Many Labs 2

Investigating Variation in Replicability across Sample and Setting

Richard Klein
LIP/PC2S
Université Grenoble Alpes

2018-12-10 (updated: 2018-12-10)

Many Labs 2

Cause for Concern

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Open access, freely

Essay

Why Most Published Research Findings Are False

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False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant

Joseph P. Simmons[1], Leif D. Nelson[2], and Uri Simonsohn[1]
[1]The Wharton School, University of Pennsylvania, and [2]Haas School of Business, University of California, Berkeley

Flexibility in Data Analysis

http://fivethirtyeight.com/features/science-isnt-broken

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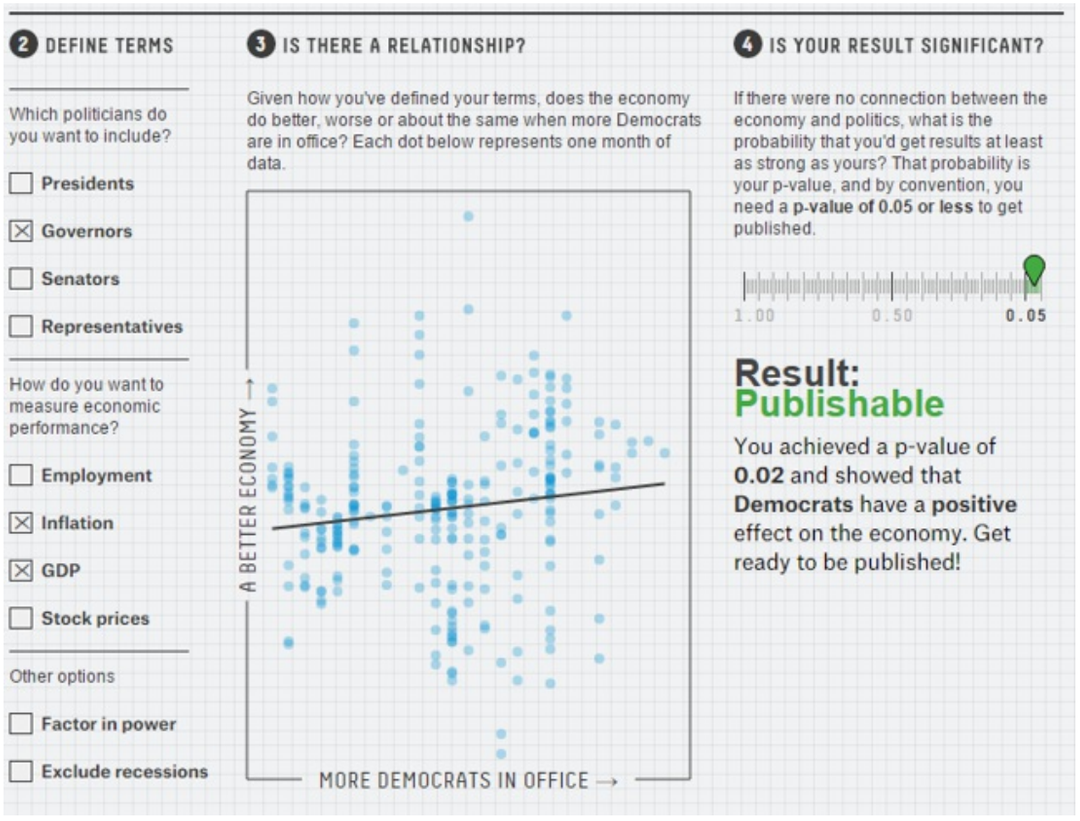

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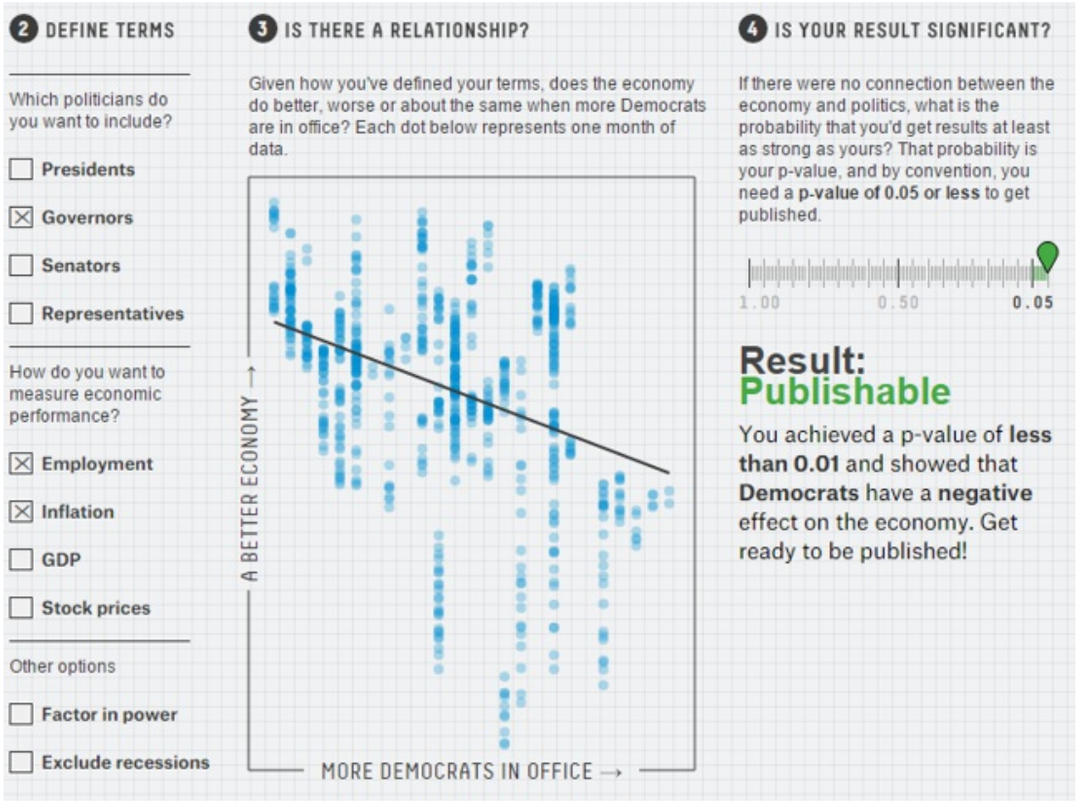

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- `Multiple large-scale Registered Reports`
  - POPS/AMPPS Registered Replication Reports

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Failures to Replicate

- What we know: Many studies are failing to replicate
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  - Could be many other reasons:
  - Moderators (known/unknown)
  - Lack of care/expertise
  - Sensitivity of effects to sample/context

Many Labs Projects

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Each ML project examines a different aspect of replication. Each question requires data colletion at multiple labs.

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- `Many Labs 5` (Ebersole et al., in prep)
  - Follow-up to Reproducibility Project

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- Replicated 28 studies
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  - Randomized study order, presented back-to-back
- Which studies?
  - Structured selection process by committee. Documented: osf.io/8cd4r
  - Sought open nominations for studies
  - Emphasized impact (citations, etc.), diversity of content, possibility for variability across sites
  - But substantial practical constraints: Short, able to be computerized
  - Authors could decline to be replicated

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- Registered Replication Report at AMPPS:
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- Registered Replication Report at AMPPS:
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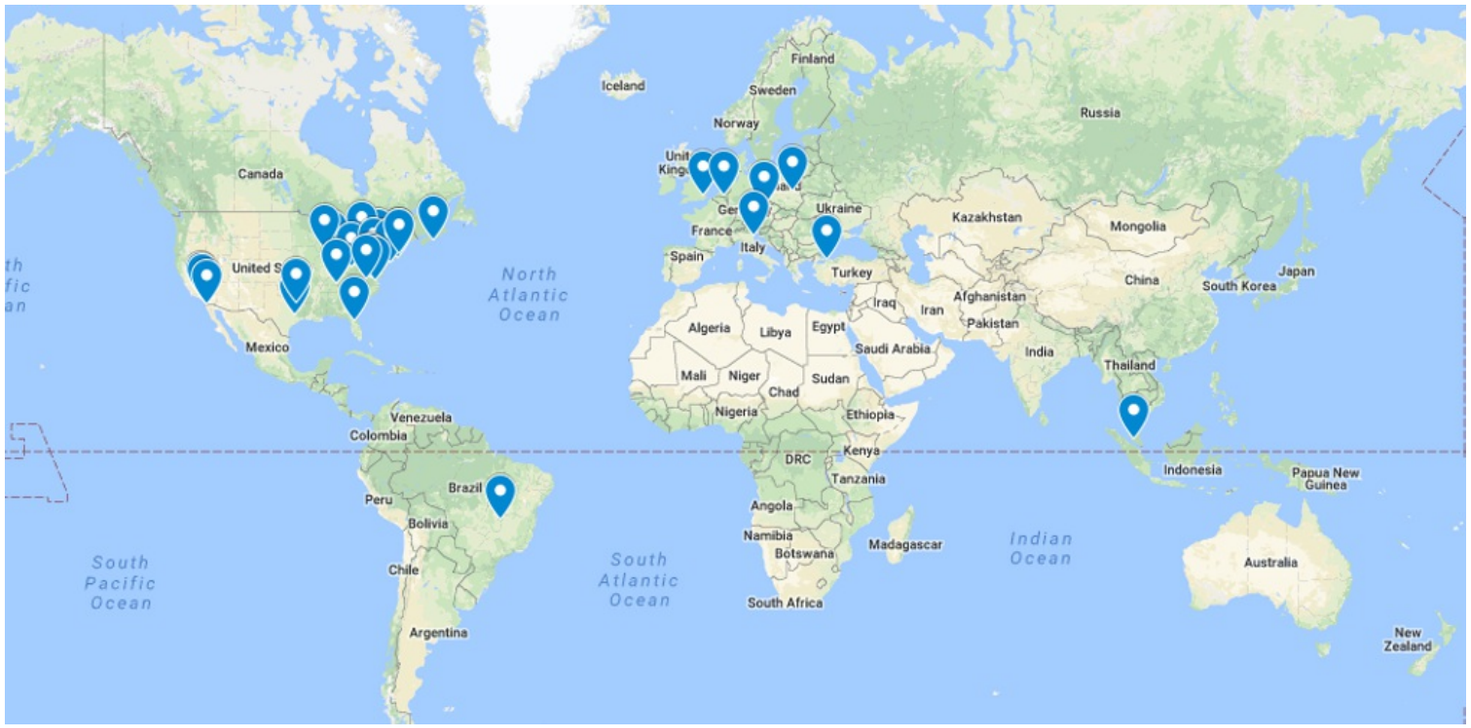
  - Open data and materials
- Administer packages across 125 samples
  - Slate 1: 13 studies administered in each of 61 labs
  - Slate 2: 15 studies administered in each of 64 labs
  - Sites (mostly) randomly assigned to slates
  - Minimum of 80 participants per site
  - 15,305 participants total
  - Much more diverse

Many Labs 1 Map



Many Labs 2 Map

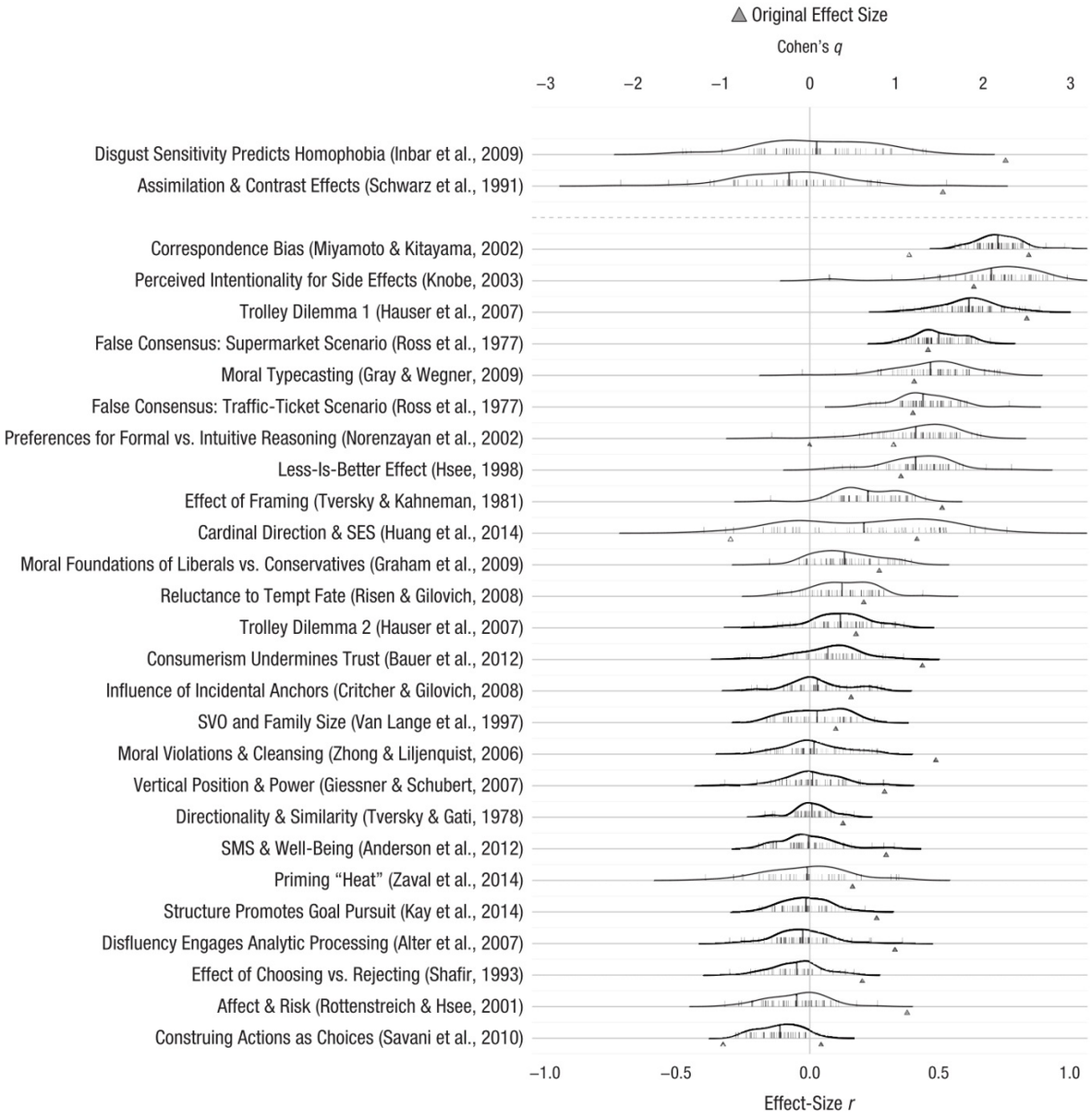
Many Labs 2 Hsee example

Coats range from $100-$1000
Your friend buys you a $110 coat

Scarves range from $10-$100
Your friend buys you a $90 scarf

How generous was your friend?

Many Labs 2 Hsee results


Original Effect Size
Cohen's q
−3
−2
−1
0
1
2
3
Disgust Sensitivity Predicts Homophobia (Inbar et al., 2009)
Assimilation & Contrast Effects (Schwarz et al., 1991)
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Trolley Dilemma 2 (Hauser et al., 2007)
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SMS & Well-Being (Anderson et al., 2012)
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Effect of Choosing vs. Rejecting (Shafir, 1993)
Affect & Risk (Rottenstreich & Hsee, 2001)
Construing Actions as Choices (Savani et al., 2010)
−1.0
−0.5
0.0
0.5
1.0
Effect-Size r

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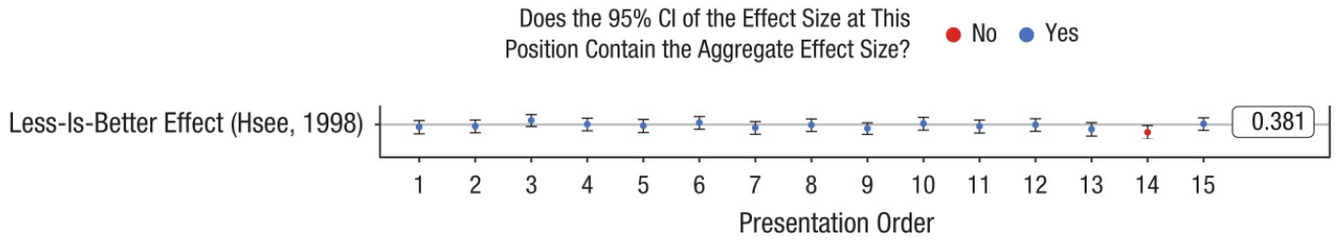


Does the 95% CI of the Effect Size at This Position Contain the Aggregate Effect Size?
No
Yes
Mean q
Disgust Sensitivity Predicts Homophobia (Inbar et al., 2009) −0.004
Assimilation & Contrast Effects (Schwarz et al., 1991) −0.003
Mean r
Correspondence Bias (Miyamoto & Kitayama, 2002) 0.677
Perceived Intentionality for Side Effects (Knobe, 2003) 0.653
Trolley Dilemma 1 (Hauser et al., 2007) 0.574
False Consensus: Supermarket Scenario (Ross et al., 1977) 0.464
Moral Typecasting (Gray & Wegner, 2009) 0.434
False Consensus: Traffic-Ticket Scenario (Ross et al., 1977) 0.408
Preferences for Formal vs. Intuitive Reasoning (Norenzayan et al., 2002) 0.382
Less-Is-Better Effect (Hsee, 1998) 0.381
Effect of Framing (Tversky & Kahneman, 1981) 0.21
Cardinal Direction & SES (Huang et al., 2014) 0.195
Moral Foundations of Liberals vs. Conservatives (Graham et al., 2009) 0.125
Reluctance to Tempt Fate (Risen & Gilovich, 2008) 0.117
Trolley Dilemma 2 (Hauser et al., 2007) 0.11
Consumerism Undermines Trust (Bauer et al., 2012) 0.066
Influence of Incidental Anchors (Critcher & Gilovich, 2008) 0.028
SVO and Family Size (Van Lange et al., 1997) 0.027
Moral Violations & Cleansing (Zhong & Liljenquist, 2006) 0.016
Vertical Position & Power (Giessner & Schubert, 2007) 0.011
Directionality & Similarity (Tversky & Gati, 1978) 0.009
SMS & Well-Being (Anderson et al., 2012) −0.005
Priming “Heat” (Zaval et al., 2014) −0.01
Structure Promotes Goal Pursuit (Kay et al., 2014) −0.014
Disfluency Engages Analytic Processing (Alter et al., 2007) −0.026
Effect of Choosing vs. Rejecting (Shafir, 1993) −0.047
Affect & Risk (Rottenstreich & Hsee, 2001) −0.048
Construing Actions as Choices (Savani et al., 2010) −0.108
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Presentation Order

Many Labs 2 Heterogeneity

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- Q statistic: (~ significance test for variation across sites exceeding chance)
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- Tau is probably best
  - SD across samples in the unit of the effect size (after accounting for sampling error)

Table 3. Results of Heterogeneity Tests for Each of the 28 Effects

Effect	ES[a]	All samples (no moderators) Tau	*Q*	*df*	*p*	I^2
						Cohen's *q* effect size
Disgust sensitivity predicts homophobia (Inbar, Pizarro, Knobe, & Bloom, 2009)	0.05	.00	55.80	58.00	.56	3.00% [0%, 30%]
Assimilation and contrast effects in question sequences (Schwarz, Strack, & Mai, 1991)	−0.07	.10	60.39	58.00	.39	15.00% [0%, 33%]
						Cohen's *d* effect size
Correspondence bias (Miyamoto & Kitayama, 2002)	1.82	.00	235.65	57.00	< .001	65.00% [46%, 73%]
Perceived intentionality for side effects (Knobe, 2003)	1.75	.14	631.72	58.00	< .001	93.00% [92%, 97%]
Trolley Dilemma 1: principle of double effect (Hauser, Cushman, Young, Jin, & Mikhail, 2007)	1.35	.10	131.24	58.00	< .001	54.00% [32%, 66%]
False Consensus: supermarket scenario (Ross, Greene, & House, 1977)	1.18	.00	65.54	58.00	.23	16.00% [0%, 41%]
Moral typecasting (Gray & Wegner, 2009)	0.95	.10	203.30	59.00	< .001	73.00% [62%, 83%]
False Consensus: traffic-ticket scenario (Ross et al., 1977)	0.95	.00	100.19	57.00	< .001	43.00% [18%, 62%]
Preferences for formal versus intuitive reasoning (Norenzayan, Smith, Kim, & Nisbett, 2002)	0.86	.10	156.75	56.00	< .001	66.00% [54%, 81%]
Less is better (Hsee, 1998)	0.78	.10	158.41	56.00	< .001	65.00% [49%, 77%]
Effect of framing on decision making (Tversky & Kahneman, 1981)	0.40	.00	55.20	54.00	.43	6.00% [0%, 36%]
Cardinal direction and socioeconomic status (Huang, Tse, & Cho, 2014)	0.40	.24	626.26	63.00	< .001	89.00% [84%, 92%]
Moral foundations of liberals versus conservatives (Graham, Haidt, & Nosek, 2009)	0.29	.09	175.26	59.00	< .001	64.00% [49%, 75%]
Reluctance to tempt fate (Risen & Gilovich, 2008)	0.18	.00	87.82	58.00	.01	36.00% [6%, 54%]
Trolley Dilemma 2: principle of double effect (Hauser et al., 2007)	0.25	.00	60.40	59.00	.42	12.00% [0%, 33%]
Consumerism undermines trust (Bauer, Wilkie, Kim, & Bodenhausen, 2012)	0.12	.00	63.78	53.00	.15	12.00% [0%, 49%]
Influence of incidental anchors on judgment (Critcher & Gilovich, 2008)	0.04	.00	64.88	58.00	.25	6.00% [0%, 43%]
Social value orientation and family size (Van Lange, Otten, De Bruin, & Joireman, 1997)	−0.03	.00	103.56	53.00	< .001	50.00% [28%, 68%]
Moral violations and desire for cleansing (Zhong & Liljenquist, 2006)	0.00	.00	65.59	51.00	.08	22.00% [0%, 52%]
Vertical position and power (Giessner & Schubert, 2007)	0.03	.00	62.87	58.00	.31	*3.00% [0%, 42%]*
Directionality and similarity (Tversky & Gati, 1978)	0.01	.00	15.33	48.00	.99	0.00% [0%, 0%]
Sociometric status and well-being (Anderson, Kraus, Galinsky, & Keltner, 2012)	−0.04	.00	55.09	58.00	.58	2.00% [0%, 30%]
Priming "heat" increases belief in global warming (Zaval, Keenan, Johnson, & Weber, 2014)	−0.03	.10	72.96	46.00	.01	37.00% [8%, 63%]
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Affect and risk (Rottenstreich & Hsee, 2001)	−0.08	.00	50.75	59.00	.77	0.00% [0%, 21%]
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False Consensus: supermarket scenario (Ross, Greene, & House, 1977)	1.18	.00	65.54	58.00	.23	16.00% [0%, 41%]
Moral typecasting (Gray & Wegner, 2009)	0.95	.10	203.30	59.00	< .001	73.00% [62%, 83%]
False Consensus: traffic-ticket scenario (Ross et al., 1977)	0.95	.00	100.19	57.00	< .001	43.00% [18%, 62%]
Preferences for formal versus intuitive reasoning (Norenzayan, Smith, Kim, & Nisbett, 2002)	0.86	.10	156.75	56.00	< .001	66.00% [54%, 81%]
Less is better (Hsee, 1998)	0.78	.10	158.41	56.00	< .001	65.00% [49%, 77%]
Effect of framing on decision making (Tversky & Kahneman, 1981)	0.40	.00	55.20	54.00	.43	6.00% [0%, 36%]
Cardinal direction and socioeconomic status (Huang, Tse, & Cho, 2014)	0.40	.24	626.26	63.00	< .001	89.00% [84%, 92%]
Moral foundations of liberals versus conservatives (Graham, Haidt, & Nosek, 2009)	0.29	.09	175.26	59.00	< .001	64.00% [49%, 75%]
Reluctance to tempt fate (Risen & Gilovich, 2008)	0.18	.00	87.82	58.00	.01	36.00% [6%, 54%]
Trolley Dilemma 2: principle of double effect (Hauser et al., 2007)	0.25	.00	60.40	59.00	.42	12.00% [0%, 33%]
Consumerism undermines trust (Bauer, Wilkie, Kim, & Bodenhausen, 2012)	0.12	.00	63.78	53.00	.15	12.00% [0%, 49%]
Influence of incidental anchors on judgment (Critcher & Gilovich, 2008)	0.04	.00	64.88	58.00	.25	6.00% [0%, 43%]
Social value orientation and family size (Van Lange, Otten, De Bruin, & Joireman, 1997)	−0.03	.00	103.56	53.00	< .001	50.00% [28%, 68%]
Moral violations and desire for cleansing (Zhong & Liljenquist, 2006)	0.00	.00	65.59	51.00	.08	22.00% [0%, 52%]
Vertical position and power (Giessner & Schubert, 2007)	0.03	.00	62.87	58.00	.31	*3.00% [0%, 42%]*
Directionality and similarity (Tversky & Gati, 1978)	0.01	.00	15.33	48.00	.99	0.00% [0%, 0%]
Sociometric status and well-being (Anderson, Kraus, Galinsky, & Keltner, 2012)	−0.04	.00	55.09	58.00	.58	2.00% [0%, 30%]
Priming "heat" increases belief in global warming (Zaval, Keenan, Johnson, & Weber, 2014)	−0.03	.10	72.96	46.00	.01	37.00% [8%, 63%]
Structure promotes goal pursuit (Kay, Laurin, Fitzsimons, & Landau, 2014)	−0.02	.00	33.95	51.00	.97	0.00% [0%, 2%]
Disfluency engages analytic processing (Alter, Oppenheimer, Epley, & Eyre, 2007)	−0.03	.00	59.46	65.00	.67	0.00% [0%, 27%]
Effect of choosing versus rejecting on relative desirability (Shafir, 1993)	−0.13	.00	51.67	40.00	.10	26.00% [0%, 52%]
Affect and risk (Rottenstreich & Hsee, 2001)	−0.08	.00	50.75	59.00	.77	0.00% [0%, 21%]
Construing actions as choices (Savani, Markus, Naidu, Kumar, & Berlia, 2010)	−0.18	.00	155.49	56.00	< .001	64.00% [47%, 76%]

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- Open data: **https://osf.io/8cd4r/**
  - CC0, free use (any purpose)
  - We barely scratched surface

Thanks!

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Questions/comments?

@raklein3
raklein22@gmail.com
https://www.raklein.me

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