate a scientific study
- ▶ repeating the essence of a research study, usually with different participants in different situations, to see whether the basic finding extends to other participants and circumstances
- ▶ Median coverage in 12 popular Introductory Psychology textbooks is 66 words, range from no explicit coverage to two full paragraphs of over 150 words.

Recommendations for teaching

- ▶ Use capstone and senior thesis projects as opportunities to replicate in meaningful ways
 - ▶ Engage in critical thinking exercises about the concept and practice of replication
 - ▶ Use original study and replication results from the open science framework to:
 - ▶ Teach students about research methods
 - ▶ Reveal how statistical results are interpreted in actual studies
 - ▶ Use replication efforts to enhance student skills at consuming scientific information
- ▶ Questions? Comments?