

# Transparency in Social Science Research & Teaching

**Dr Nicole Janz**

The  
Economist

OCTOBER 18TH - 25TH 2013

[Economist.com](http://Economist.com)

Britain's angry white men

How to do a nuclear deal with Iran

Investment tips from Nobel economists

Junk bonds are back

The meaning of Sachin Tendulkar

**HOW**  
**SCIENCE**  
**GOES**  
**WRONG.**

# Why Do So Many Studies Fail to Replicate?

**Gray Matter**

By JAY VAN BAVEL MAY 27, 2016



Unreliable research

# Trouble at the lab

Scientists like to think of science as self-correcting. To an alarming degree, it is not

Oct 19th 2013 | From the print edition

 Timekeeper

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22K

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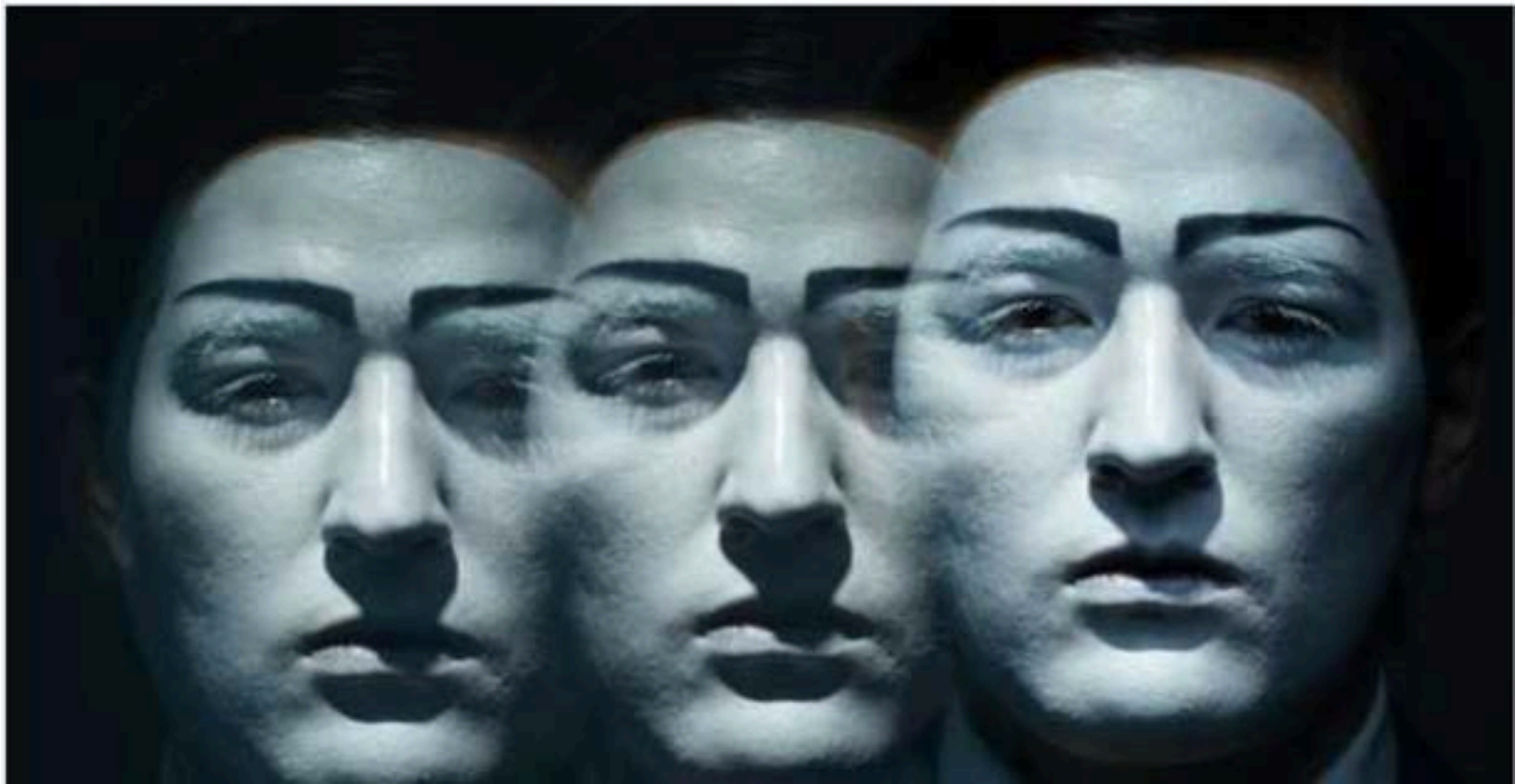
"I SEE a train wreck looming," warned Daniel Kahneman, an eminent psychologist, in an

# More than half of psychology papers are not reproducible

Initiative to replicate findings of 100 prominent studies raises further questions about health of discipline

August 27, 2015

By Paul Jump Twitter: @PaulJump





# How to replicate

# What is a replication?

## Duplication

Verify research results

*exact same data set*  
*exact same methods*

## Replication

Test the robustness of the original research results

*new data*  
*new models*



# Which study should I pick?

**Relevant research  
with impact**

**Outdated  
measures**

**The perfect replication  
project**

**Abstract**  
I'm the perfect replication project because I combine all these, or at least most of these, features: interesting & relevant questions, results that are accepted but have never been checked, fail to control for important variables, use out-dated measurements, make you wonder if the results apply in different contexts, I'm pointed at in "limitations" and "future research" sections of articles, I'm in an area 'ripe for replication'.

**Keywords:** *replication, relevant, improvement*

**Results widely  
accepted but  
never checked**

**Missing control  
variables**

# Examples of a ‘good pick’

Reinhart & Rogoff. 2010.  
“Growth in a Time of Debt.”


**Argument:** high debt is associated with lower growth

**Impact:**

- high journal (The American Economic Review)
- research was used by governments to justify austerity measures



# Practical steps in a replication study

- 1 Select paper
  - 2 Access data & code
  - 3 Identify each variable
  - 4 Reproduce tables, figures
  - 5 Compare
- 
- 2-3 weeks
- 3-4 weeks

If you got to this point, you completed a **duplication**.

# Practical steps in a replication study (II)

## 6 Add value

- new data
- new variables
- new model specifications
- theoretical contributions



4-6 weeks

## 7 Compare

## 8 Get feedback from peers

## 9 Journal submission



months

**You now completed a full replication!**

# Communicating failed replications



# What replicators write



“We ... find that coding errors, selective exclusion of available data, and unconventional weighting of summary statistics lead to **serious errors**” (Herndon et al. 2013)

“If we cannot even reproduce the original results using the same publicly available data, there is **no need for further commentary.**” (Miller et al, 2001)

# How original authors often **respond**

“less realistic”, “inconsistent with the substantive literature,” and “**of limited utility**” (Mansfield, Milner, and Rosendorff 2002)



“fundamentally **flawed**”  
(Peffley, Knigge, and Hurwitz 2001)

“statistical, computational, and reporting errors that **invalidate its conclusions**” (Gerber and Green 2005:301).

# Publishing a replication study

- Good replication studies get published
- Write a **solid** paper (puzzle, relevance, hypothesis, research design, findings, discussion) – as if it was an **original** piece.
- In some fields (politics): **Don't sell it as a replication** paper



# Voting Costs and Voter Turnout in Competitive Elections

Bernard Fraga<sup>1</sup> and Eitan Hersh<sup>2,\*</sup>

Our estimation approach builds off of the methodology and data used by Gomez et al. (2007) ..., adding measures of electoral closeness in order to focus on how the randomly assigned cost (rain) has a different impact depending on the electoral environment.

same way even to rain, then serious doubt should meet claims that voters will react

# Political Regimes and International Trade: The Democratic Difference Revisited

XINYUAN DAI *University of Illinois at Urbana-Champaign*

**H**ow do domestic political institutions affect the outcomes of international trade negotiations? Specifically, are the aggregate trade barriers agreed upon by a democratic pair lower than those by a pair composed of a democracy and an autocracy? I revisit these important questions

by highlighting  
some problematic  
aspects of the analysis  
by Mansfield, Milner,  
and Rosendorff (2000).

I revisit these important questions by highlighting some problematic aspect of the analysis by Mansfield, Milner, and Rosendorff (2000).

**H**ow do domestic political institutions affect the outcomes of international trade negotiations? Specifically, are the aggregate trade barriers agreed upon by a democratic pair lower than those by a pair composed of a democracy and an autocracy? I revisit these important questions, analyze a model that offers to calculate the ideal level of trade barriers at home and abroad for

To distinguish between country A, or a legislature in country A, or a legislature in country B. The ideal level of trade barriers at home and abroad for

Contrary to their central conclusion, I find that whether the aggregate trade barriers are lower for a democratic pair than those for a mixed pair depends on the preferences of the decision makers involved.

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# Journals Open to Replication (selection)

## Political Science



Research & Politics ^

## Psychology



\*

\*

+

#

- \* original study was published in the same journal
- + home of the original 'Many Labs' project
- # special issue dedicated to replications (March 2015)
- ^ this journal invites replication studies

# Replications by Early Career Researchers



## Does High Public Debt Consistently Stifle Economic Growth? A Critique of Reinhart and Rogoff

Thomas Herndon, Michael Ash and Robert Potts

POLITICAL ECONOMY RESEARCH INSTITUTE

Article

## Questioning the Effect of Nuclear Weapons on Conflict

Mark S. Bell<sup>1</sup> and Nicholas L. Miller<sup>1</sup>

**Abstract**  
We examine the effect of nuclear weapons on interstate conflict. Using more appropriate methodologies than have previously been used, we find that dyads in which both states possess nuclear weapons are not significantly less likely to fight wars, nor are they significantly more or less belligerent at low levels of conflict. This stands in contrast to previous work, which suggests nuclear dyads are some 2.7 million times less likely to fight wars. We additionally find that dyads in which one state possesses nuclear weapons are more prone to low-level conflict (but not more prone to war). This appears to be because nuclear-armed states expand their interests after nuclear acquisition rather than because nuclear weapons provide a shield behind which states can aggress against more powerful conventional armed states. This calls into question conventional wisdom on the impact of nuclear weapons and has policy implications for the impact of nuclear proliferation.

Journal of Conflict Resolution  
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DOI: 10.1177/1078346312469118  
jcr.sagepub.com  
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Psychophysiology (2013) 50:135-141. doi:10.1093/psych/psy/psj010  
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## Near-wins and near losses in gambling: A behavioral and facial EMG study

David W. Clark<sup>1</sup>, Michael D. D'Armentano<sup>1</sup>, and David M. Clark<sup>1</sup>

<sup>1</sup>Department of Psychology, University of Kentucky, Lexington, Kentucky, USA

Abstract

The main investigation reported on here asks if, across gambles that vary only in their objective probabilities, decision makers who are "near" to a win or loss (but who do not actually win or lose) show a bias toward a higher level of decision making activity (measured by facial EMG) during the gamble than they do when the objective probability of winning is either high or low. The main findings are that (1) there is a significant main effect of "nearness" on facial EMG activity during gambles, with higher activity observed for "near" gambles than for "not near" gambles, and (2) there is a significant main effect of "nearness" on decision making activity during gambles, with higher activity observed for "near" gambles than for "not near" gambles.

W



## Working Paper No. 20 – 2014: CAN INFLATION EXPECTATIONS BE MEASURED USING COMMODITY FUTURES PRICES?

Rasheed Saleemuddin (corresponding author):  
[rs15@cam.ac.uk](mailto:rs15@cam.ac.uk) and D'Maris Coffman

Centre for Financial History, University of Cambridge

PSYCHOPHYSIOLOGY

**Psychophysiology**  
The main investigation reported on here asks if, across gambles that vary only in their objective probabilities, decision makers who are "near" to a win or loss (but who do not actually win or lose) show a bias toward a higher level of decision making activity (measured by facial EMG) during the gamble than they do when the objective probability of winning is either high or low. The main findings are that (1) there is a significant main effect of "nearness" on facial EMG activity during gambles, with higher activity observed for "near" gambles than for "not near" gambles, and (2) there is a significant main effect of "nearness" on decision making activity during gambles, with higher activity observed for "near" gambles than for "not near" gambles.

## Irregularities in LaCour (2014)

David Brancaccio, Assistant Professor, Wright State (as of July 13),  
dbrancaccio@wright.edu  
Julian Ball, Graduate Student, UC Berkeley, [ball@econ.berkeley.edu](mailto:ball@econ.berkeley.edu),  
Julian Ball, Assistant Professor, The University of North Carolina at Chapel Hill  
May 18, 2013

### Summary

We report a number of irregularities in the replication dataset used by LaCour and Glass (2012). These irregularities suggest that the original authors may not have followed the procedures outlined in their replication manual. These irregularities include missing data, missing values, and missing observations. We discuss the implications of these irregularities and provide suggestions for how to handle these irregularities in the replication dataset.

### Timeline of Disclosure

1 January - April 2013: Brancaccio and Ball were informed by LaCour and Glass (2012) and invited to conduct the article's methodological and substantive discussions. We began to plan an analysis. We began to plan an analysis. We began to plan an analysis. We began to plan an analysis.

Journal of Experimental Political Science 9 (2014) 135-141  
doi:10.1017/xps.2014.4

## Information Spillovers: Another Look at Experimental Estimates of Legislator Responsiveness

Alexander Coppock<sup>1</sup>

**Abstract**

A field experiment conducted by Barber and Nisbet (2011) and replicated by W (2013). The findings suggest that the relationship between public opinion and legislative behavior is more complex than previously thought. The authors of the experiment did not account for the possibility that legislators may also be influenced by the media. We argue that this may be the case. We argue that this may be the case.

**Keywords:** Field experiment; spillovers.

### INTRODUCTION

Barber and Nisbet (2011) report the results of an innovative field experiment testing the responsiveness of legislators to public opinion in New Mexico. Most previous studies of responsiveness to a positive correlation between public opinion and legislators' choices, which may be due to electoral concerns, the similarity of preferences, or public responsiveness to elite opinion, among many other possible explanations. Barber and Nisbet isolate a single causal channel—the effect of lowering public opinion on legislators' voting decisions—by randomly providing some legislators with survey measures of their constituents' preferences. The findings from their study indicate that representatives change their voting behavior upon receiving novel public opinion information.

The estimates of responsiveness reported by Barber and Nisbet (2011) rely on an assumption of non-interference (see Imai, Keele, 2009). Legislators respond

The authors are grateful to David P. Eason, Robert Erikson, Gregory Warren, Peter Anagnostis, Andrew Baker, Albert Duro, and two anonymous reviewers for helpful comments and suggestions and to David C. Collier at University of North Carolina for providing replication datasets.

# Bringing the Gold Standard into the Classroom: Replication in University Teaching<sup>1</sup>

NICOLE JANZ

*University of Cambridge*

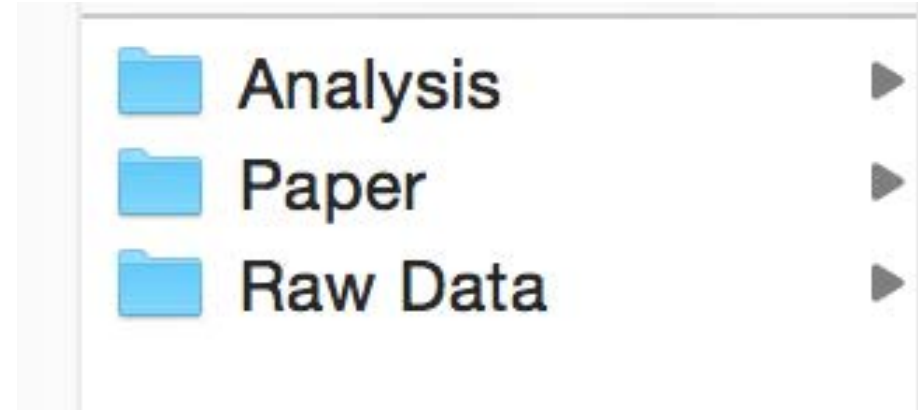
Reproducibility is held to be the gold standard for scientific research. The credibility of published work depends on being able to replicate the results. However, there are few incentives to conduct replication studies in political science. Replications are difficult to conduct, time-consuming, and hard to publish because of a presumed lack of originality. This article sees a solution in a profound change in graduate teaching. Universities should introduce replications as class assignments in methods training or invest in new stand-alone replication workshops to establish a culture of replication and reproducibility. This article will

How to work  
transparently

# Working reproducibly

## Starting out...

- Plan file structure
- Never touch raw data!



## Analysis

- Comment your code
- Keep a log of decisions

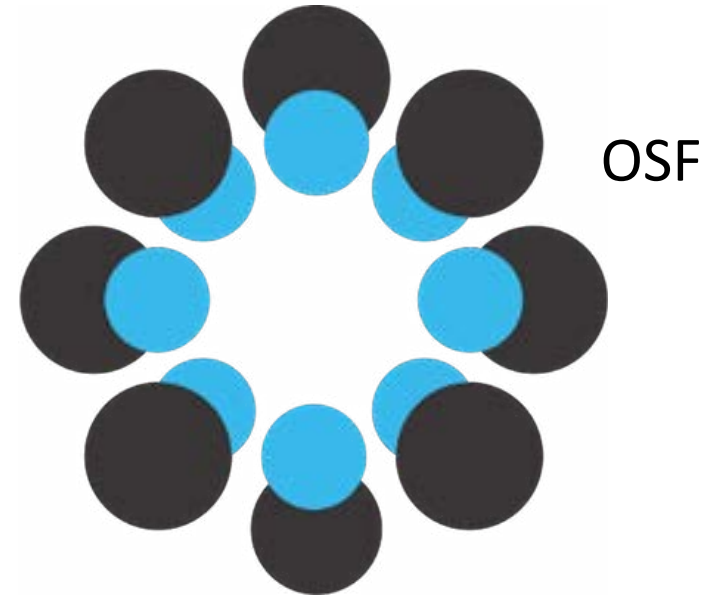
## Writing up

- clarity in methodology section; appendix

**Before you submit:** Replicate your results !!!

# What to share - quantitative

1. Readme file
2. Dataset
3. Software commands
4. Information to reconstruct data



GitHub









**AMERICAN JOURNAL  
of POLITICAL SCIENCE**

*AJPS, South Kedzie Hall, 368 Farm Lane, East Lansing, MI 48824  
ajps@msu.edu, (517) 884-7836*

## **GUIDELINES FOR PREPARING REPLICATION FILES**

**Version 2.1, May 19, 2016**

**William G. Jacoby  
Robert N. Lupton**

**Michigan State University**

The *American Journal of Political Science* requires the authors of all accepted manuscripts to provide replication files before the article enters the production stage of the publication process. The replication files for each article must be made available as a Dataset (i.e., a collection of files) located in the [AJPS Dataverse](#) on the [Harvard Dataverse Network](#). Instructions for getting started on the *AJPS* Dataverse can be found in the [“Quick Reference for Uploading Replication Files,”](#)

# Support your claims - qualitative

satellite images, interview transcripts, personal diaries, video clips, newspaper articles, speeches...

## Transparency Appendix:

- how you **evaluated** persuasiveness & consistency of evidence
- logic and **steps** in process tracing
- Upload **files** and **fragments** e.g. partial transcripts (100-150 w.)



# When to protect the data

- Confidential / proprietary data
- Protect individuals
- Informed consent obtained?



- **Anonymization**
- **Justify** why you withhold data

What's in it  
**for me?**



avoid  
**disaster**



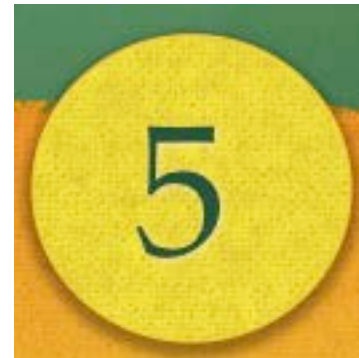
easier to  
**write up**



persuade  
**reviewers**



enables  
**continuity**



build your  
**reputation**



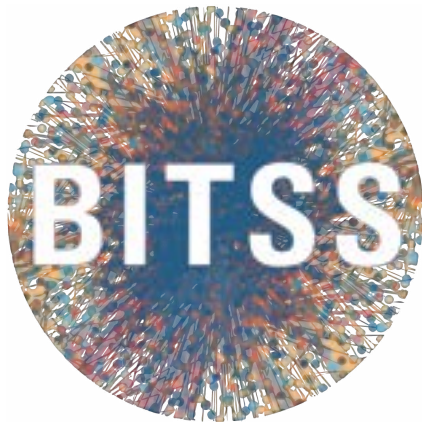
# Get in Touch



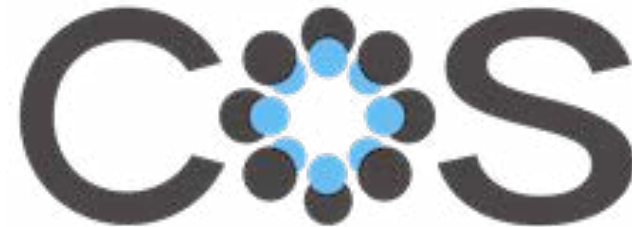
Twitter: **@PolSciReplicate**



<http://PoliticalScienceReplication.wordpress.com/>



Vising scholar 2016  
and Catalyst



Ambassador



# Useful resources

# Materials - Replication

- King, Gary. (2006). **How to Write a Publishable Paper as a Class Project**, copy at: <http://gking.harvard.edu/papers>
- Janz, N. (2015) **Bringing the Gold Standard Into the Class Room: Replication in University Teaching**, International Studies Perspectives, Article first published online: 9 March 2015. Copy at: <http://tinyurl.com/q2qnrvn>
- Brandt et al. (2014) **The Replication Recipe: What makes for a convincing replication?** Journal of Experimental Social Psychology, Vol 50, pp. 217-224. Copy at: <http://tinyurl.com/poe474k>

# Materials – Transparent Workflow

- Christensen, Garret (2016). **Manual of Best Practices in Transparent Social Science Research**  
<https://github.com/garretchristensen/BestPracticesManual>
- Open Science Framework. **Transparency and Openness Promotion (TOP) Guidelines**. <https://cos.io/top/>
- **TIER Documentation Protocol**  
<https://www.haverford.edu/project-tier/protocol-v2>

# Adding value to a replication

1. Theoretical contribution: questioning the arguments
2. Statistical contribution

## **Sample size:**

Power calculations (how big should the sample be?)

More years, more countries (units)

New samples (experiments)

Different subsets of your data set (e.g. only OECD countries)

Missing data handling (multiple imputation)

## **Changing measurements:**

Change of variables: %GDP, log transformation, different ways of dealing with negative values for logging, different measurement for the same variable

## **Model specification:**

Standard errors treatment, LDV, lags

Interactions

Dummy variables

Omitted variables

Reversed causality

Adjusted / improved / advanced models

## **Robustness/Sensitivity checks:**

How much do betas and standard errors change when we change model specifications? Are they very 'sensitive' even to small changes/outliers?