

Communication edition

Questionable research practices and open science

Peter M. Dahlgren
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HAS, JMG

2019-11-16

Essay

Why Most Published Research Findings Are False

John P.A. Ioannidis

Summary

There is increasing concern that most current published research findings are false. The probability that a research claim

factors that influence this problem and some corollaries thereof.

Modeling the Framework for False Positive Findings

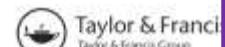
is characteristic of the field and can vary a lot depending on whether the field targets highly likely relationships or searches for only one or a few true relationships among thousands

Personality and Social Psychology Review
1998, Vol. 2, No. 3, 196–217

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Communication Methods and Measures, 9:253–279, 2015.
Copyright © Taylor & Francis Group, LLC.
ISSN: 1931-2458 print/1931-2466 online
DOI: 10.1080/19312458.2015.1096355**HARKing: Hypothesizing After the Results are Known**Norbert L. Kerr
Department of Psychology
Michigan State University

This article considers a practice in scientific communication termed HARKing (Hypothesizing After the Results are Known). HARKing is defined as presenting a post hoc hypothesis (i.e., one based on or informed by one's results) in one's research report as if it were, in fact, an a priori hypothesis. Several forms of HARKing are identified and survey data are presented that suggests that at least some forms of HARKing are widely practiced and widely seen as inappropriate. I identify several reasons why scientists might HARK. Then I discuss several reasons why scientists might not HARK. It is recommended that the acronym HARK be used as a cue to encourage

Blinded by the Light: How a Focus on Statistical "Significance" May Cause *p*-Value Misreporting and an Excess of *p*-Values Just Below .05 in Communication ScienceIvar Vermeulen, Camiel J. Beukeboom, Anika Batenburg, Arthur Avramica, Dimo Stoyanov, Bob van de Velde, and Dirk Oegema
VU University AmsterdamACCOUNTABILITY IN RESEARCH:
2017, VOL. 24, NO. 3, 127–151
<http://dx.doi.org/10.1080/08989521.2016.1268922>

OPEN ACCESS

Who Believes in the Storybook Image of the Scientist?Coosje L. S. Veldkamp, M.Sc. ^a, Chris H. J. Hartgerink, M.Sc. ^a, Marcel A. L. M. van Assen, Ph.D. ^{a,b}, and Jelte M. Wicherts, Ph.D. ^a

^aDepartment of Methodology and Statistics, Tilburg School of Social and Behavioral Sciences, Tilburg University, Tilburg, The Netherlands; ^bDepartment of Sociology, Faculty of Social and Behavioral Sciences, Utrecht University, Utrecht, The Netherlands

ABSTRACT

Do lay people and scientists themselves recognize that scientists are human and therefore prone to human fallibilities such as error, bias, and even dishonesty? In a series of three experimental studies and one correlational study (total N = 3,278) we found that the "storybook image of the scientist" is pervasive: American lay people and scientists from over 60 countries attributed considerably more objectivity, rationality, openness,

KEYWORDS
Bias; fallibility; integrity; RCT; scientists

Original Investigation

The Mass Production of Redundant, Misleading, and Conflicted Systematic Reviews and Meta-analyses

JOHN P. A. IOANNIDIS



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"Positive" Results Increase Down the Hierarchy of the Sciences

Daniele Fanelli*

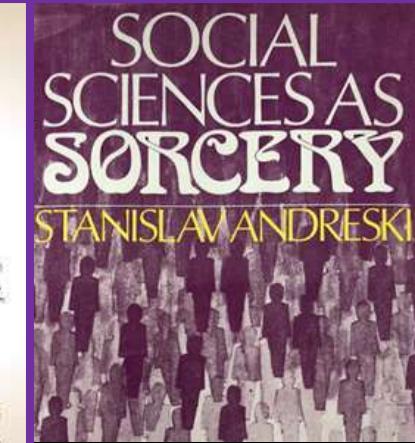
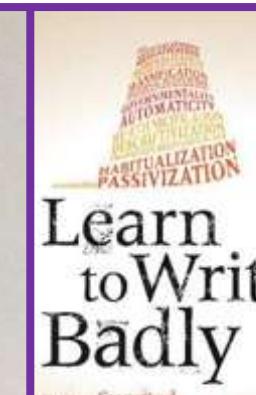
INNOGEN and ISSTI-Institute for the Study of Science, Technology & Innovation, The University of Edinburgh, Edinburgh, United Kingdom

Abstract

The hypothesis of a Hierarchy of the Sciences with physical sciences at the top, social sciences at the bottom, and biological sciences in-between is nearly 200 years old. This order is intuitive and reflected in many features of academic life, but whether it reflects the "hardness" of scientific research—i.e., the extent to which research questions and results are determined by data and theories as opposed to non-cognitive factors—is controversial. This study analysed 2434 papers published in all disciplines and that declared to have tested a hypothesis. It was determined how many papers reported a

Scientists behaving badly

To protect the integrity of science, we must look beyond falsification, fabrication and plagiarism, to a wider range of questionable research practices, argue Brian C. Martinson, Melissa S. Anderson and Raymond de Vries.



Why I'm interested in this

- Based on my lecture **How to lie with statistics**, MKV, since 2017
- Paper on circular reasoning 2017
- Interest in human bias/reasoning
- Methods are practical – but need to know why, not only how
 - philosophy of science



Agenda

1. Questionable research practices (QRP's)
2. Selective reporting
3. HARKing
4. How common are QRP's?
5. Why QRP's occur
6. How to do open science

Coined the term 'Questionable Research Practice' (QRP)

"[...] we found that the percentage of respondents who have engaged in **questionable practices was surprisingly high** [...] some questionable practices may constitute the prevailing research norm."

John, Loewenstein, & Prelec (2012, p. 524)



Writing the Empirical Journal Article

Daryl J. Bem

Cornell University

2

Planning Your Article

Which Article Should You Write?	2
Analyzing Data	2
Reporting the Findings	3
How Should You Write?	3
For Whom Should You Write?	3

Writing Your Article

The Shape of An Article	4
The Introduction	5
The Opening Statements	5
Examples of Examples	6
The Literature Review	6
Citations	6
Criticizing Previous Work	7
Ending the Introduction	7
The Method Section	7
The Results Section	8
Setting the Stage	8
Presenting the Findings	9
Figures and Tables	10
On Statistics	10

"There are two possible articles you can write:
(a) the article you planned to write when you
designed your study or (b) the article that makes
the most sense now that you have seen the
results. They are rarely the same, and the correct
answer is (b)."

Feeling the Future: Experimental Evidence for Anomalous Retroactive Influences on Cognition and Affect

Daryl J. Bem
Cornell University

The term *psi* denotes anomalous processes of information or energy transfer that are currently unexplained in terms of known physical or biological mechanisms. Two variants of *psi* are *precognition* (conscious cognitive awareness) and *premonition* (affective apprehension) of a future event that could not otherwise be anticipated through any known inferential process. Precognition and premonition are themselves special cases of a more general phenomenon: the anomalous retroactive influence of some future event on an individual's current responses, whether those responses are conscious or nonconscious, cognitive or affective. This article reports 9 experiments, involving more than 1,000 participants, that test for retroactive influence by "time-reversing" well-established psychological effects so that the individual's responses are obtained before the putatively causal stimulus events occur. Data are presented for 4 time-reversed effects: precognitive approach to erotic stimuli and precognitive avoidance of negative stimuli; retroactive priming; retroactive habituation; and retroactive facilitation of recall. The mean effect size (d) in *psi* performance across all 9 experiments was 0.22, and all but one of the experiments yielded statistically significant results. The individual-difference variable of stimulus seeking, a component of extraversion, was significantly correlated with *psi* performance in 5 of the experiments, with participants who scored above the midpoint on a scale of stimulus seeking achieving a mean effect size of 0.43. Skepticism about *psi*, issues of replication, and theories of *psi* are also discussed.

Keywords: psi, parapsychology, ESP, precognition, retrocausation

The term *psi* denotes anomalous processes of information or energy transfer that are currently unexplained in terms of known physical or biological mechanisms. The term is purely descriptive; it neither implies that such phenomena are paranormal nor connotes anything about their underlying mechanisms. Alleged *psi* phenomena include *telepathy*, the apparent transfer of information from one person to another via some channel of communication that is not based on normal channels of communication; *remotely sensed memory*, the apparent ability to remember events that occurred before one was born; and *chokiness*, the apparent influence of thoughts or intentions on

Precognition and premonition are themselves special cases of a more general phenomenon: the anomalous retroactive influence of some future event on an individual's current responses, whether those responses are conscious or nonconscious, cognitive or affective. This article reports nine experiments designed to test for such retroactive influence by "time-reversing" several well-established psychological effects. In all but one of the experiments, responses are obtained before the putatively causal stimulus events occur. Most of the experiments were conducted by social psychologists and were published in *Psychological Bulletin*. A survey of 1,100 college professors in the United States found that psycholo-

People can see into the future – evidence from 9 (!) experiments

"Replication crisis" 2011

From: Brian Wansink
To: David Just
Cc: Collin Payne; Sandra Cuellar
Subject: Can Branding Improve School Lunches?
Date: Saturday, January 7, 2012 7:17:42 AM
Attachments: Elmo Icon-AJPH - 1-7-12.doc
ATT00001.htm

Hi David,

Here's the Elmo study we are going to spin off and submit. I think we start with the AJPH as a Brief (80 word abstract and 800 word paper), and go from there. I'll give Sandra a list of the journals and the priority order we should consider. Let's consider these two first:

Brief -- American Journal of Public Health

Research Letter – Archives of Pediatric and Adolescent Medicine

One sticking point is that although the stickers increase apple selection by 71%, for some reason this is a p value of .06. It seems to me it should be lower. Do you want to take a look at it and see what you think. If you can get the data, and it needs some tweaking, it would be good to get that one value below .05.

Best,

Brian

The measure becomes the target

BuzzFeed News

Vox

RECODE · THE GOOD · FUTURE PERFECT · THE HIGHLIGHT · FREE PAPER · PODCASTS · VIDEOS · MORE · YOUTUBE · F · D · S · T · S · C

A top Cornell food researcher has had 15 studies retracted. That's a lot.

Brian Wansink is a cautionary tale in bad incentives in science.

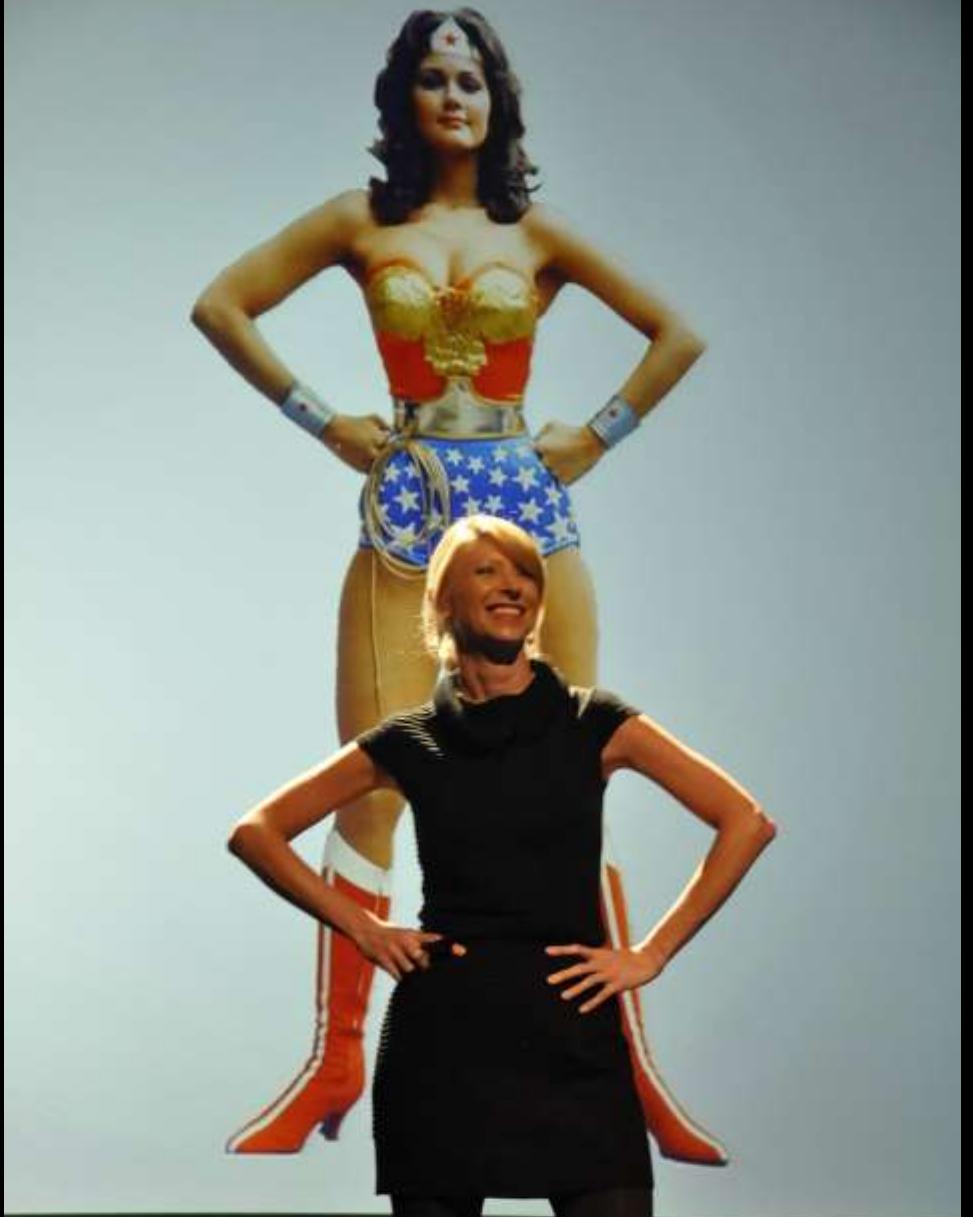
By Brian Resnick and Julia Belluz | Updated Oct 24, 2018, 2:05pm EDT

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MOST READ





Power pose



54,423,779

Views



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Recommend



Like



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Amy Cuddy - TEDGlobal 2012

Your body language may shape who you are

[Details](#) [Transcript](#) [Comments \(2525\)](#)

(NOTE: Some of the findings presented in this talk have been referenced in an ongoing debate among social scientists about robustness and reproducibility. Read "Criticisms & updates" below for more details as well as Amy Cuddy's response.) Body language affects how others see us, but it may also change how we see

TEDGlobal 2012 |

June 2012

Related tags

[Body Language](#)



Power pose

Open letter by Dana Carney
(co-author power pose)

My position on “Power Poses”

Regarding: Carney, Cuddy & Yap (2010).

Reasonable people, whom I respect, may disagree. However since early 2015 the evidence has been mounting suggesting there is unlikely any embodied effect of nonverbal expansiveness (vs. contractiveness)—i.e., “power poses” – on internal or psychological outcomes.

As evidence has come in over these past 2+ years, my views have updated to reflect the evidence. As such, I do not believe that “power pose” effects are real.

Any work done in my lab on the embodied effects of power poses was conducted long ago (while still at Columbia University from 2008-2011) – well before my views updated. And so while it may seem I continue to study the phenomenon, those papers (emerging in 2014 and 2015) were already published or were on the cusp of publication as the evidence against power poses began to convince me that power poses weren’t real. My lab is conducting no

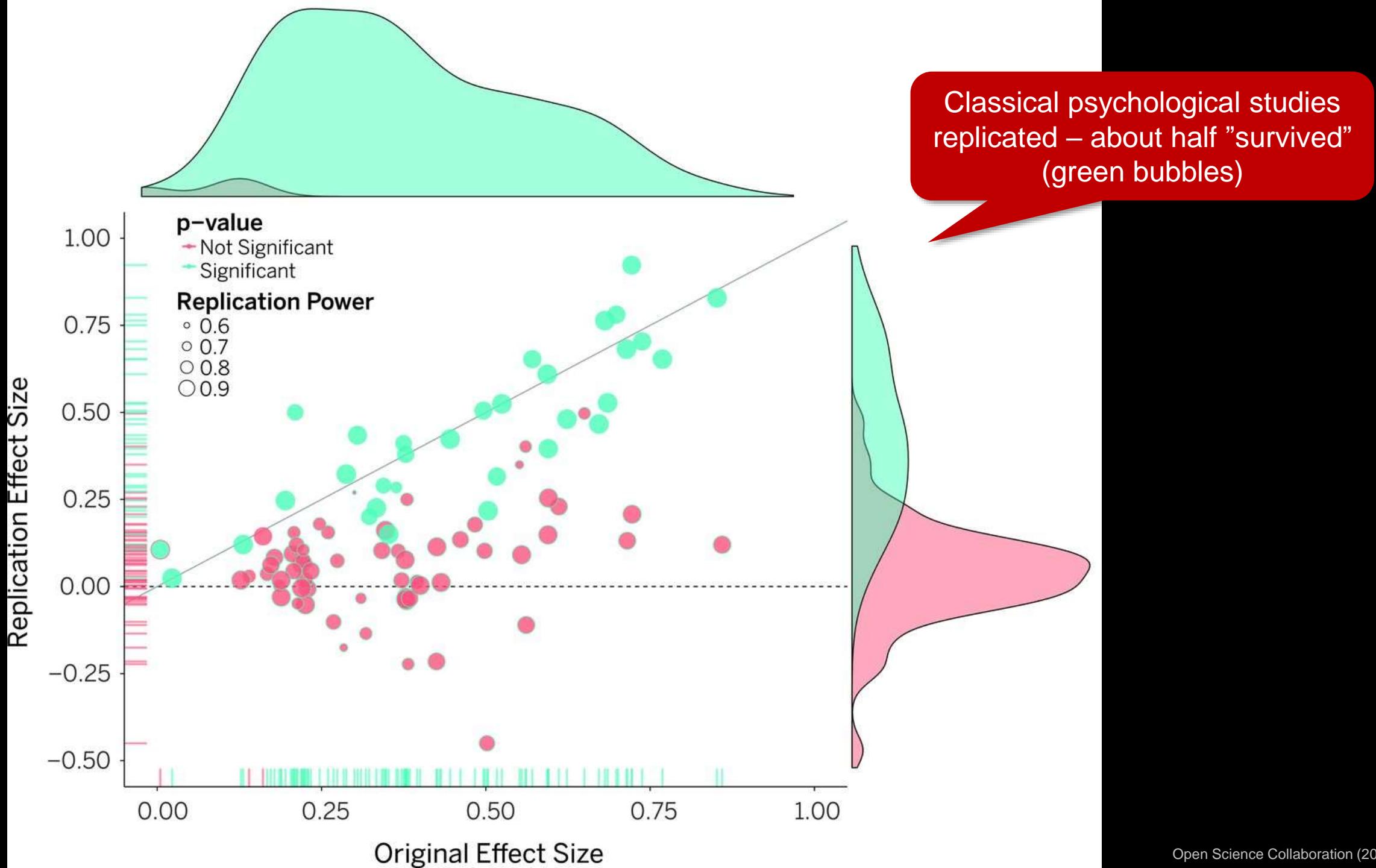
re

10. The self-report DV was p-hacked in that many different power questions were asked and those chosen were the ones that “worked.”

Weber (2015) seemed reasonable, at the time, since there were a number of effects showing positive evidence and only 1 published that I was aware of showing no evidence. What I regret about writing that “summary” paper is that it



Share



What's wrong with
psychology?

~~What's wrong with
psychology?~~

What's wrong with science?

ecology, evolution (e.g. Fraser et al., 2018)

humanities, tech (e.g. Sørensen, Ravn, & Schneider, 2019)

political science (e.g. Franco, Malhotra, & Simonovits, 2015)

communication (e.g. Matthes et al., 2015)

psychology (e.g. John, Loewenstein, & Prelec, 2012)

economy (e.g. Ioannidis, Stanley, & Doucouliagos, 2017)

medicine (e.g. Ioannidis, 2005)

health (e.g. Artino, Driessen, & Maggio, 2018)

RETRACTED: “Boom, Headshot!”: Effect of Video Game Play and Controller Type on Firing Aim and Accuracy

Communication Research
2014, Vol. 41(7) 879–891
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sagepub.com/journalsPermissions.nav
DOI: 10.1177/0093650212446622
crx.sagepub.com 

Jodi L. Whitaker¹ and Brad J. Bushman^{1,2}

Abstract

Video games are excellent training tools. Some writers have called violent video games “murder simulators.” Can violent games “train” a person to shoot a gun? There are theoretical reasons to believe they can. Participants ($N = 151$) played a violent shooting game with humanoid targets that rewarded headshots, a nonviolent shooting game with bull’s-eye targets, or a nonviolent nonshooting game. Those who played a shooting game used either a pistol-shaped or a standard controller. Next, participants shot a realistic gun at a mannequin. Participants who played a violent shooting game using a pistol-shaped controller had 99% more headshots and 33% more other shots than did other participants. These results remained significant even after controlling for firearm experience, gun attitudes, habitual exposure to violent shooting games, and trait aggressiveness. Habitual exposure to violent shooting games also predicted shooting accuracy. Thus, playing violent shooting video games can improve firing accuracy and can influence players to aim for the head.

Keywords

controller, gun, pistol, shooting accuracy, violent video game

“Boom, headshot!”

Popular catchphrase of FPS (First Person Shooter) Doug, fictional pro-gamer

Video games are a multibillion dollar market, generating more than US\$25 billion in the United States in 2010 (Entertainment Software Association, 2011, pp. 1-2). This is more than twice the revenue generated from Hollywood movie sales (Motion Picture Association

¹The Ohio State University, Columbus, OH, USA

²VU University, Amsterdam, the Netherlands

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Email: bushman.20@osu.edu

“Data inconsistencies”

Jodi L. Whita

Abstract

Video games are often blamed for violent behavior. In this study, we examined whether playing violent video games leads to increased aggression. We conducted a meta-analysis of 10 studies that manipulated violent video game exposure and aggression. Results showed that violent video game exposure was associated with increased aggression. Specifically, participants who played violent video games reported more aggression than those who did not play violent video games. These findings support the causal role of violent video game exposure in aggression.

Blinded by the Light: How a Focus on Statistical “Significance” May Cause *p*-Value Misreporting and an Excess of *p*-Values Just Below .05 in Communication Science

Ivar Vermeulen, Camiel J. Beukeboom, Anika Batenburg, Arthur Avramiea,
 Dimo Stoyanov, Bob van de Velde, and Dirk Oegema

VU University Amsterdam

Keywords

controller, gun, pistol, video game, aggression, violence, publication bias

“Boom, headshot!”

Popular culture has long blamed video games for violent behavior.

Video games are a \$70 billion industry in the United States in 2015, which is more than twice the revenue generated by movie theaters.

¹The Ohio State University
²VU University Amsterdam

Corresponding Author:
 Brad J. Bushman, School of Communication, Ohio State University, Columbus, OH, USA
 Email: bushman.20@osu.edu

Publication bias promotes papers providing “significant” findings, thus incentivizing researchers to produce such findings. Prior studies suggested that researchers’ focus on “ $p < .05$ ” yields—intentional or unintentional—*p*-value misreporting, and excess *p*-values just below .05. To assess whether similar distortions occur in communication science, we extracted 5,834 test statistics from 693 recent communication science ISI papers, and assessed prevalence of *p*-values (1) misreported, and (2) just below .05. Results show 8.8% of *p*-values were misreported (74.5% too low). 1.3% of *p*-values were critically misreported, stating $p < .05$ while in fact $p > .05$ (88.3%) or vice versa (11.7%). Analyzing *p*-value frequencies just below .05 using a novel method did not unequivocally demonstrate “*p*-hacking”—excess *p*-values could be alternatively explained by (severe) publication bias. Results for 10,820 *p*-values from social psychology were strikingly similar. We conclude that publication bias is a serious problem in communication science.

Misreporting

Abstract

Video games are often blamed for violent behavior. In this study, we examined whether video game exposure influences aggression. Participants who played a first-person shooter game for 10 minutes showed more aggression than participants who played a nonviolent game or a control game. Participants who played a first-person shooter game also showed more aggression than participants who played a nonviolent game or a control game. Participants who played a first-person shooter game also showed more aggression than participants who played a nonviolent game or a control game. Participants who played a first-person shooter game also showed more aggression than participants who played a nonviolent game or a control game.

Keywords

video game, controller, gun, pistol, aggression

"Boom, headshot!"

Popularity

Video games are a \$70 billion industry in the United States in 2013, which is more than twice the revenue generated by movie theaters.

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²VU University, Amsterdam

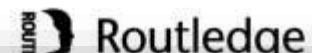
Corresponding Author: Brad J. Bushman, School of Communication, The Ohio State University, 191 North High Street, Columbus, OH, USA 43210. Email: bushman.20@osu.edu

Communication Methods and Measures, 9:253–279, 2015

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Questionable Research Practices in Experimental Communication Research: A Systematic Analysis From 1980 to 2013

Jörg Matthes, Franziska Marquart, and Brigitte Naderer

University of Vienna

Florian Arendt

University of Munich (LMU)

Desirée Schmuck and Karoline Adam

University of Vienna

Ivar

Publications produced in professional or similar communication journals below .05 were critical. Analyzing strate "p" Results

Questionable research practices (QRPs) pose a major threat to any scientific discipline. This article analyzes QRPs with a content analysis of more than three decades of published experimental research in four flagship communication journals: *Journal of Communication*, *Communication Research*, *Journalism & Mass Communication Quarterly*, and *Media Psychology*. Findings reveal indications of small and insufficiently justified sample sizes, a lack of reported effect sizes, an indiscriminate removal of cases and items, an increasing inflation of *p*-values directly below $p < .05$, and a rising share of verified (as opposed to falsified) hypotheses. Implications for authors, reviewers, and editors are discussed.

Lack of transparency

Abstract

Video games are often used as "murder simulators" for theoretical reasons, such as with humanoid targets or nonviolent targets, or a nonviolent target shaped like a pistol or a sword. Participants who play more violent video games also remain significantly exposed to violence. Video game shooting games also can improve firing accuracy.

Keywords

video game, controller, gun, pistol, accuracy

"Boom, heads up!"

Popular

Video games are a \$9 billion industry in the United States in 2015, which is more than twice the revenue

¹The Ohio State University

²VU University, Amsterdam

Corresponding Author

Brad J. Bushman, School of Communication, Columbus, OH, USA
Email: bushman.20@osu.edu

Publications have produced questionable research practices (QRPs) with a disconnect between statistical power and alpha levels. This study analyzes QRPs with a content analysis of 900 political and health-related media articles published in four flagship communication journals from 2010 through 2015. The results reveal a complete disconnect between discussions of statistical power and alpha levels. This study proposes the use of discontinuous criterion power analyses to address this power-alpha blind spot. Additional analyses indicate a sizeable percentage (41.1%) of published works in these areas retaining sufficient statistical power (i.e., .95 or greater) to warrant the use of a stricter alpha level than the traditional $\alpha = .05$ to detect small effects. The surgical use of more stringent alpha levels to guard against Type I error will instill greater confidence in the empirical findings generated by media research conducted in political and health contexts.

Questionable Research Practices in Experimental Communication Research: A Systematic Review

ANNALS OF THE INTERNATIONAL COMMUNICATION ASSOCIATION, 2018
VOL. 42, NO. 2, 75–92
<https://doi.org/10.1080/23808985.2018.1459198>

COMMUNICATION INSIGHT



Addressing a statistical power-alpha level blind spot in political- and health-related media research: discontinuous criterion power analyses

R. Lance Holbert^a, Bruce W. Hardy^a, Esul Park^a, Nicholas W. Robinson^a, Heeyoung Jung^a, Chen Zeng^a, Erin Drouin^b and Kelly Sweeney^b

^aKlein College of Media and Communication, Temple University, Philadelphia, PA, USA; ^bDepartment of Communication, University of Delaware, Newark, DE, USA

ABSTRACT

A content analysis of 900 political- and health-related media articles published in 11 outlets from 2010 through 2015 reveals a complete disconnect between discussions of statistical power and alpha levels. This study proposes the use of *discontinuous criterion power analyses* to address this power-alpha blind spot. Additional analyses indicate a sizeable percentage (41.1%) of published works in these areas retaining sufficient statistical power (i.e., .95 or greater) to warrant the use of a stricter alpha level than the traditional $\alpha = .05$ to detect small effects. The surgical use of more stringent alpha levels to guard against Type I error will instill greater confidence in the empirical findings generated by media research conducted in political and health contexts.

Poor knowledge of statistics

Accepted 2 January 2018
Revised 10 January 2018
Revised 10 January 2018
Accepted 27 March 2018

KEYWORDS

Statistical power; alpha level; criterion analysis; Type I error; political media; health media

89% of psych textbooks
describe NHST incorrectly

Cassidy et al. (2019)

Probabilistic Misconceptions Are Pervasive Among Communication Researchers

Eike Mark Rinke, Frank Schneider

Submitted on: September 26, 2018 | Last edited: September 26, 2018

The screenshot shows a research paper titled "PROBABILISTIC MISCONCEPTIONS" by Eike Mark Rinke and Frank Schneider. The paper is on page 1 of 26, with an automatic zoom setting. A "Download paper" button is visible, along with a "Downloads: 0" counter and social sharing icons for Twitter, Facebook, LinkedIn, and Email. The abstract section begins with: "Across all areas of communication research, the most popular approach to generating insights about". A large green box highlights a quote from the paper: "vast majority of communication researchers misinterpreted NHST (91%) and [...] confidence intervals (96%)". At the bottom, it says: "on data from a survey of the ICA membership to assess the evidential basis of these concerns. The vast". A red callout bubble points to the "Abstract" section with the text: "Do we know what we're doing?". The footer indicates the paper was submitted on February 19, 2016, and has 221 views (5%).

n = 221 (5 %)

NOV. 24, 2015, AT 12:12 PM

Not Even Scientists Can Easily Explain P-values

By Christie Aschwanden

Filed under [Scientific Method](#)



P-values have taken quite a beating lately. These widely used and often misapplied statistics have been blamed for giving a veneer of legitimacy to [dodgy study results](#), encouraging [bad research practices](#) and pronouncing [false-positive study results](#).

BOOKS SEPTEMBER 9, 2019 ISSUE

WHAT STATISTICS CAN AND CAN'T TELL US ABOUT OURSELVES

In the era of Big Data, we've come to believe that, with enough information, human behavior is predictable. But number crunching can lead us perilously wrong.

By Hannah Fry September 2, 2019



THE
NEW YORKER

More than just

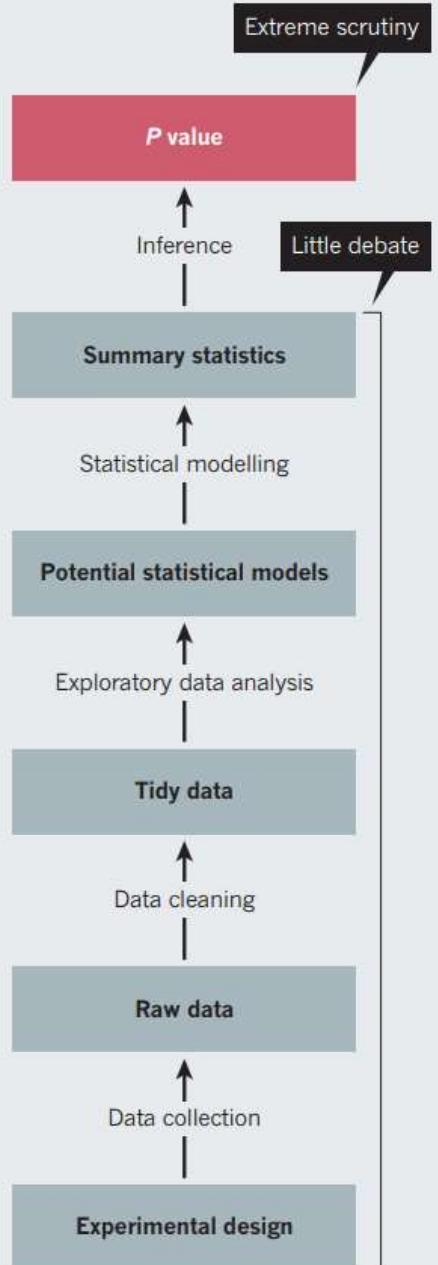
An earlier version of this article incorrectly defined p-value.

This article appears in the print edition of the [September 9, 2019](#), issue, with the headline "Your Number's Up."

Hannah Fry is a professor at University College London's Centre for Advanced Spatial Analysis. Her latest book is "[Hello World](#)." [Read more »](#)

DATA PIPELINE

The design and analysis of a successful study has many stages, all of which need policing.



P-values have got a lot of attention,
but shouldn't forget all other stuff

Selective reporting



Point of View: Tell me a story



Joshua R Sanes
Harvard University, United States

FEATURE ARTICLE Aug 6, 2019

question you began with. If you try to fit the answer to the question, you risk ending up with a compendium of results that is less cohesive than it could be. Instead, start with the answer, figure out what the question should have been, and build on that. This seems counterintuitive, but it works. It is the first step in crafting a story.

The whole truth

In presenting your results, you have to tell the truth and nothing but the truth. What you don't have to do is tell the whole truth. In other words, you can select the results you present, as well as the order in which you present them, to shape your narrative. There is one crucial caveat: if you have results that call your conclusions into question, you need to present them,

The idea that science is story-telling is pervasive

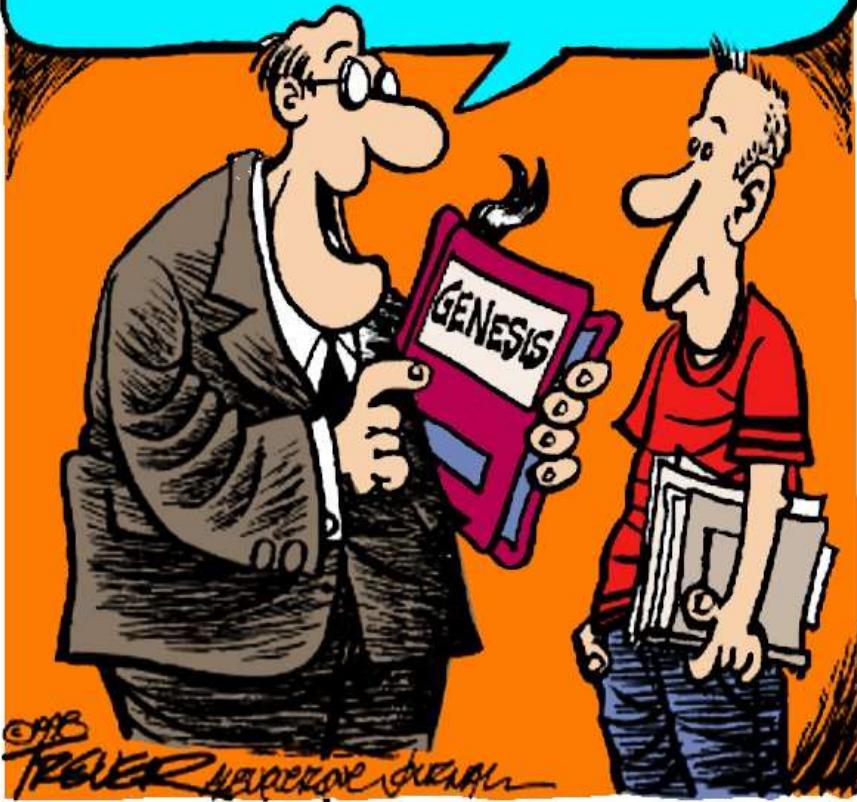
The Scientific Method

HERE ARE THE FACTS. WHAT CONCLUSIONS CAN WE DRAW FROM THEM?



The Creationist Method

HERE'S THE CONCLUSION. WHAT FACTS CAN WE FIND TO SUPPORT IT?



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TREVER HARRISON JOURNAL

Not Reporting Results of a Clinical Trial Is Academic Misconduct

Joshua D. Wallach, MS, PhD; Harlan M. Krumholz, MD, SM

Article, Author, and Disclosure Information

FULL TEXT



MORE ▾

Failure to report the results of clinical trials threatens the public's trust in and the integrity of the medical literature, and should be considered academic misconduct at the individual and institutional levels. According to the ethical principles for research outlined in the Declaration of Helsinki, researchers have a duty to make publicly available the results of their research on human subjects "because they are accountable for the completeness and accuracy of their reports" (1). When participants volunteer to take part in clinical trials, and expose themselves to interventions with unknown safety and efficacy profiles, they have a tacit assumption, based on trust, that the evidence generated will inform clinicians (2). Health care providers and medical societies, who are responsible for evaluating and synthesizing evidence and filling the gap between research and practice, have a duty to encourage investigators to fully report their results in a timely manner. The utility of a diligent search for truth in the medical literature depends on its completeness. However, when research findings are not consistently disseminated, the literature provides a skewed view of the science, which may bias reviews of the evidence.

During the past 2 decades, efforts have been increasing to promote the reporting of clinical trial results. After the creation of ClinicalTrials.gov, a public registry database, the United States moved to establish consequences of not reporting clinical trial results. In particular, the U.S. Food and Drug Administration Amendments Act (FDAAA) of 2007 created legal requirements for certain intervention studies of FDA-regulated...

 U.S. Department of Health & Human Services

 THE OFFICE OF
RESEARCH
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[Home](#) » Definition of Research Misconduct  [Printer Friendly](#)

Definition of Research Misconduct

Research misconduct means fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.

- (a) Fabrication is making up data or results and recording or reporting them.
- (b) Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
- (c) Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.
- (d) Research misconduct does not include honest error or differences of opinion.

Table 1 Experimental findings: community members' evaluations of data falsification and fabrication ($n = 415$) versus selective reporting ($n = 406$) (Study 1)

Variables	Falsification and fabrication Support (%)	Selective reporting Support (%)	z	p	Many in the U.S. public think it should be a crime
Morally unacceptable	96	71	9.59	<.001	
Should be fired	96	63	11.75	<.001	
Should receive funding ban	93	73	7.75	<.001	
<u>Should be a crime</u>	<u>66</u>	<u>37</u>	8.34	<.001	

Table 3 The American public's support for criminalizing data falsification and fabrication (Study 2)

Sample	<u>Should be a crime</u> <u>Support (%)</u>	Preferred penalty among those supporting criminalization ^a		
		Fine and/or probation (%)	Incarceration for up to 1 year (%)	Incarceration for more than 1 year (%)
Total sample ($N = 964$)	<u>91</u>	45	31	24

Public opinion and scientists' opinion diverge

“This finding is especially noteworthy, given that many scientists’ have very permissive views of selective reporting (John et al. 2012)—“**that is how the field works**” (Baumeister 2014)”

Pickett & Roche (2018, p. 157)

The problem: false positives

	Found effect	Found nothing
Effect exist	✓	✗ False negative
Doesn't exist	✗ False positive	✓

Garden of forking paths

- Similar concepts to forking paths
- researchers degrees of freedom
 - capitalizing on chance
 - multiple comparisons
 - data dredging
 - p-hacking
 - cooking
 - fishing

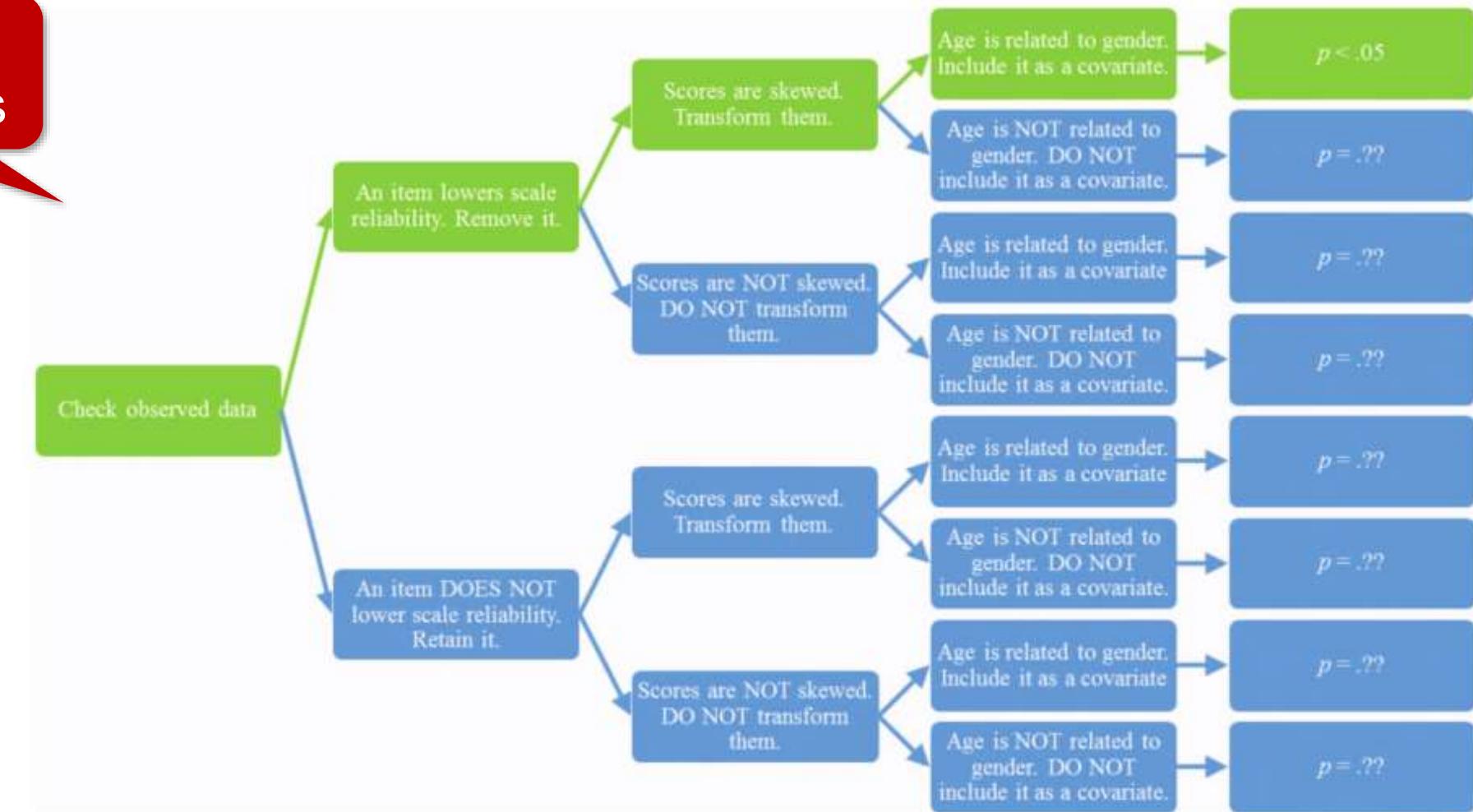
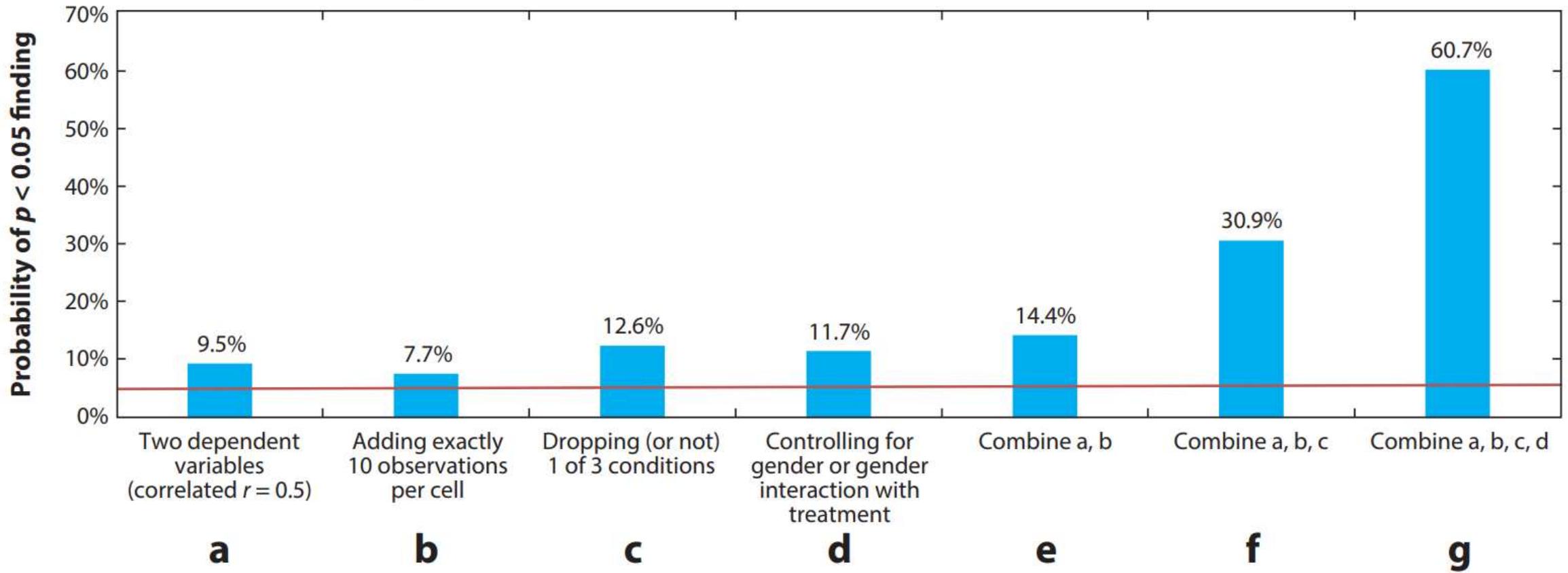


Figure 1. An illustration of three forking paths in which decisions about removing items, transforming scores, and including covariates are based on the idiosyncrasies of a specific sample of data. See the online article for the color version of this figure.

Combine forking paths,
increase false positive rate



JELLY BEANS
CAUSE ACNE!

SCIENTISTS!
INVESTIGATE!

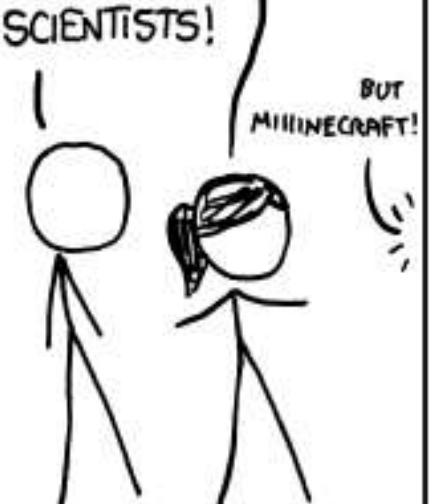
BUT WE'RE
PLAYING
MINECRAFT!
... FINE.



WE FOUND NO
LINK BETWEEN
JELLY BEANS AND
ACNE ($P > 0.05$).



THAT SETTLES THAT.
I HEAR IT'S ONLY
A CERTAIN COLOR
THAT CAUSES IT.



WE FOUND NO
LINK BETWEEN
PURPLE JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
BROWN JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
PINK JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
BLUE JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
TEAL JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
SALMON JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
RED JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
TURQUOISE JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
MAGENTA JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
YELLOW JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
GREY JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
TAN JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
CYAN JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND A
LINK BETWEEN
GREEN JELLY
BEANS AND ACNE
($P < 0.05$).



WE FOUND NO
LINK BETWEEN
LAUVE JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
BEIGE JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
LILAC JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
BLACK JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
PEACH JELLY
BEANS AND ACNE
($P > 0.05$).



WE FOUND NO
LINK BETWEEN
ORANGE JELLY
BEANS AND ACNE
($P > 0.05$).



JELLY BEANS
CAUSE ACNE!

SCIENTISTS!
INVESTIGATE!

BUT WE'RE
PLAYING
MINECRAFT!
... FINE.

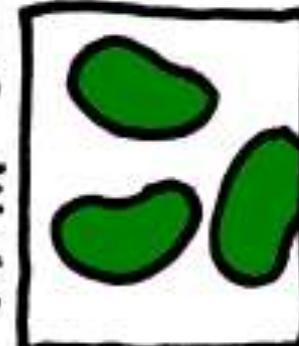
WE FOUND
LINK BETWE
JELLY BEAN
ACNE ($P >$)

News

GREEN JELLY BEANS LINKED TO ACNE!

95% CONFIDENCE

ONLY 5%
CHANGE
OF COINCIDENCE!



SCIENTISTS...

Selectively reporting findings
leads to false positives

WE FOUND NO
LINK BETWEEN
PURPLE JELLY
BEANS AND ACNE

WE FOUND NO
LINK BETWEEN
BROWN JELLY
BEANS AND ACNE

WE FOUND NO
LINK BETWEEN
PINK JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
BLUE JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
TEAL JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
TURQUOISE JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
MAGENTA JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
YELLOW JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
CYAN JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND A
LINK BETWEEN
GREEN JELLY
BEANS AND ACNE
($P < 0.05$).

WE FOUND NO
LINK BETWEEN
MAUVE JELLY
BEANS AND ACNE
($P > 0.05$).

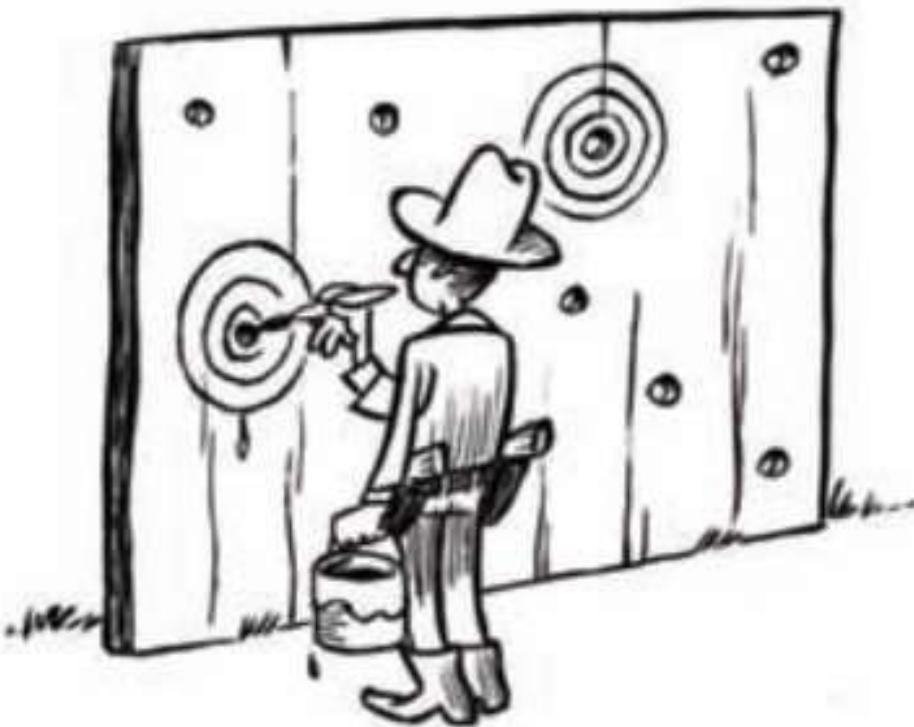
WE FOUND NO
LINK BETWEEN
BLACK JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
PEACH JELLY
BEANS AND ACNE
($P > 0.05$).

WE FOUND NO
LINK BETWEEN
ORANGE JELLY
BEANS AND ACNE
($P > 0.05$).

Goofy statistics

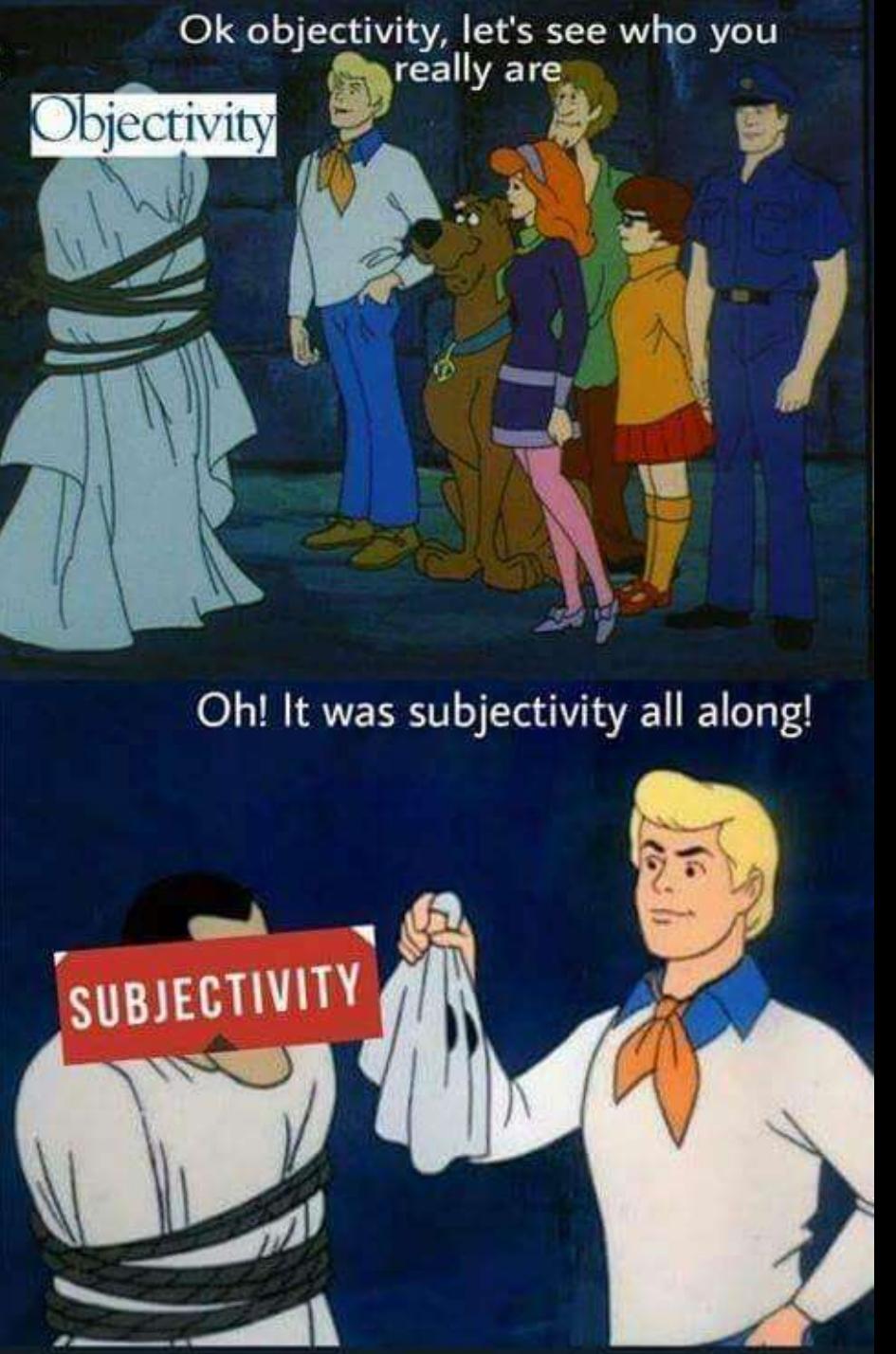
Useful statistics



Exploratory

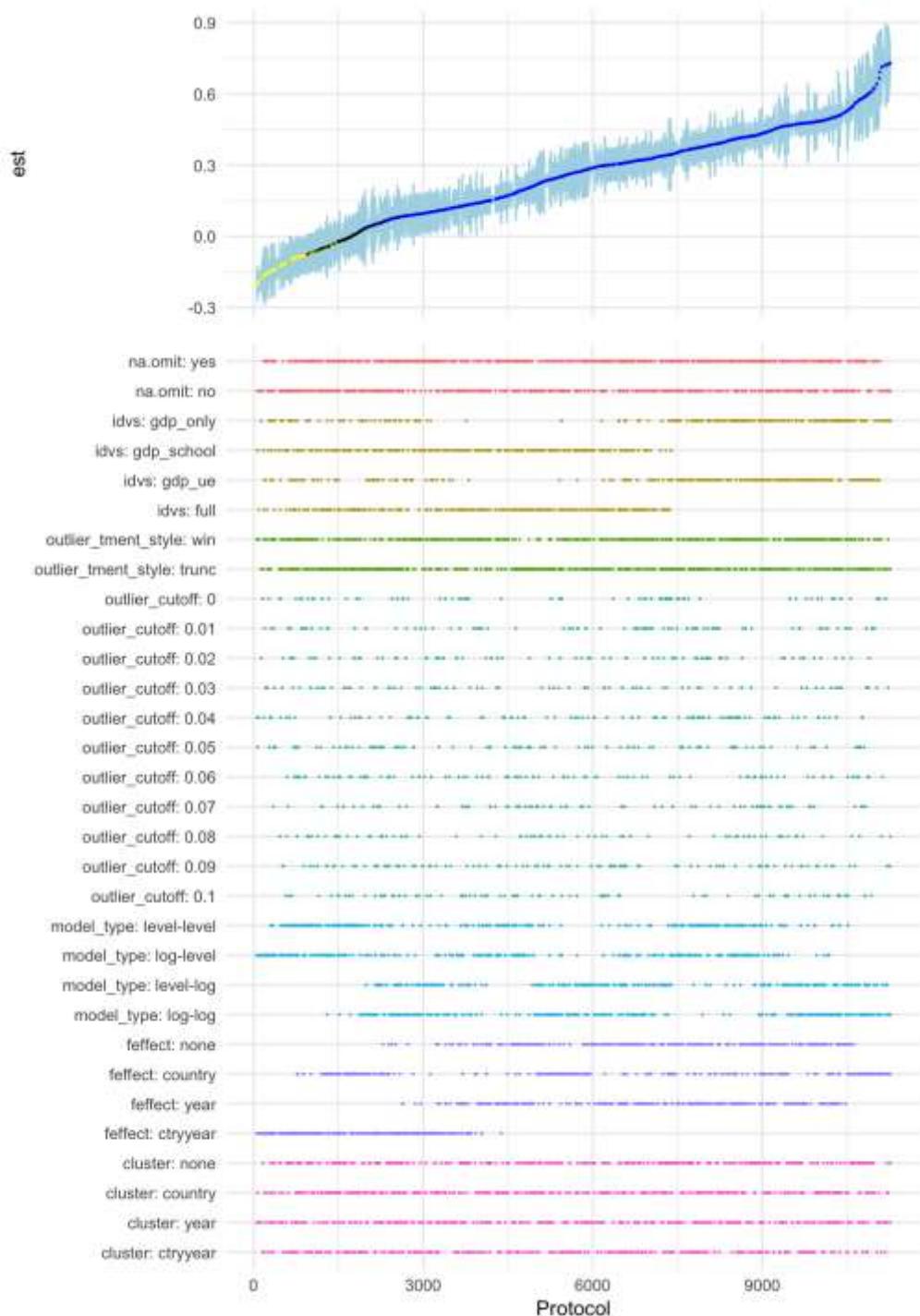


Confirmatory



“The culprit is a construct we refer to as **researcher degrees of freedom**. In the course of collecting and analyzing data, researchers have many decisions to make: Should more data be collected? Should some observations be excluded? Which conditions should be combined and which ones compared? Which control variables should be considered? Should specific measures be combined or transformed or both?”

Simmons et al. (2011, p. 1359)

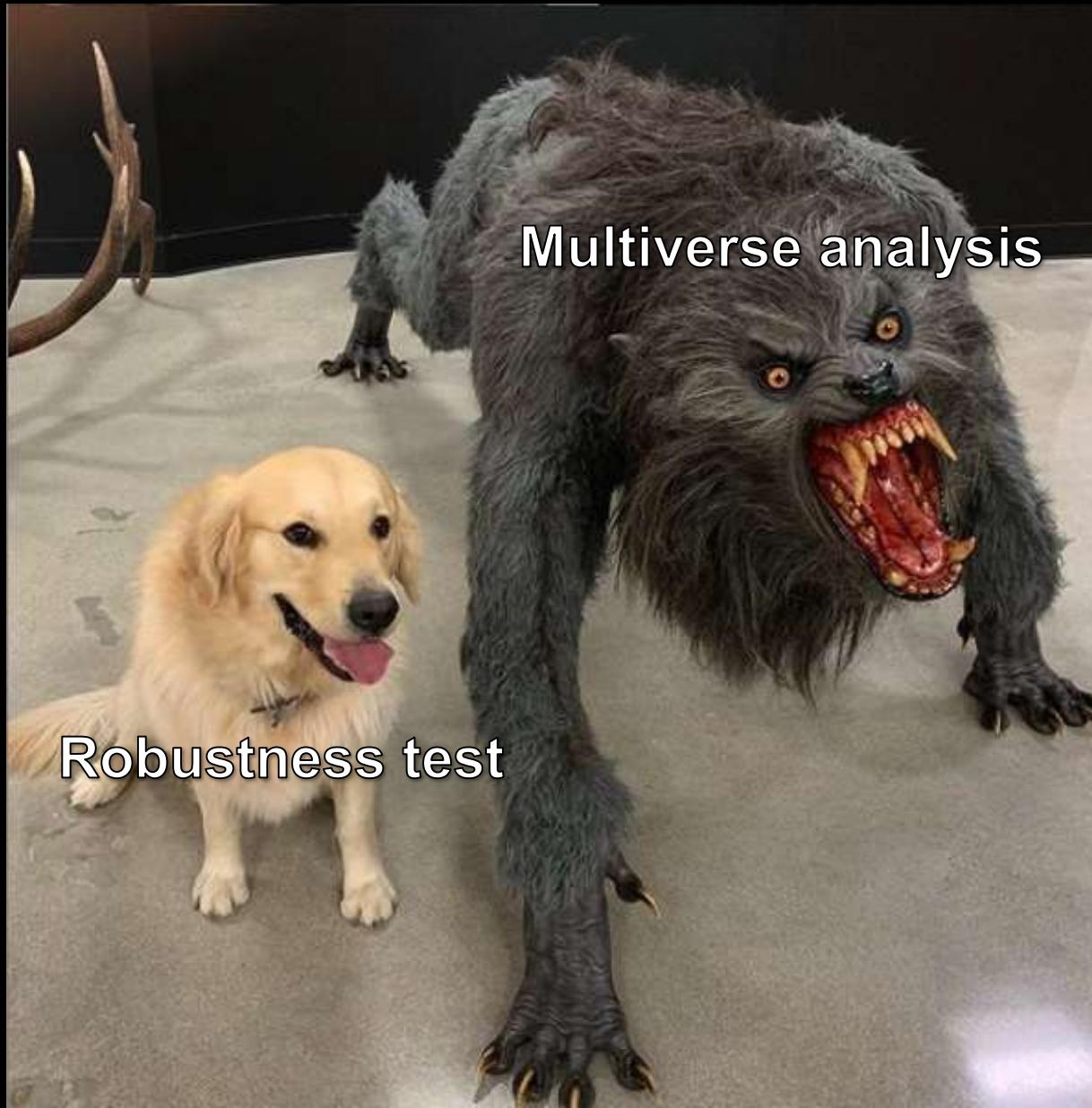


11,264
researcher
degrees of
freedom

Multiverse
analysis

"Raw data do not uniquely give rise to a single data set for analysis but rather to multiple alternatively processed data sets, depending on the specific combination of choices—a many worlds or **multiverse** of data sets."

Steegen et al. (2016, p. 702)



Multiverse analysis

Robustness test

Common wisdom:

"the larger the sample, the easier it is to get statistical significance"

Logical implication (modus tollens):

1. If I have insufficient sample, I should not get significance
2. I got significance
3. Therefore, my sample was sufficient

Common wisdom
true if effect exists

Common wisdom:

"the larger the sample, the easier it is to get statistical significance"

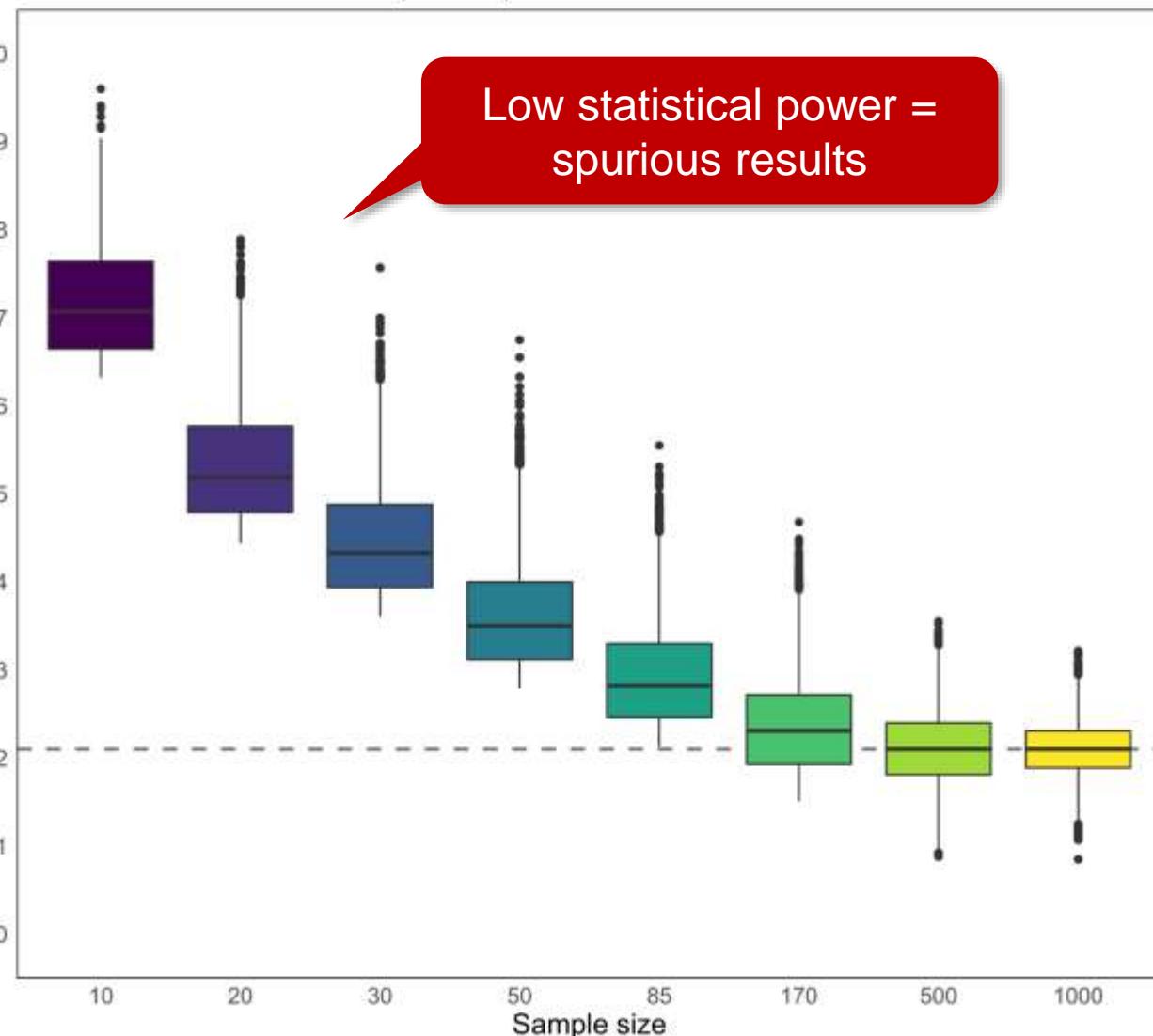
Logical implication (modus tollens):

1. If I have insufficient sample, I should not get significance
2. I got significance
3. Therefore, my sample was sufficient

Instead:

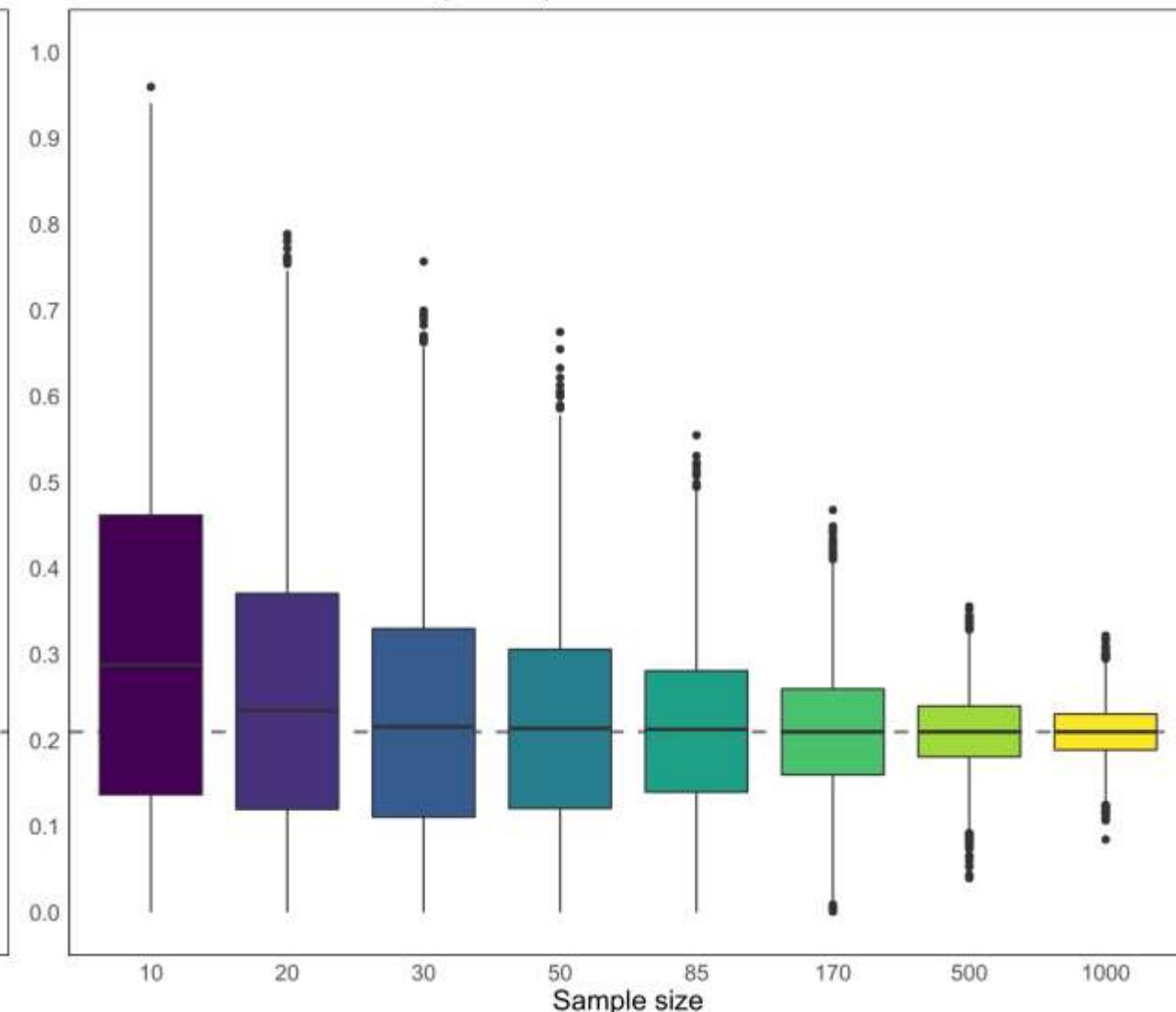
Small samples have higher variability in effect sizes, thereby increasing the chance of large effects that are statistically significant

Observed effect size when you only report $p < .05$
Dashed line is true effect size ($r = 0.21$)

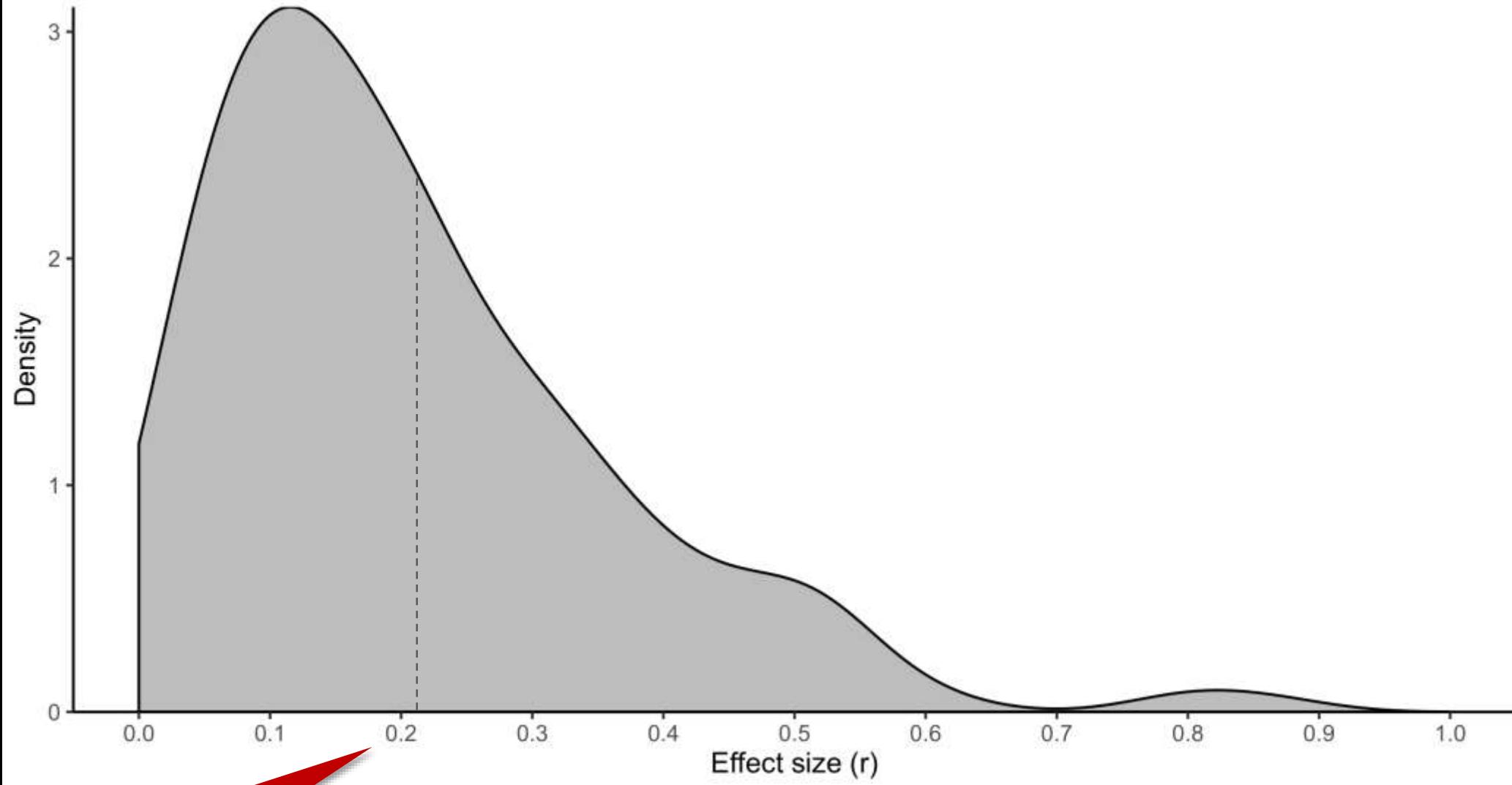


Low statistical power =
spurious results

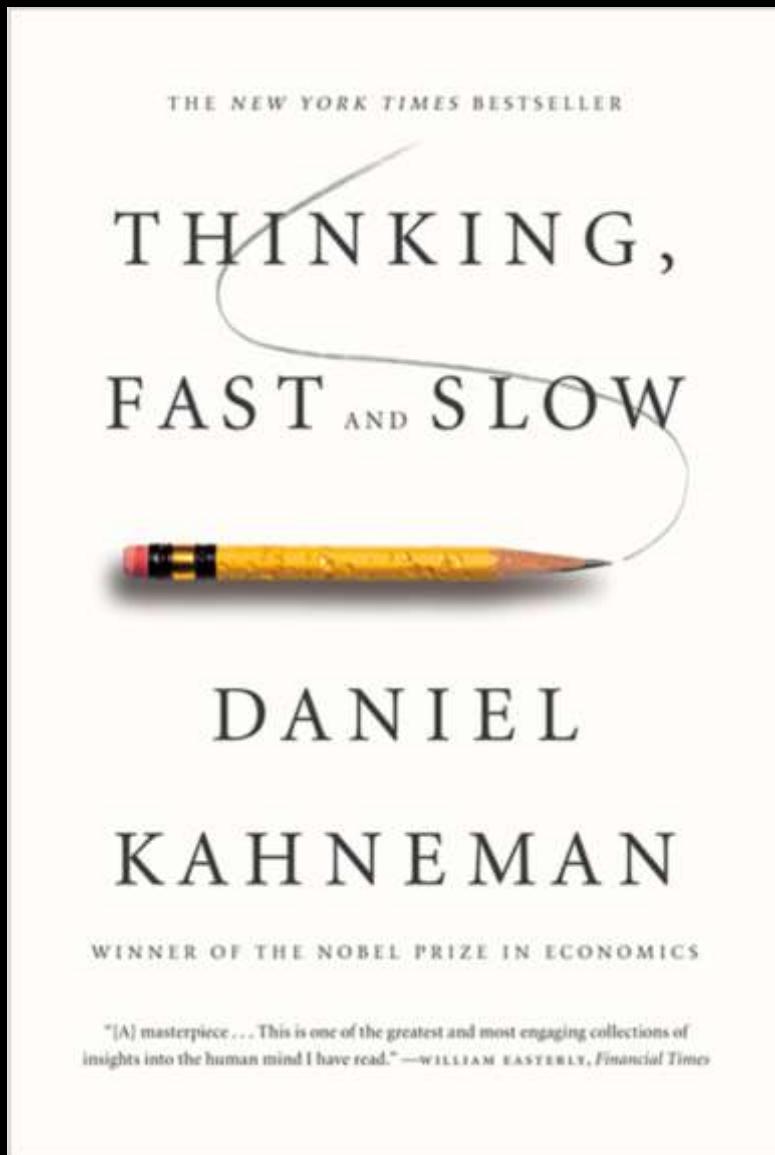
Observed effect size when you report all the results (including negative)
Dashed line is true effect size ($r = 0.21$)



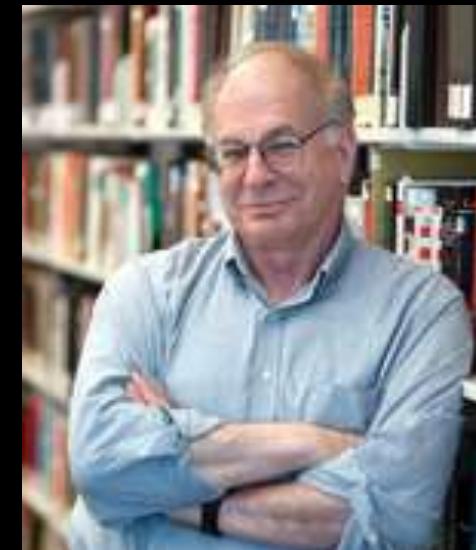
Magnitude of meta-analytic effect sizes from 60 years of communication research



Average $r = .21$



“I placed too much faith in underpowered studies”



Daniel Kahneman

Trimming consists in clipping off little bits here and there from those observations which differ most in excess from the mean, and in sticking them on to those which are too small; a species of "equitable adjustment," as a radical would term it, which cannot be admitted in science.

This fraud is not perhaps so injurious (except to the character of the trimmer) as cooking, which the next paragraph will teach. The reason of this is, that the *average* given by the observations of the trimmer is the same, whether they are trimmed or untrimmed. His object is to gain a reputation for extreme accuracy in making observations; but from respect for truth, or from a prudent foresight, he does not distort the position of the fact he gets from nature, and it is usually difficult to detect him. He has more sense or less adventure than the Cook.

Of Cooking. This is an art of various forms, the object of which is to give to ordinary observations the appearance and character of those of the highest degree of accuracy.

One of its numerous processes is to make multitudes of observations, and out of these to select those only which agree, or very nearly agree. If a hundred observations are made, the

cook must be very unlucky if he cannot pick out fifteen or twenty which will do for serving up.

Another approved receipt, when the observations to be used will not come within the limit of accuracy, which it has been resolved they shall possess, is to calculate them by two different formulæ. The difference in the constants employed in those formulæ has sometimes a most happy effect in promoting unanimity amongst discordant measures. If still greater accuracy is required, three or more formulæ can be used.

It must be admitted that this receipt is in some instances rather hazardous: but in cases where the positions of stars, as given in different catalogues, occur, or different tables of specific gravities, specific heats, &c. &c., it may safely be employed. As no catalogue contains all stars, the computer must have recourse to several; and if he is obliged to use his judgment in the selection, it will be cruel to deny him any little latitude which might result from it. It may be necessary to guard against one misfortune, lest persons might fall.

If an observer calculate particular stars from a catalogue which makes them accord precisely with the rest of his results, whereas, had they

Babbage cautioned against
selective reporting in 1830

HARKing

HARKing

Hypothesizing After the Results are Known.

"It's difficult to make predictions,
especially about the future."

Danish proverb

My Survey

1. How many pets do you have? $p = 0.638$
2. What party do you like? $p = 0.459$
3. What is your mother's maiden name? $p = 0.994$
4. Where do you place yourself on left/right-scale? $p = 0.194$
5. What is the circumferences of the earth? $p = 0.894$
6. How many moons are orbiting jupiter? $p = 0.899$
7. Why are you reading this? $p = 0.349$
8. What is this thing called love? $p = 0.018$
9. How old are you? $p = 0.534$
10. Haven't you stopped reading yet? $p = 0.435$

What is this thing called love?

p = 0.018

This thing called love predicts selective exposure

Theory

Love is an important predictor.

Hypothesis 1: This thing called love predicts
selective exposure

Results

What is this thing called love? **p = 0.018**

Why is this wrong?

In methodological terms: It's confusing exploration for confirmation

In philosophical terms: It's accommodation, not prediction

In statistical terms: It's a violation of independence

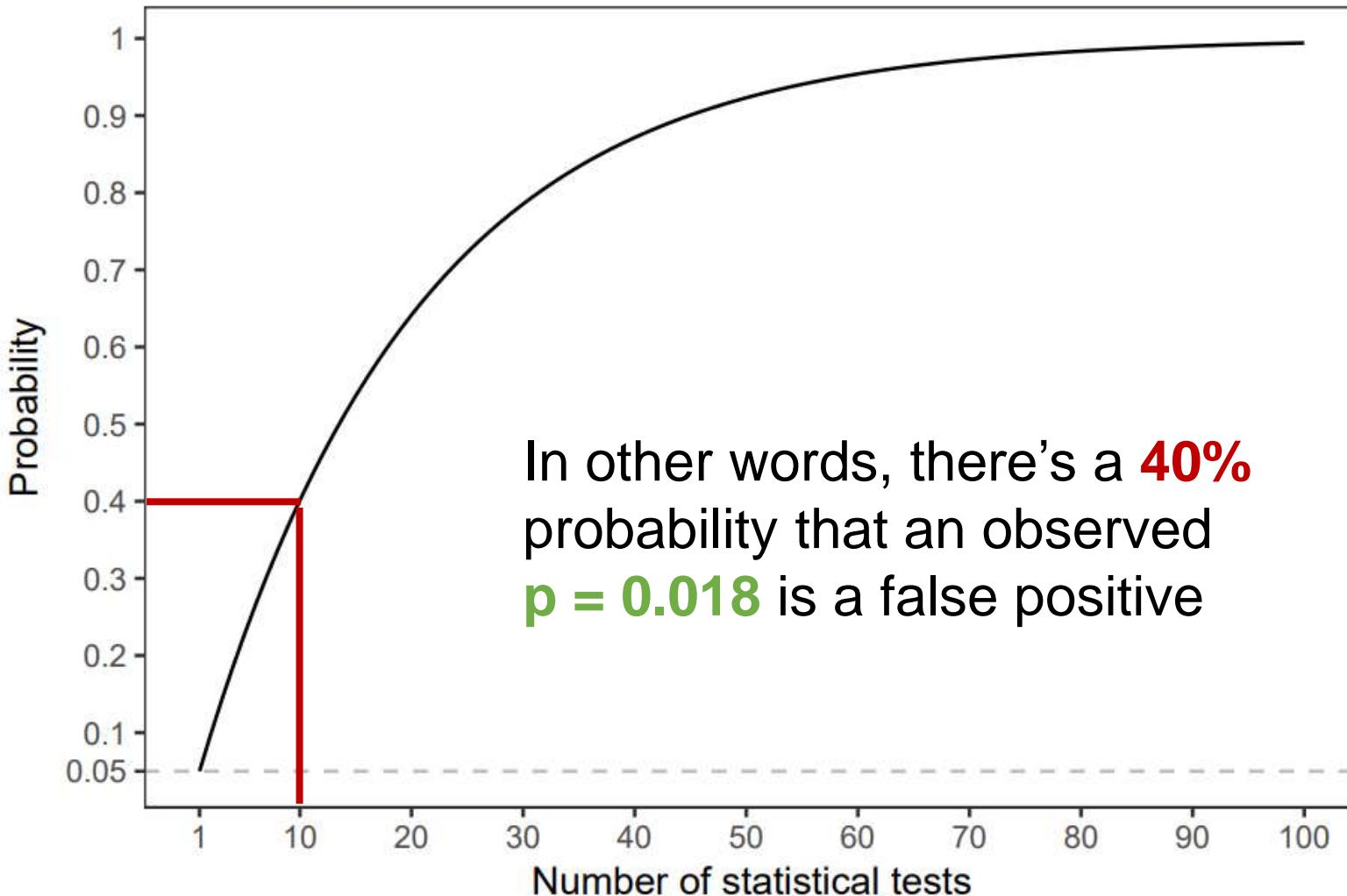
In logical terms: It's circular reasoning – one cannot test an hypothesis on data that was used to generate the hypothesis*

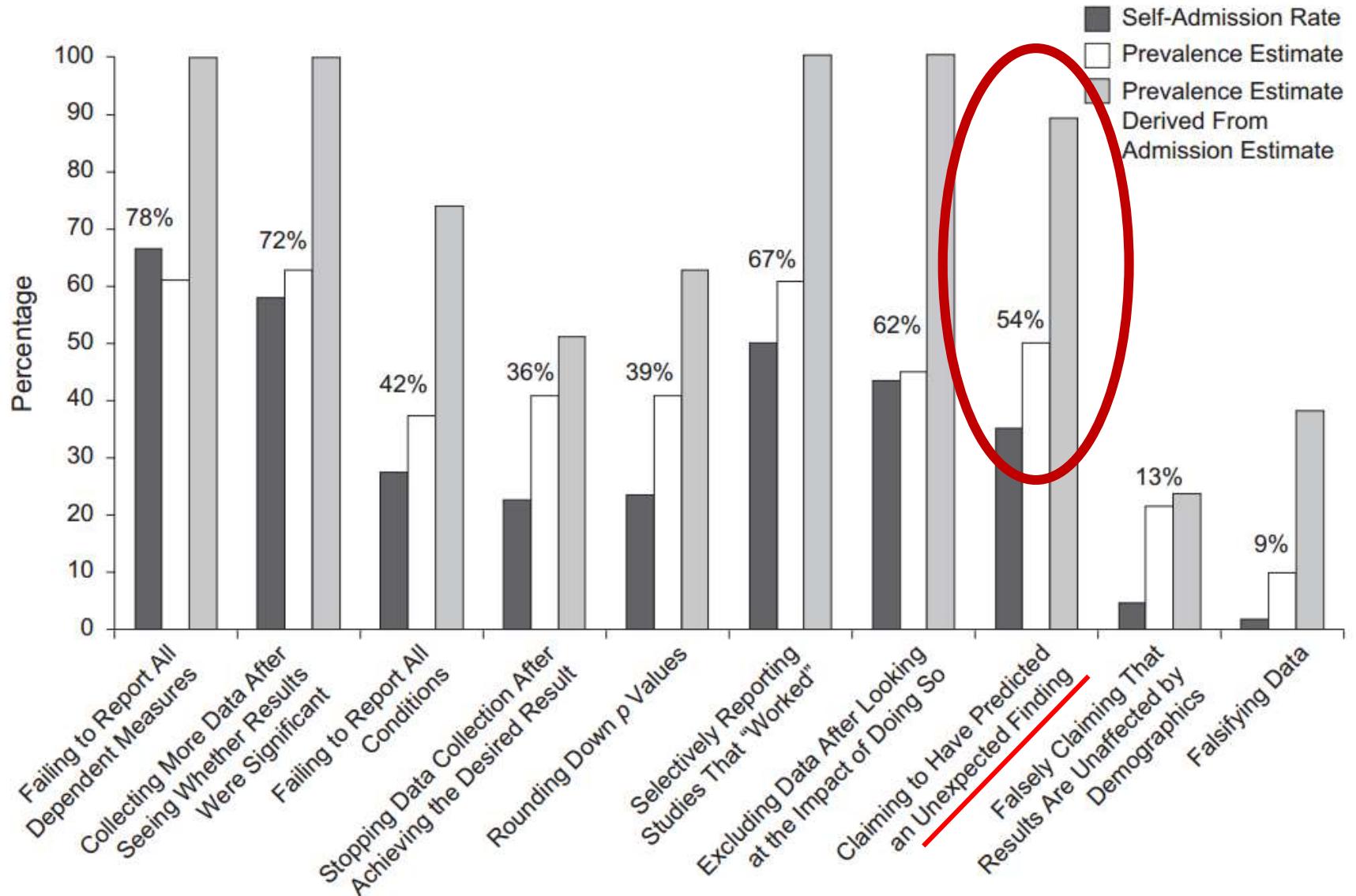
Weak severity argument

"One does not have evidence for a claim if nothing has been done to rule out ways the claim may be false"

Mayo (2018, p. 5)

Probability of at least one false positive





Preregistration

Write in advance

- hypothesis
- data collection
- analysis & inference criteria

Why?

- avoid hindsight bias
- separate exploration/testing
- make forking paths transparent

Preregistering everything too much? Consider this instead.

Standard Operating Procedures:
A Safety Net for Pre-Analysis Plans

Winston Lin* and Donald P. Green†
August 13, 2015

Across the social sciences, growing concerns about research transparency have led to calls for plans, documents that lay out in advance how researchers intend to analyze the data they are collecting. Such plans help readers to distinguish between exploratory and confirmatory analysis, improving the credibility of the reported results. Pre-analysis plans, however, impose costs on researchers. They are time-consuming to write, especially if researchers attempt to describe in detail how they would handle the many contingencies that may arise in the course of data collection. In this article, we make the case for "standard operating procedures," default practices that researchers can fall back on in the event that their pre-analysis plan fails to address these contingencies. We offer an example of a documented set of standard operating procedures that may be adapted by other researchers seeking to place a safety net beneath their pre-analysis plans.

Concerns about data fishing and publication bias have sparked a growing movement to promote transparency in social science research (Miguel et al. 2014; Nosek et al. 2015). One recent innovation is the public archiving of pre-analysis plans (PAPs) that specify details of the analysis (e.g., statistical methods, sample exclusions, outcome measures, covariates, and subgroup definitions) before the researchers see unblinded outcome data.¹ Deviations from the plans are not prohibited, but "when such deviations arise they [should] be highlighted and the effects on results reported" (Humphreys, Sanchez de la Sierra, and van der Windt 2013, 13).

OSF REGISTRIES - Help | Donate | Jobs | Login

Social media and political polarization

Study Information

Title: How does social media use influence impression and political polarization? Examining psychological reactance as mediator

Authors: Peter M. Daigler

Description: This study is investigating the relationship between social media use and political polarization. Specifically, it explores how social media use influences political polarization through the mechanism of psychological reactance. Psychological reactance occurs when individuals feel threatened or violated, and it can lead to increased polarization. The study will examine how different types of social media use (e.g., Facebook) affect political polarization, and how this relationship is mediated by psychological reactance.

Registration type: OSF Management

Date registered: August 16, 2015

Date treated: August 16, 2015

Registered from: OSF Registry

Category: Impact

Tags: #politicalpolarization, #socialmedia, #psychologicalreactance

Example: my
preregistration

<https://osf.io/9yk6n>

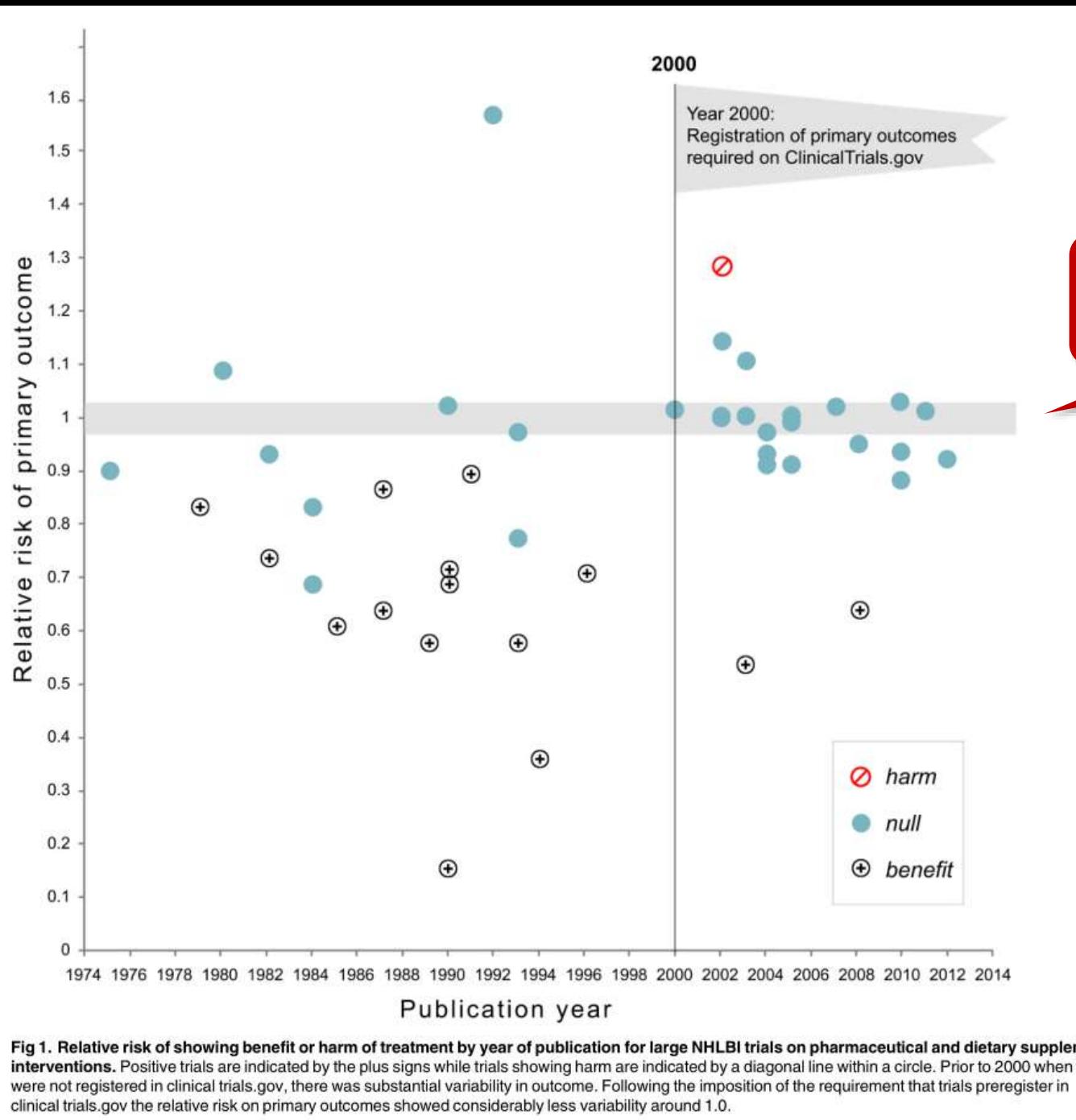
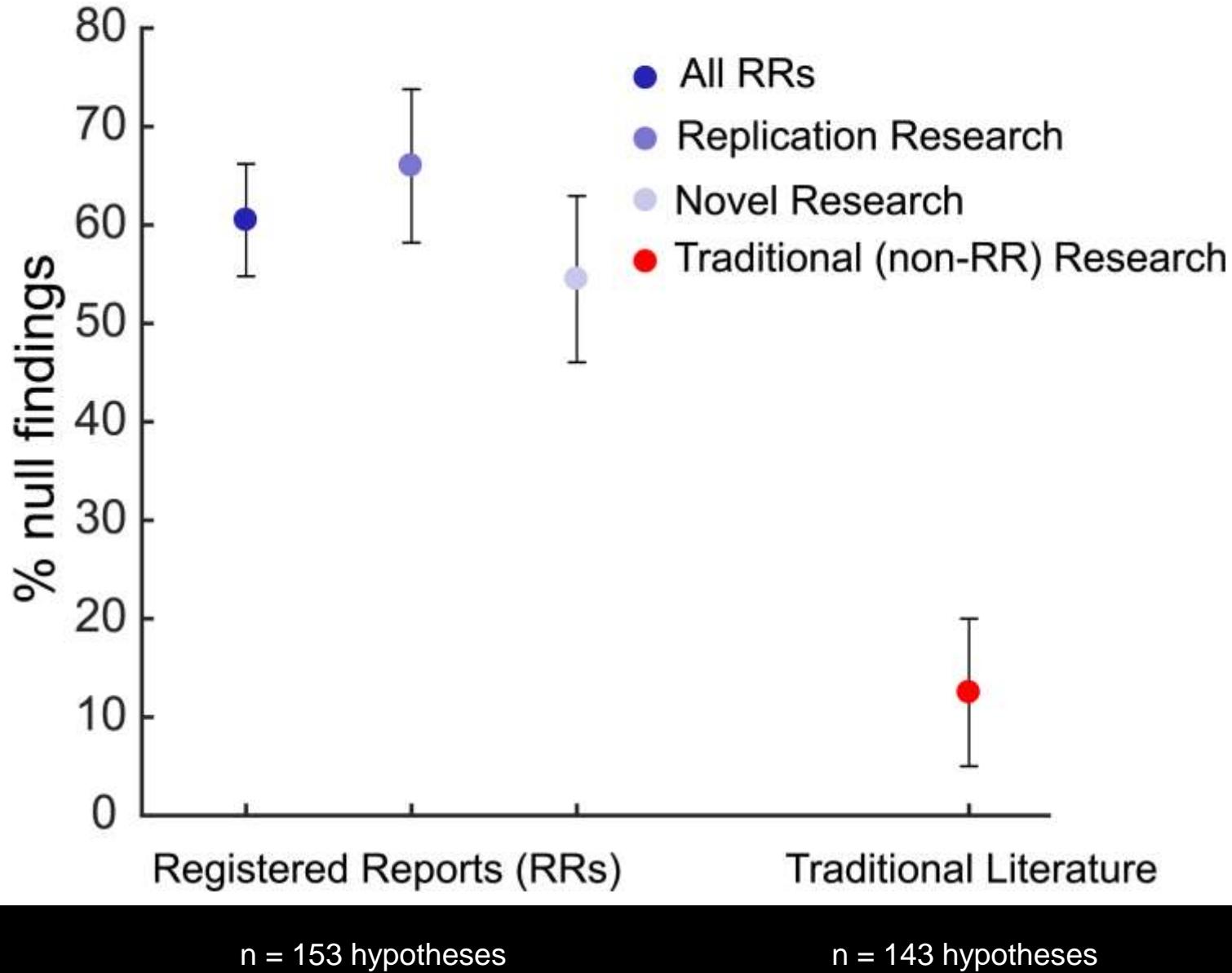


Fig 1. Relative risk of showing benefit or harm of treatment by year of publication for large NHLBI trials on pharmaceutical and dietary supplement interventions. Positive trials are indicated by the plus signs while trials showing harm are indicated by a diagonal line within a circle. Prior to 2000 when trials were not registered in clinical trials.gov, there was substantial variability in outcome. Following the imposition of the requirement that trials preregister in clinical trials.gov the relative risk on primary outcomes showed considerably less variability around 1.0.

Registered reports



Percentage of null findings



The Chrysalis Effect: How Ugly Initial Results Metamorphosize Into Beautiful Articles

Ernest Hugh O'Boyle Jr.

University of Iowa

George Christopher Banks

Longwood University

Erik Gonzalez-Mulé

University of Iowa

Non-supported hypotheses are simply removed when submitted to journals

The issue of a published literature not representative of the population of research is most often discussed in terms of entire studies being suppressed. However, alternative sources of publication bias are questionable research practices (QRPs) that entail post hoc alterations of hypotheses to support data or post hoc alterations of data to support hypotheses. Using general strain theory as an explanatory framework, we outline the means, motives, and opportunities for researchers to better their chances of publication independent of rigor and relevance. We then assess the frequency of QRPs in management research by tracking differences between dissertations and their resulting journal publications. Our primary finding is that from dissertation to journal article, the ratio of supported to unsupported hypotheses more than doubled (0.82 to 1.00 versus 1.94 to 1.00). The rise in predictive accuracy resulted from the dropping of statistically nonsignificant hypotheses, the addition of statistically significant hypotheses, the reversing of predicted direction of hypotheses, and alterations to data. We conclude with recommendations to help mitigate the problem of an unrepresentative literature that we label the "Chrysalis Effect."

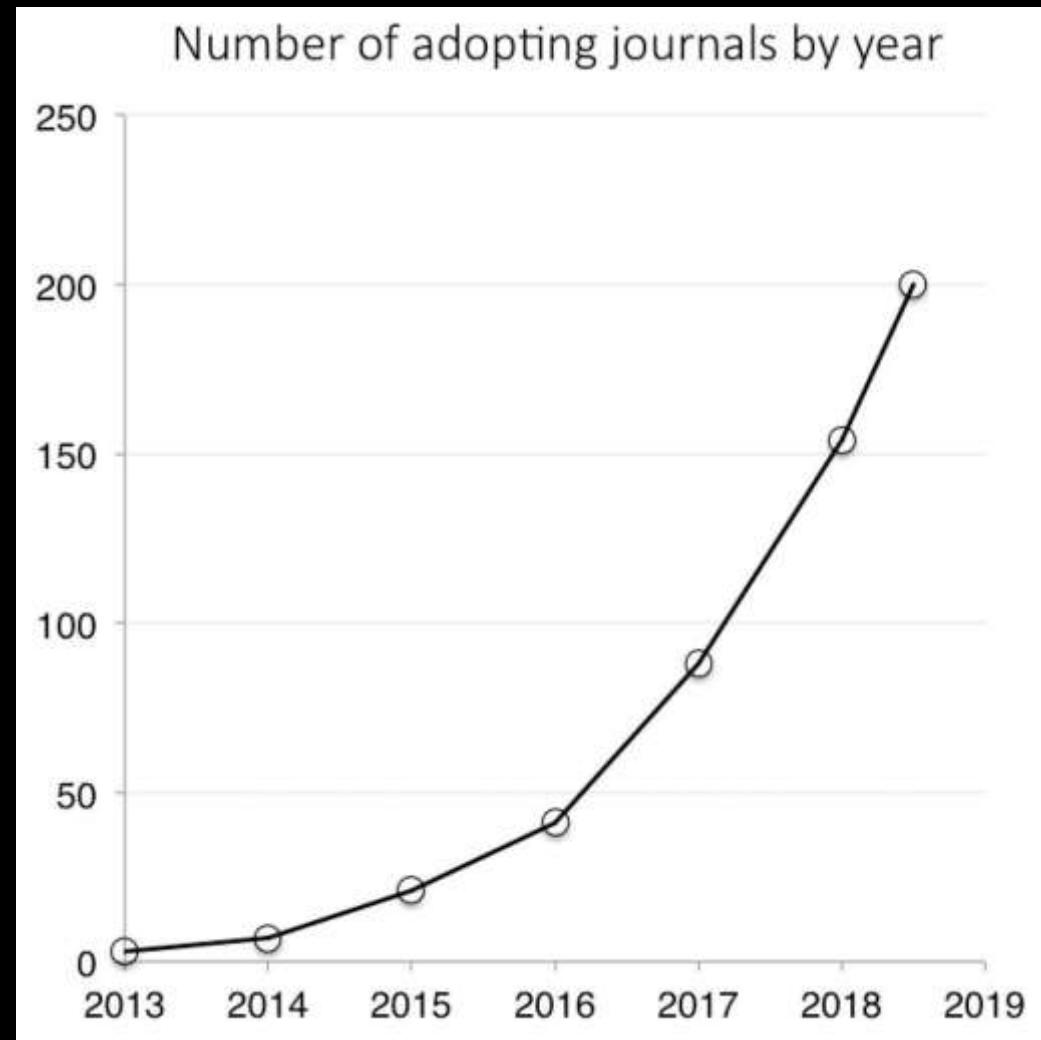
Registered reports

All journals supporting registered reports
<https://cos.io/rr/>

List of articles w/ registered reports
<https://www.zotero.org/groups/479248/osf/items/collectionKey/KEJP68G9?>

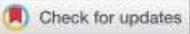
Media, communication, political science:

- Communication Research Reports
- Computational Communication Research
- J of Media Psychology
- J of Experimental Political Science





OPEN ACCESS



Preregistering qualitative research

Tamarinde L. Haven ^a and Dr. Leonie Van Grootel ^b

^aDepartment of Philosophy, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; ^bDepartment of Methodology & Statistics, Tilburg University, Tilburg, The Netherlands

ABSTRACT

The threat to reproducibility and awareness of current rates of research misbehavior sparked initiatives to better academic science. One initiative is preregistration of quantitative research. We investigate whether the preregistration format could also be used to boost the credibility of qualitative research. A crucial distinction underlying preregistration is that between *prediction* and *postdiction*. In qualitative research, data are used to decide which way interpretation should move forward, using data to generate hypotheses and new research questions. Qualitative research is thus a real-life example of postdiction research. Some may object to the idea of preregistering qualitative studies because qualitative research generally does not test hypotheses, and because qualitative research design is typically flexible and subjective. We rebut these objections, arguing that making hypotheses explicit is just one feature of preregistration, that flexibility can be tracked using preregistration, and that preregistration would provide a check on subjectivity. We then contextualize preregistrations alongside another initiative to enhance credibility in qualitative research: the confirmability audit. Besides, preregistering qualitative studies is practically useful to combating dissemination bias and could incentivize qualitative researchers to report constantly on their study's development. We conclude with suggested modifications to the Open Science Framework preregistration form to tailor it for qualitative studies.

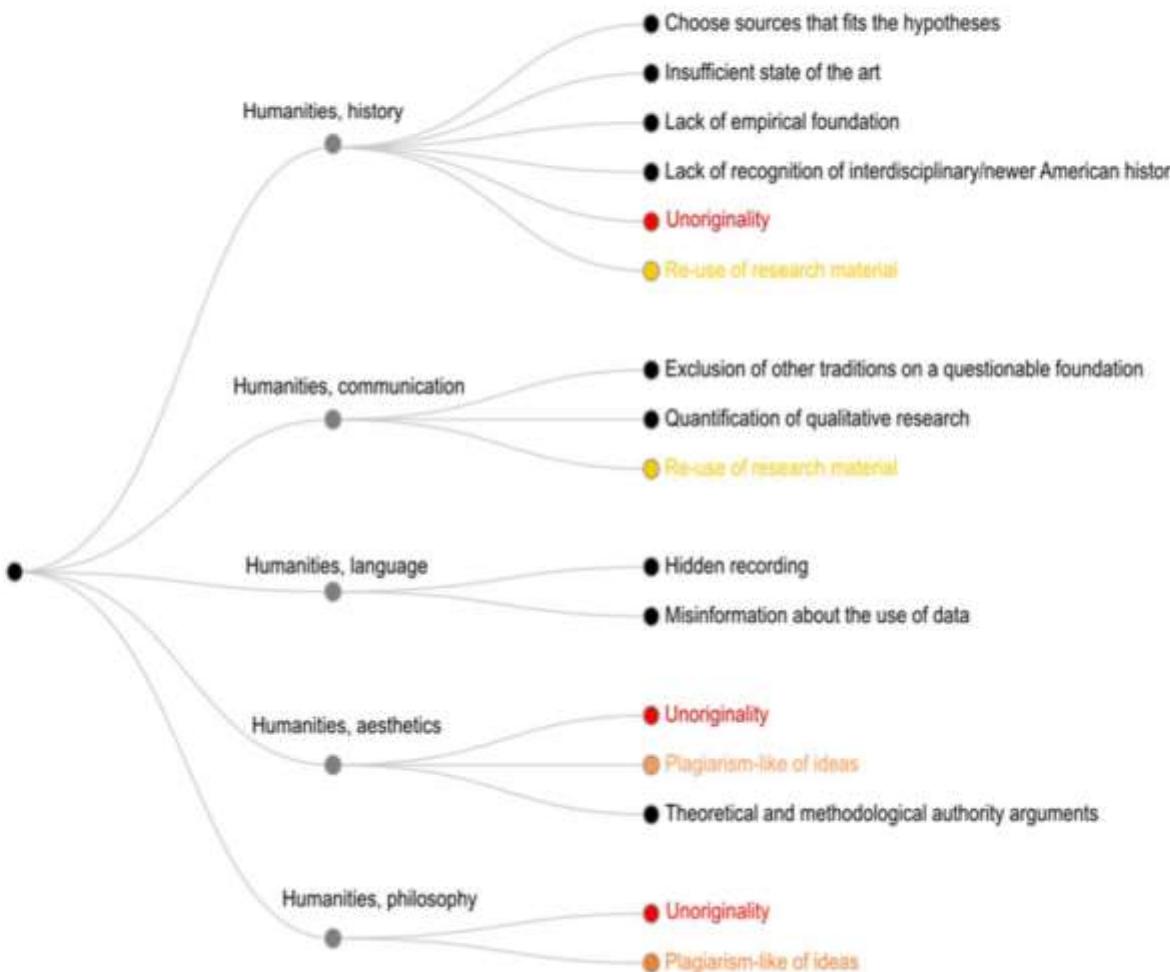
KEYWORDS

Preregistration; qualitative research; transparency

“The errors of reasoning and irresponsible conclusions from the quantitative case originate from acts, which in principle are performed exactly the same in qualitative research.”

De Groot (1956, p. 8)

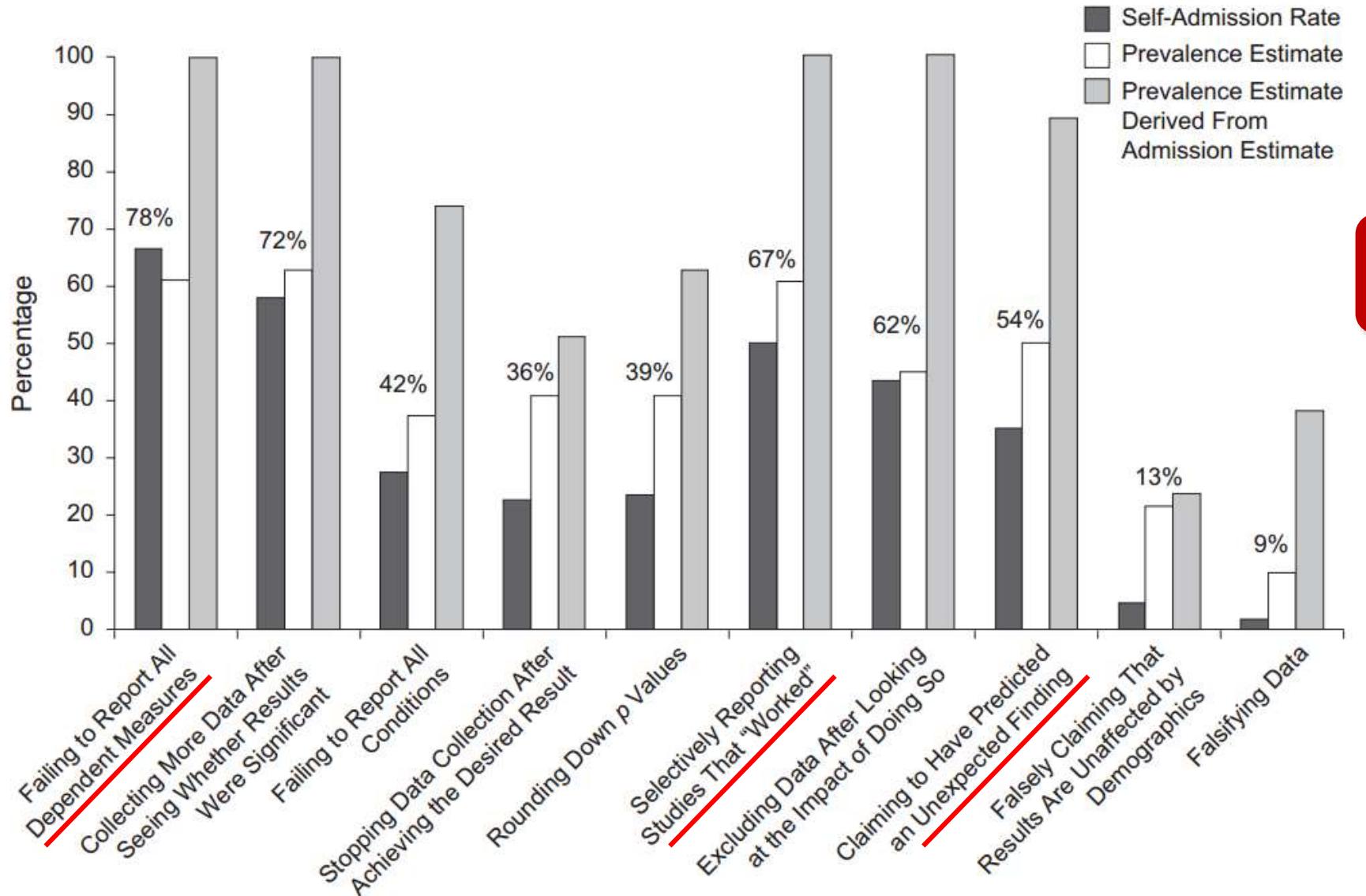
Self-defined QRPs within the Humanities



Research from
PRINT project
<http://print-cfa.dk/about/>



How common
are QRP's?



n=2 155 (36 %)

QRP's are also common across fields

Questionable Research Practice	Psychology Italy Agnoli et al. [16]	Psychology USA John et al. [17]	Ecology	Evolution
Not reporting response (outcome) variables that failed to reach statistical significance#	47.9 (41.3–54.6)	63.4 (59.1–67.7)	64.1 (59.1–68.9)	63.7 (57.2–69.7)
Collecting more data after inspecting whether the results are statistically significant#	53.2 (46.6–59.7)	55.9 (51.5–60.3)	36.9 (32.4–42.0)	50.7 (43.9–57.6)
Rounding-off a p value or other quantity to meet a pre-specified threshold#	22.2 (16.7–27.7)	22.0 (18.4–25.7)	27.3 (23.1–32.0)	17.5 (13.1–23.0)
Deciding to exclude data points after first checking the impact on statistical significance	39.7 (33.3–46.2)	38.2 (33.9–42.6)	24.0 (19.9–28.6)	23.9 (18.5–30.2)
Reporting an unexpected finding as having been predicted from the start#	37.4 (31.0–43.9)	27.0 (23.1–30.9)	48.5 (43.6–53.6)	54.2 (47.7–60.6)
Filling in missing data points without identifying those data as simulated*	2.3 (0.3–4.2)	0.6 (0.0–1.3)	4.5 (2.8–7.1)	2.0 (0.8–5.1)

Table 1 | Percentage of scientists who say that they engaged in the behaviour listed within the previous three years ($n = 3,247$)

Top ten behaviours	All	Mid-career	Early-career
1. Falsifying or 'cooking' research data	0.3	0.2	0.5
2. Ignoring major aspects of human-subject requirements	0.3	0.3	0.4
3. Not properly disclosing involvement in firms whose products are based on one's own research	0.3	0.4	0.3
4. Relationships with students, research subjects or clients that may be interpreted as questionable	1.4	1.3	1.4
5. Using another's ideas without obtaining permission or giving due credit	1.4	1.7	1.0
6. Unauthorized use of confidential information in connection with one's own research	1.7	2.4	0.8 ***
7. Failing to present data that contradict one's own previous research	6.0	6.5	5.3
8. Circumventing certain minor aspects of human-subject requirements	7.6	9.0	6.0 **
9. Overlooking others' use of flawed data or questionable interpretation of data	12.5	12.2	12.8
10. Changing the design, methodology or results of a study in response to pressure from a funding source	15.5	20.6	9.5 ***
Other behaviours			
11. Publishing the same data or results in two or more publications	4.7	5.9	3.4 **
12. Inappropriately assigning authorship credit	10.0	12.3	7.4 ***
13. Withholding details of methodology or results in papers or proposals	10.8	12.4	8.9 **
14. Using inadequate or inappropriate research designs	13.5	14.6	12.2
15. Dropping observations or data points from analyses based on a gut feeling that they were inaccurate	15.3	14.3	16.5
16. Inadequate record keeping related to research projects	27.5	27.7	27.3

Mid-career researchers more likely to engage in QRP's

Note: significance of χ^2 tests of differences between mid- and early-career scientists are noted by ** ($P < 0.01$) and *** ($P < 0.001$).

Most "replications" in communication
are post hoc reasoning (2007-2016)

Table 3. Breakdown of replication prevalence by journal type.

Replication category	Overall
Any replication	13.7%
<u>Direct replication</u>	<u>1.8%</u>
Conceptual replication	11.9%
Built-in replication ^a	8.0%
Other replication ^a	5.0%
<u>Post-hoc replication claim</u>	<u>27.0%</u>

Note: ^aTwo studies were excluded from these counts because they were not true replications.

Why do
QRP's occur?

Look at others and do the same

- socialization of PhD students
- argumentum ad populum:
"everybody is doing it"
- social comparison

Don't know enough about...

- philosophy of science
- human biases
- methods
- QRP's

Incentives

- reputation and status
- publish or perish

[About the Journal](#) ▾

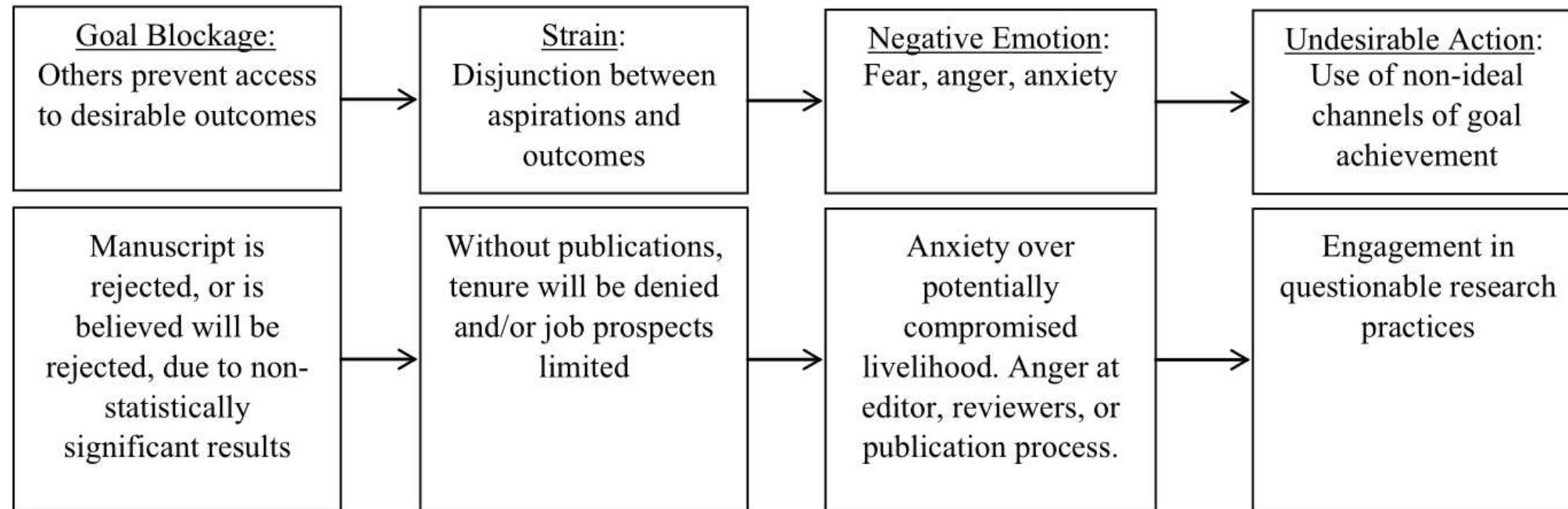
About the Journal

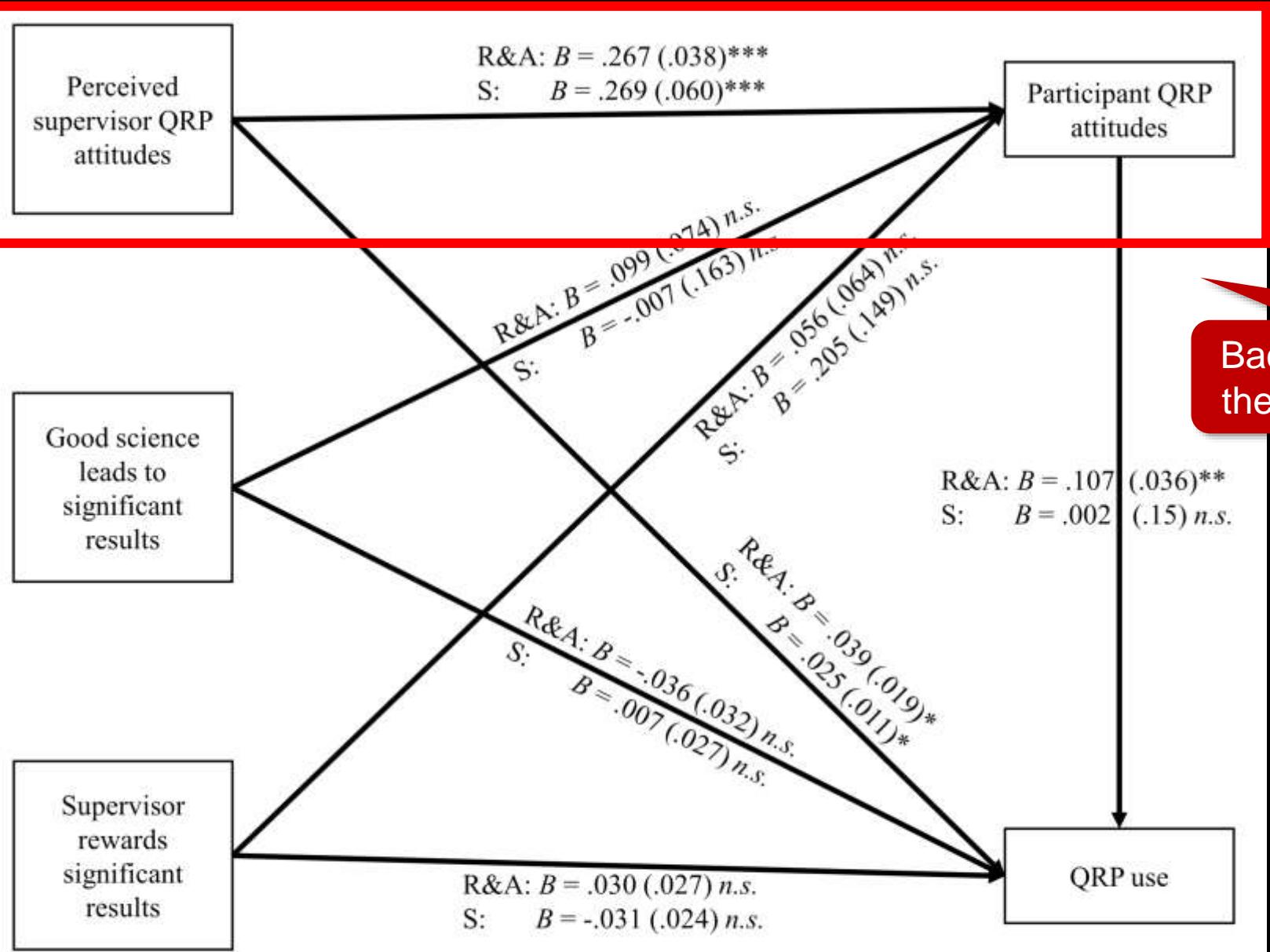
Aims & Scope

Nature is a weekly international journal publishing the finest peer-reviewed research in all fields of science and technology on the basis of its originality, importance, interdisciplinary interest, timeliness, accessibility, elegance and **surprising conclusions**. Nature also provides rapid, authoritative, insightful and arresting news and interpretation of topical and coming trends affecting science, scientists and the wider public.

Figure 1

General Strain Theory Applied to Questionable Research Practices





Bachelor/master thesis students and their perceptions of their supervisors

Fig 2. Regression weights for mediation models predicting self-reported reporting and analysis (R&A) and study design (S) QRP use. Standard errors are given in parentheses. Asterisks denote statistical significance: *: p < .05, **: p < .01, *: p < .001.**

<https://doi.org/10.1371/journal.pone.0203470.g002>

Conflict of interest between:

1. Individual researcher

More papers better for career = QRP's good 

2. Scientific community (and society)

Unreliable papers undermine science = QRP's bad 

Knowledge

Coherence

Truth

Correspondence



Publish or perish

Employability

Tenure

The incentives

Reputation

Status

Euthyphro's dilemma:

*Is it good just because
God says it, or does God
say it because it is good?*

Researcher's dilemma:

*Is it good just because a
prominent researcher says it, or
does the prominent researcher
say it because it is good?*

No, it's not The Incentives—it's you

There's a narrative I find kind of troubling, but that unfortunately seems to be growing more common in science. The core idea is that the mere existence of perverse incentives is a valid and sufficient reason to

knowingly acknowledge dynamic us problem with propensity on submitting our manuscripts to publishers that are actively trying to undermine our interests—and then someone else will say, “I know, right—but what are you going to do, those are the *incentives*.”

“What I *do* object to quite strongly is the narrative that scientists are somehow helpless in the face of all these awful incentives—that we can't possibly be expected to take any course of action that has any potential, however small, to impede our own career development.”

Scientists are furious after a famous psychologist accused her peers of 'methodological terrorism'

Rafi Letzter Sep. 22, 2016, 12:42 PM



The science of psychology is in crisis.

One by one, many of its flashiest and most famous results have collapsed in the last decade as a new generation of researchers have re-examined famous findings.

Forcing a smile can't really make cookies doesn't make you a better



The pushback that followed was ferocious. Registered reports denigrated exploratory research, the critics cried. Pre-registration would "put science in chains" (bit.ly/2R9nSS9). We were accused of behaving like "high priests", "Stasi", of being "self-righteous", "fascists", "crusaders on a witch hunt", and worse in private channels. In one widely circulated email, a British professor dismissed the signatories of our *Guardian* letter as having "low scientific weight", adding that, "In response I would like to front load our big guns as signatories".

unearth and expose examples of psychology's failings come in for particular scorn. As one tenured professor I spoke with recently put it, "I think they're human scum."

James Heathers is a jovial, bearded Australian who loves cats. He is a postdoc at Northeastern University with a Ph.D. in cardiac psychophysiology; when he's not ranting about subpar research practices on *Everything Hertz*, the podcast he co-hosts,

How are open science proponents & "data police" met by other scientists?



Cass Sunstein
@CassSunstein

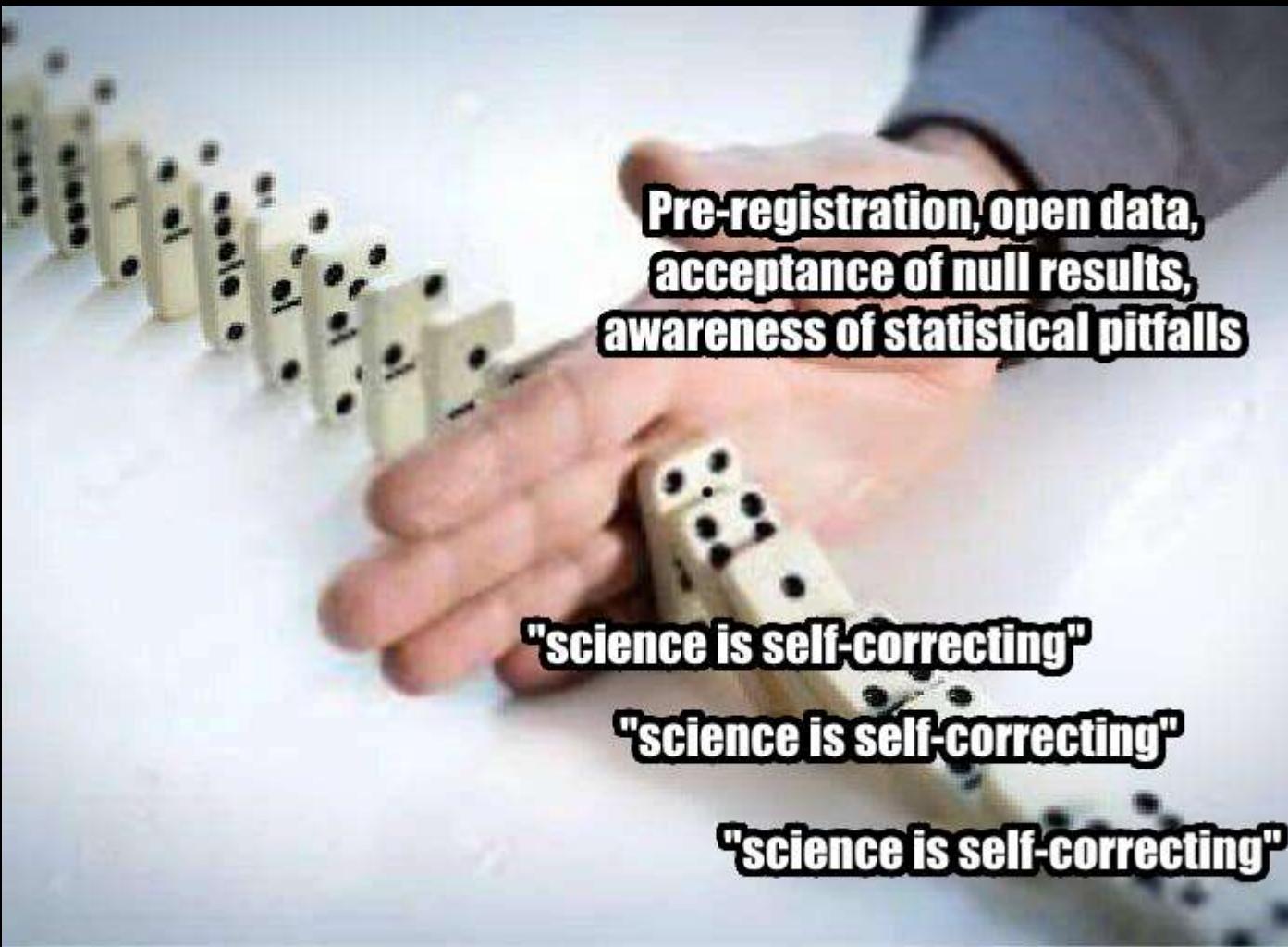
It is right and important to ask whether social science findings can be replicated - but in another life, the replication police would be Stasi.

@DanTGilbert @R_Thaler

12:48 · 22/02/2019 · Twitter Web Client

4 Retweets 5 Likes

unushing critics, like many of the attendees at s, there are lousy studies that slip through may be improved. Science progresses in fits But they complain that the tactics of the be gleefully aggressive, that they're too eager of researchers who make it their mission to



**Pre-registration, open data,
acceptance of null results,
awareness of statistical pitfalls**

"science is self-correcting"

"science is self-correcting"

"science is self-correcting"

Fundamental different research approaches



"Let's try to scaffold the results
so that it can be published"

- Critique undermine results
- Solution: defend oneself from critics, hide data



"Let's try to break it so
we know it's robust"

- Critique improve results
- Solution: systematically find errors, show data

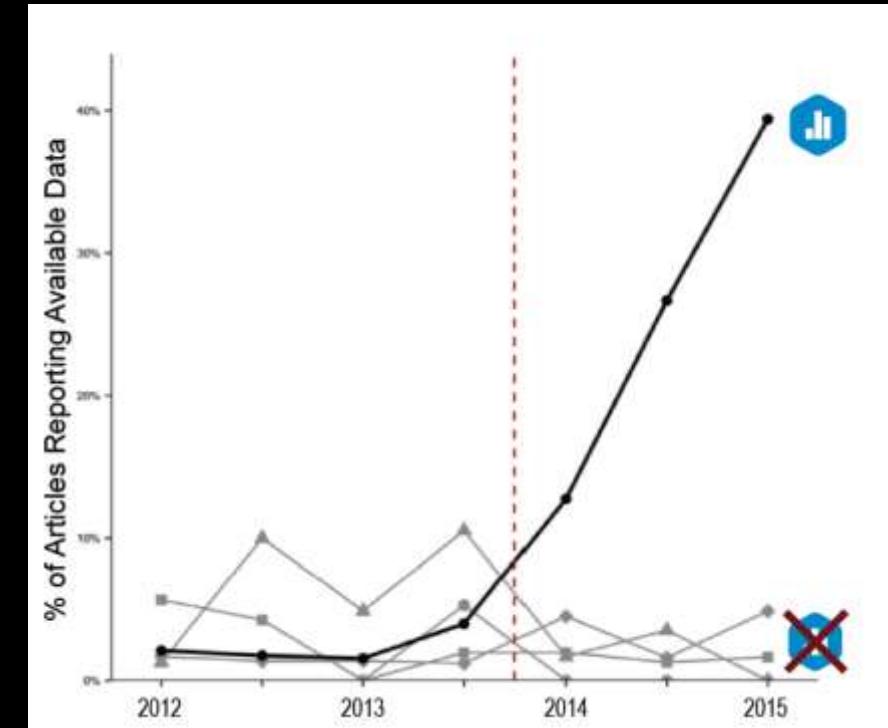
How to do open science

Many solutions – all about transparency

Open science

- Open access
- Preregistration
- Registered reports
- Open materials (e.g. survey, scripts)
- Infrastructure (e.g. OSF, SND)

Researchers like badges – they share data if they get a badge



Started 2013

150,000+ researchers

nonprofit, grants & donations

Open Science Framework

A scholarly commons to connect the entire research cycle



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Preregistration

- aspredicted.org

- osf.io/prereg





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Format: Abstract

Am J Psychiatry. 2019 May 1;176(5):376-387. doi: 10.1176/appi.ajp.2018.18070881. Epub 2019 Mar 8.

1 comment on PubPeer (by: Olavo B Amaral)

No Support for Historical Candidate Gene or Candidate Gene-by-Interaction Hypotheses for Major Depression Across Multiple Large Samples.

Border R¹, Johnson EG¹, Evans LM¹, Smolen A¹, Berley N¹, Sullivan PE¹, Keller MC¹.

Author information

Abstract

OBJECTIVE: Interest in candidate gene and candidate gene-by-environment interaction hypotheses regarding major depressive disorder remains strong despite controversy surrounding the validity of previous findings. In response to this controversy, the present investigation empirically identified 18 candidate genes for depression that have been studied 10 or more times and examined evidence for their relevance to depression phenotypes.

METHODS: Utilizing data from large population-based and case-control samples (Ns ranging from 62,138 to 443,264 across subsamples), the authors conducted a series of preregistered analyses examining candidate gene polymorphism main effects, polymorphism-by-environment interactions, and gene-level effects across a number of operational definitions of depression (e.g., lifetime diagnosis, current severity, episode recurrence) and environmental moderators (e.g., sexual or physical abuse during childhood, socioeconomic adversity).

RESULTS: No clear evidence was found for any candidate gene polymorphism associations with depression phenotypes or any polymorphism-by-environment moderator effects. As a set, depression candidate genes were no more associated with depression phenotypes than noncandidate genes. The authors demonstrate that phenotypic measurement error is unlikely to account for these null findings.

CONCLUSIONS: The study results do not support previous depression candidate gene findings, in which large genetic effects are frequently reported in samples orders of magnitude smaller than those examined here. Instead, the results suggest that early hypotheses about depression candidate genes were incorrect and that the large number of associations reported in the depression candidate gene literature are likely to be false positives.

KEYWORDS: Biological Markers; Genetics; Mood Disorders-Unipolar; Stress

PMID: 30845820 DOI: 10.1176/appi.ajp.2018.18070881

1 comment on PubPeer (by: Olavo B Amaral)

	Skapare	Titel	Tidskriftens ...	Ändrat datum
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Datum: Ändrat fe...	Hart m. fl.	Fueling doubt and openness: Experiencing the unconscious, constructed n...	Cognition	2017-08-04 12:54...
Datum: Ändrat idag	Lewandowsk...	Recursive Fury: Conspiracist Ideation in the Blogosphere in Response to Res...	Frontiers in ...	2014-08-18 00:00...
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Citation Key: *hart_fueling_2015*

Falsification/Fabrication of Data
Intentional changes to data so that it is not representative of the actual finding

Investigation by Company/Institution
An evaluation of allegations by the affiliations of one or all of the authors

Manipulation of Images
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Misconduct - Official Investigation/Finding

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<https://retractionwatch.com/2017/10/04/second-retraction-psychologist-reveals-clues-culprit-behind-misconduct/>



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Om oss

Open Science Community Sweden är ett ideellt nätverk som syftar till att lära, diskutera och dela kunskap kring open science-rörelsen i Sverige. Liknande Open Science Communities finns på flera ställen runt om i världen.

Vårt mål är att vetenskap ska vara tillgänglig, transparent, reproducerbar och replikerbar.

Vi arbetar mot vårt mål genom att anordna aktiviteter (t.ex. workshops) och med att föra aktiv debatt.

opensciencesweden.org





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Print

Title	Open science and reproducible research
Course number	2963
Programme	1-Included in several programmes
Language	English
Credits	3.0
Date	2020-03-23 -- 2020-04-03
Responsible KI department	Department of Clinical Neuroscience
Specific entry requirements	
Purpose of the course	The purpose of the course is to provide an overview of current challenges in reproducibility and to provide tools and skills for students wishing to practice science openly.
Intended learning outcomes	After the course, students should be able to: - Analyse reproducibility problems in science, including the impact of analysis flexibility and questionable research practices, and identify practices contributing to improved reproducibility - Account for principles of replication research - Preregister research protocols and assess others' preregistered research outputs



ReproducibiliTea



27 universities, 8 countries

<https://reproducibilitea.org/>

“During each meeting, a scientific paper lays the groundwork for a conversation [...] give researchers a space to explore ideas [...] even if their supervisors are wary and warn that such practices will undermine their careers.”

Orben (2019)

<https://www.nature.com/articles/d41586-019-02842-8>

- Linköping (LIU)
- Stockholm (KI)



Open science reading

The screenshot shows a screenshot of the OSF Wiki page for "Open Science Literature". The page has a dark blue header with the OSF logo and navigation links for "TOP Resources", "Files", "Wiki" (which is selected), "Analytics", and "Registrations". A user profile for "Peter M. Dahlgren" is at the top right. Below the header, there's a toolbar with "View", "Wiki Version: (Current) David Mellor: 2019-05-15 18:17:02+00:00 UTC", "Print view", "View", "Edit", and "Compare". The main content area has a sidebar with "Project Wiki Pages" and a "Menu" section containing "Home", "Funders", "Open Science Literature" (which is highlighted in blue), and "Universities". The main content includes sections like "Open Science in the Literature", "Table of Contents" (with a list of topics), and "Another great collection of items is in this Reproducibility Bibliography".

osf.io/kgnva/wiki/Open%20Science%20Literature/

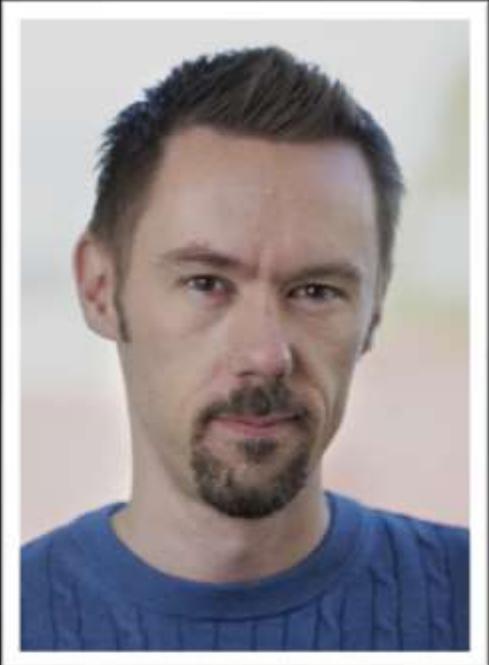
The screenshot shows the "OSF Guides" page from the Open Science Framework Help. The header has the OSF logo and "Open Science Framework Help" on the left, and "Status page" on the right. The main content area features a search bar with "Enter a keyword or topic to search" and a "Search" button. Below the search bar, there are sections for "OSF Guides" (with a note about navigating the OSF), "Best Practices", "Research Design", "File Management and Licensing", and "Other Resources". Each section contains a list of articles or guides. At the bottom, there's a "Feedback" link.

help.osf.io/m/bestpractices

In conclusion

“Science should be ‘show me’, not ‘trust me’”

Stark (2018)



Peter M. Dahlgren

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🐦 @peterdalle



UNIVERSITY OF
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This presentation can be found at
peterdahlgren.com