Existe-t-il une crise de la reproductibilité en science?

Florian Naudet

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Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis.

Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology, 54*(5), 768–777. https://doi.org/10.1037/0022-3514.54.5.768

We investigated the hypothesis that people's facial activity influences their affective responses. Two studies were designed to both eliminate methodological problems of earlier experiments and clarify theoretical ambiguities. This was achieved by having subjects hold a pen in their mouth in ways that either inhibited or facilitated the muscles typically associated with smiling without requiring subjects to pose in a smiling face. Study 1's results demonstrated the effectiveness of the procedure. Subjects reported more intense humor responses when cartoons were presented under facilitating conditions than under inhibiting conditions that precluded labeling of the facial expression in emotion categories. Study 2 served to further validate the methodology and to answer additional theoretical questions. The results replicated Study 1's findings and also showed that facial feedback operates on the affective but not on the cognitive component of the humor response. Finally, the results suggested that both inhibitory and facilitatory mechanisms may have contributed to the observed affective responses. (APA PsycInfo Database Record (c) 2016 APA, all rights reserved)

Journal of Personality and Social Psychology

Perspectives on Psychological SCIENCE

Registered Replication Report: Strack, Martin, & Stepper (1988)

E.-J. Wagenmakers*, T. Beek*, L. Dijkhoff *, Q. F. Gronau,*
A. Acosta, R. B. Adams, Jr., D. N. Albohn, E. S. Allard, S. D. Benning,
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C. A. Capaldi, N. S. Carfagno, K. T. Chasten, A. Cleeremans, L. Connell,
J. M. DeCicco, K. Dijkstra, A. H. Fischer, F. Foroni, U. Hess, K. J. Holmes,
J. L. H. Jones, O. Klein, C. Koch, S. Korb, P. Lewinski, J. D. Liao, S. Lund,
J. Lupianez, D. Lynott, C. N. Nance, S. Oosterwijk, A. A. Ozdoğru,
A. P. Pacheco-Unguetti, B. Pearson, C. Powis, S. Riding, T.-A. Roberts,
R. I. Rumiati, M. Senden, N. B. Shea-Shumsky, K. Sobocko, J. A. Soto,
T. G. Steiner, J. M. Talarico, Z. M. van Allen, M. Vandekerckhove,
B. Wainwright, J. F. Wayand, R. Zeelenberg, E. E. Zetzer, and R. A. Zwaan
*Proposing authors

Multilab direct replication of: Study 1 from Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, *54*, 768-777.

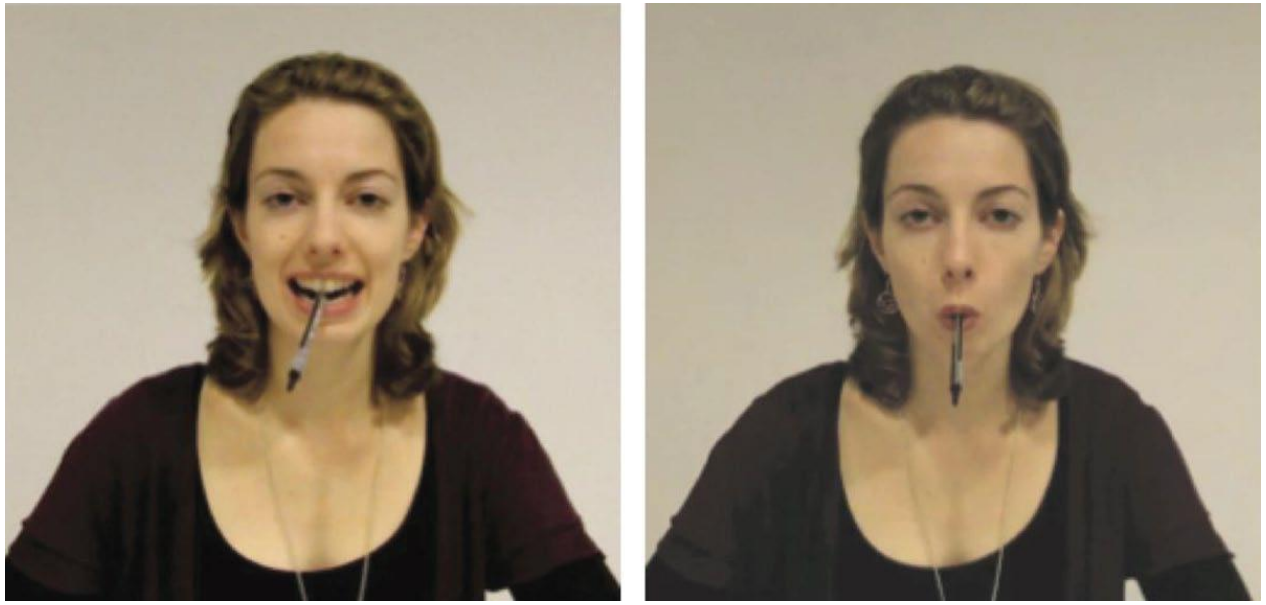

Fig. 1. Illustration of the two ways in which participants were instructed to position the pen for rating the funniness of cartoons. Left panel: the pen is held with the teeth, inducing a facial expression similar to smiling. Right panel: the pen is held with the lips, inducing a facial expression similar to pouting. Figure available at http://tinyurl.com/zm7p9l7 under CC license https://creativecommons.org/licenses/by/2.0/.

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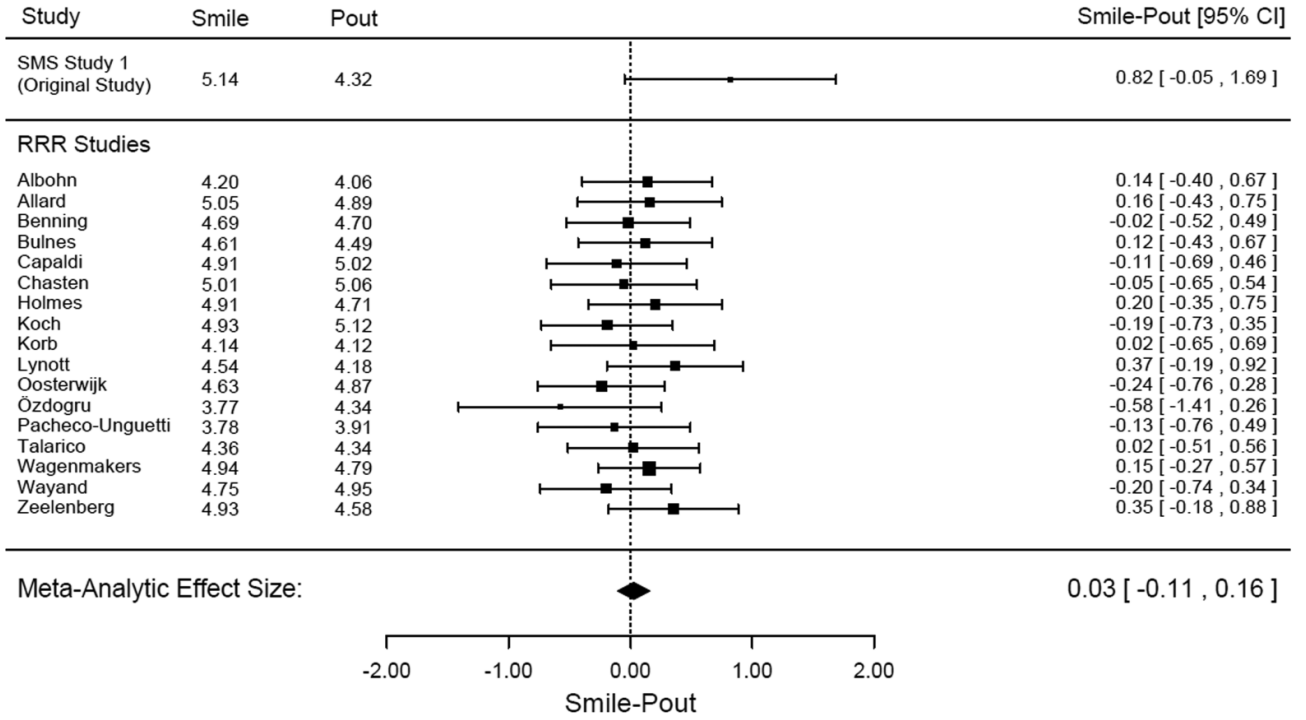

Fig. 4. Forest plot of a random-effects meta-analysis of 17 replications of SMS. The plot is based on raw effect sizes (i.e., mean rating differences between the smile and the pout condition). The result of Study 1 by SMS is included on top. The confidence interval for the SMS study was obtained from the summary statistics under the assumption of homogeneous variance and homogeneous sample size across the experimental conditions. A forest plot based on standardized effect sizes is available on the project OSF page. Figure available at http://tinyurl.com/jluyjwh under CC license https://creativecommons.org/licenses/by/2.0/.

THE LANCET

« The case against science is straightforward: much of the scientific literature, perhaps half, may simply be untrue. »

Richard Horton (Lancet's editor in chief) 11/04/2015

Science Translational Medicine
AAAS

SCIENTIFIC INTEGRITY

What does research reproducibility mean?

Steven N. Goodman,* Daniele Fanelli, John P. A. Ioannidis

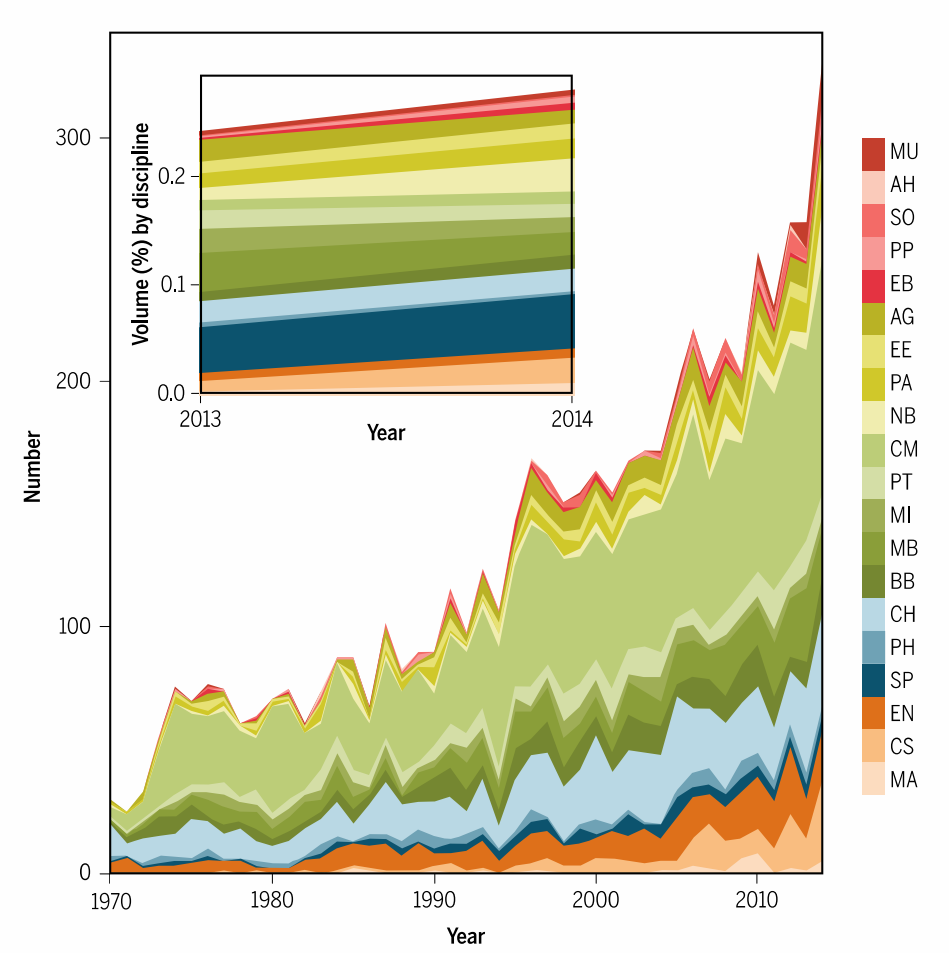

Fig. 1. Reports rising. Number of publications recorded in Scopus that have, in the title or abstract, at least one of the following expressions: research reproducibility, reproducibility of research, reproducibility of results, results reproducibility, reproducibility of study, study reproducibility, reproducible research, reproducible finding, or reproducible result. Papers are classified by discipline on the basis

sapin de Noël meringue

sapin de **noel** meringue

sapin de **noel** meringue **thermomix**

Recherche Google J'ai de la chance

Signaler des prédictions inappropriées

En savoir plus

Environ 162 000 résultats (0,32 secondes)

Recettes

Sapins meringues

Ptitchef

4,5 ★★★★½ (22)

1 h 15 min

Sapins de Noël

Chef Simon

4,2 ★★★★☆ (38)

1 h 20 min

Meringues sapins de Noël

Femme Actuelle

5,0 ★★★★★ (1)

2 h 5 min

Meringues en forme de sapin

Deliacious

Aucun avis

1 h 20 min

Meringues sapins de Noël

Encore un gâteau

5,0 ★★★★★ (2)

1 h 15 min

Recette Meringue de Noël

Maspatule

4,9 ★★★★★ (182)

Sapins meringues

À la fin de votre repas de fêtes, pour accompagner votre thé ou café, quoi de plus mignon et gourmand que ces jolies meringues en forme de sapin ?!

Dessert	15 parts	15 min	1 heure	facile	31 Kcal

(4.5/5 - 22 votes) 7 1296

- Ajouter à mon livre de recettes
- Envoyer cette recette à un ami
- Poser une question à l'auteur
- Imprimer cette page

15 parts

- [ ] 2 blancs d’oeuf
- [ ] 100 gr de sucre
- [ ] colorant alimentaire vert
- [ ] Petites perles en sucre

Coût estimé: **0.34€** (0.02€/part)

Matériel

Poche à douille

Poche à douilles

1 Battre les blancs avec la moitié du sucre. Lorsque le fouet commence à laisser des marques, ajouter l'autre moitié du sucre.

2 Battre jusqu'à ce que la meringue forme des pics lorsqu'on soulève le fouet.

3 Ajouter une pointe de colorant et battre la meringue. Attention, il vaut mieux mettre peu de colorant et en ajouter au fur et à mesure que d'en mettre trop d'un coup.

4 Sur une plaque de cuisson, former des petits sapins à l'aide d'une poche à douille, en enchaînant trois légères pressions.

5 Ajouter des petites perles en sucre sur chaque sapin. Cuire 1 heure à 110°C.

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METHODS REPRODUCIBILITY

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3 2 2 2 2

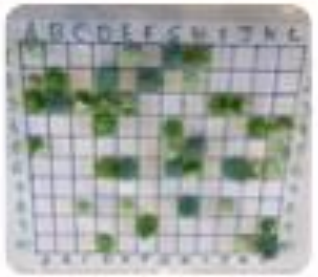
48 possibilités


RESULTS
REPRODUCIBILITY


INFERENTIAL
REPRODUCIBILITY

INFERENTIAL REPRODUCIBILITY

PLOS BIOLOGY

Categories	Definitions	Analogies with Xmas tree meringues
Methods reproducibility	Provide a detailed account of the methods, tools, data, software—essentially everything used during the research—for other researchers to replicate the experiment accurately	To improve methods reproducibility, we optimized the recipe with the help of a pastry chef using a "reporting guideline," a tool designed to ensure that all essential details are included in the description. 
Results reproducibility	Obtain the same results when the same experiment is conducted by other researchers as faithfully as possible to the original study.	 By enhancing methods reproducibility with a more precise recipe to follow, we expect to improve the consistency of results, both in appearance and taste, so chefs achieve more reliable outcomes.
Inferential reproducibility	Draw the same conclusions when interpreting the results of a given experiment.	Better baking results should impact how people choose a meringue to eat. Will the public's favorite meringues come from the improved recipe? Let's see how the votes turn out! 

Public Engagement with Research Reproducibility

Constant Vinatier, Magdalena Kozula, Veerle Van den Eynden, Laura Caquelin, Hynek Roubik, Inge Stegeman, Florian Naudet

COIs

None in the past 5 years

Fundings

Funded by European Union

Open access, freely available online

PLOS | MEDICINE

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 is true may depend on study power and bias, the number of other studies on the same question, and, importantly, the ratio of true to no relationships among the relationships probed in each scientific field. In this framework, a research finding is less likely to be true when the studies conducted in a field are smaller; when effect sizes are smaller; when there is a greater number and lesser preselection of tested relationships; where there is greater flexibility in designs, definitions, outcomes, and analytical modes; when there is greater financial and other interest and prejudice; and when more teams are involved in a scientific field in chase of statistical significance. Simulations show that for most study designs and settings, it is more likely for a research claim to be false than true. Moreover, for many current scientific fields, claimed research findings may often be simply accurate measures of the prevailing bias. In this essay, I discuss the implications of these problems for the conduct and interpretation of research.

Published research findings are sometimes refuted by subsequent evidence, with ensuing confusion and disappointment. Refutation and controversy is seen across the range of research designs, from clinical trials and traditional epidemiological studies [1–3] to the most modern molecular research [4,5]. There is increasing concern that in modern research, false findings may be the majority or even the vast majority of published research claims [6–8]. However, this should not be surprising. It can be proven that most claimed research findings are false. Here I will examine the key factors that influence this problem and some corollaries thereof.

The Essay section contains opinion pieces on topics of broad interest to a general medical audience.

Modeling the Framework for False Positive Findings

Several methodologists have pointed out [9–11] that the high rate of nonreplication (lack of confirmation) of research discoveries is a consequence of the convenient, yet ill-founded strategy of claiming conclusive research findings solely on the basis of a single study assessed by formal statistical significance, typically for a *p*-value less than 0.05. Research is not most appropriately represented and summarized by *p*-values, but, unfortunately, there is a widespread notion that medical research articles

It can be proven that most claimed research findings are false.

should be interpreted based only on *p*-values. Research findings are defined here as any relationship reaching formal statistical significance, e.g., effective interventions, informative predictors, risk factors, or associations. "Negative" research is also very useful. "Negative" is actually a misnomer, and the misinterpretation is widespread. However, here we will target relationships that investigators claim exist, rather than null findings.

As has been shown previously, the probability that a research finding is indeed true depends on the prior probability of it being true (before doing the study), the statistical power of the study, and the level of statistical significance [10,11]. Consider a 2 × 2 table in which research findings are compared against the gold standard of true relationships in a scientific field. In a research field both true and false hypotheses can be made about the presence of relationships. Let R be the ratio of the number of "true relationships" to "no relationships" among those tested in the field. R 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 and millions of hypotheses that may be postulated. Let us also consider, for computational simplicity, circumscribed fields where either there is only one true relationship (among many that can be hypothesized) or the power is similar to find any of the several existing true relationships. The pre-study probability of a relationship being true is $R/(R + 1)$. The probability of a study finding a true relationship reflects the power $1 - \beta$ (one minus the Type II error rate). The probability of claiming a relationship when none truly exists reflects the Type I error rate, α. Assuming that c relationships are being probed in the field, the expected values of the 2 × 2 table are given in Table 1. After a research finding has been claimed based on achieving formal statistical significance, the post-study probability that it is true is the positive predictive value, PPV. The PPV is also the complementary probability of what Wacholder et al. have called the false positive report probability [10]. According to the 2 × 2 table, one gets $PPV = (1 - \beta)R/(R - \beta R + \alpha)$. A research finding is thus

Citation: Ioannidis JPA (2005) Why most published research findings are false. PLoS Med 2(8): e124.

Abbreviation: PPV, positive predictive value

John P. A. Ioannidis is in the Department of Hygiene and Epidemiology, University of Ioannina School of Medicine, Ioannina, Greece, and Institute for Clinical Research and Health Policy Studies, Department of Medicine, Tufts-New England Medical Center, Tufts University School of Medicine, Boston, Massachusetts, United States of America. E-mail: jioannid@cc.uoi.gr

Competing Interests: The author has declared that no competing interests exist.

DOI: 10.1371/journal.pmed.0020124

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DOI: 10.1371/journal.pmed.0020124

CORRECTION

Correction: Why Most Published Research Findings Are False

John P. A. Ioannidis

There is an error in Table 2. A set of parentheses is missing in the equation for Research Finding = Yes and True Relationship = No. Please see the correct Table 2 here.

Table 2. Research Findings and True Relationships in the Presence of Bias.

Research Finding	True Relationship		
	Yes	No	Total
Yes	$(c[1 - \beta]R + uc\beta R)/(R + 1)$	$(c\alpha + uc(1 - \alpha))/R + 1)$	$c(R + \alpha - \beta R + u - u\alpha + u\beta R)/(R + 1)$
No	$(1 - u)c\beta R/(R + 1)$	$(1 - u)c(1 - \alpha)/(R + 1)$	$c(1 - u)(1 - \alpha + \beta R)/(R + 1)$
Total	$cR/(R + 1)$	$c/(R + 1)$	c

https://doi.org/10.1371/journal.pmed.1004085.t001

Reference

1. Ioannidis JPA (2005) Why Most Published Research Findings Are False. PLoS Med 2(8): e124. https://doi.org/10.1371/journal.pmed.0020124 PMID: 16060722

Citation: Ioannidis JPA (2022) Correction: Why Most Published Research Findings Are False. PLoS Med 19(8): e1004085. https://doi.org/10.1371/journal.pmed.1004085

Published: August 25, 2022

COIs

None in the past 5 years

Fundings

Funded by European Union

Science

RESEARCH ARTICLE

PSYCHOLOGY

Estimating the reproducibility of psychological science

Open Science Collaboration*†

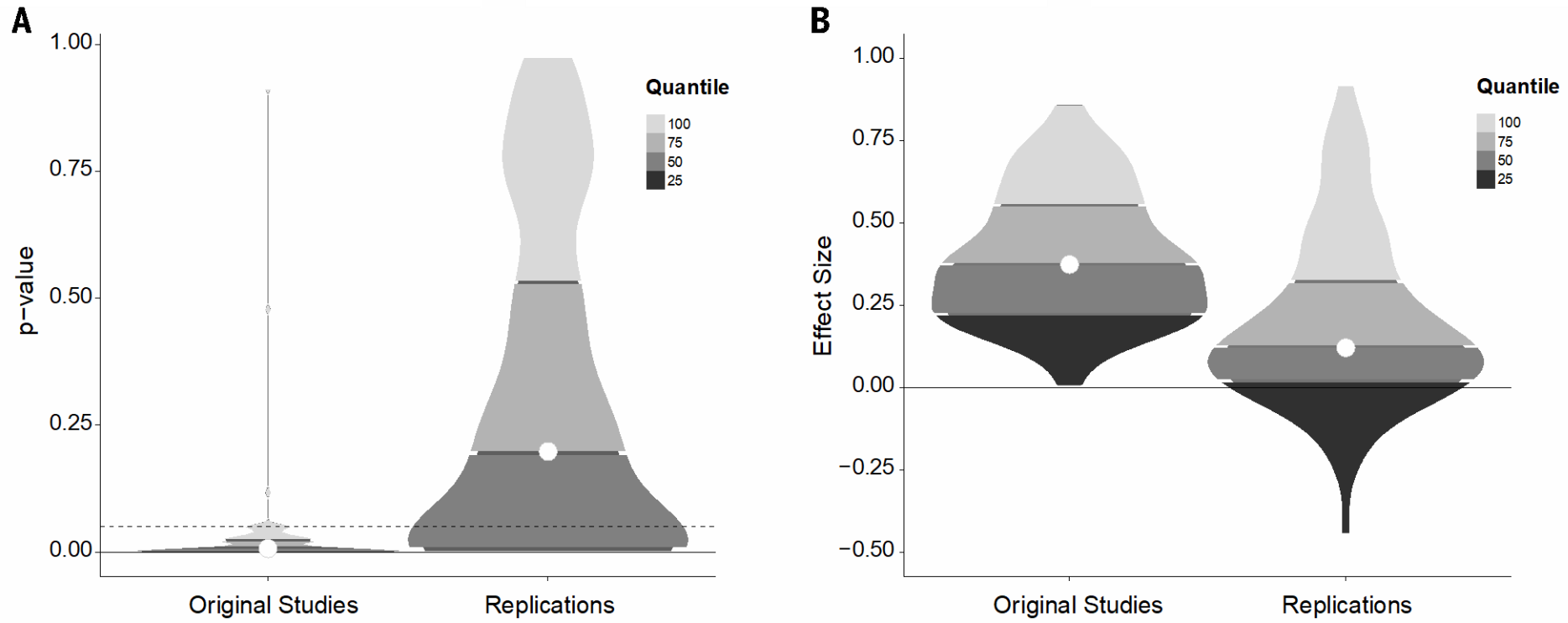


Fig. 1. Density plots of original and replication P values and effect sizes. (A) P values. (B) Effect sizes (correlation coefficients). Lowest quantiles for P values are not visible because they are clustered near zero.

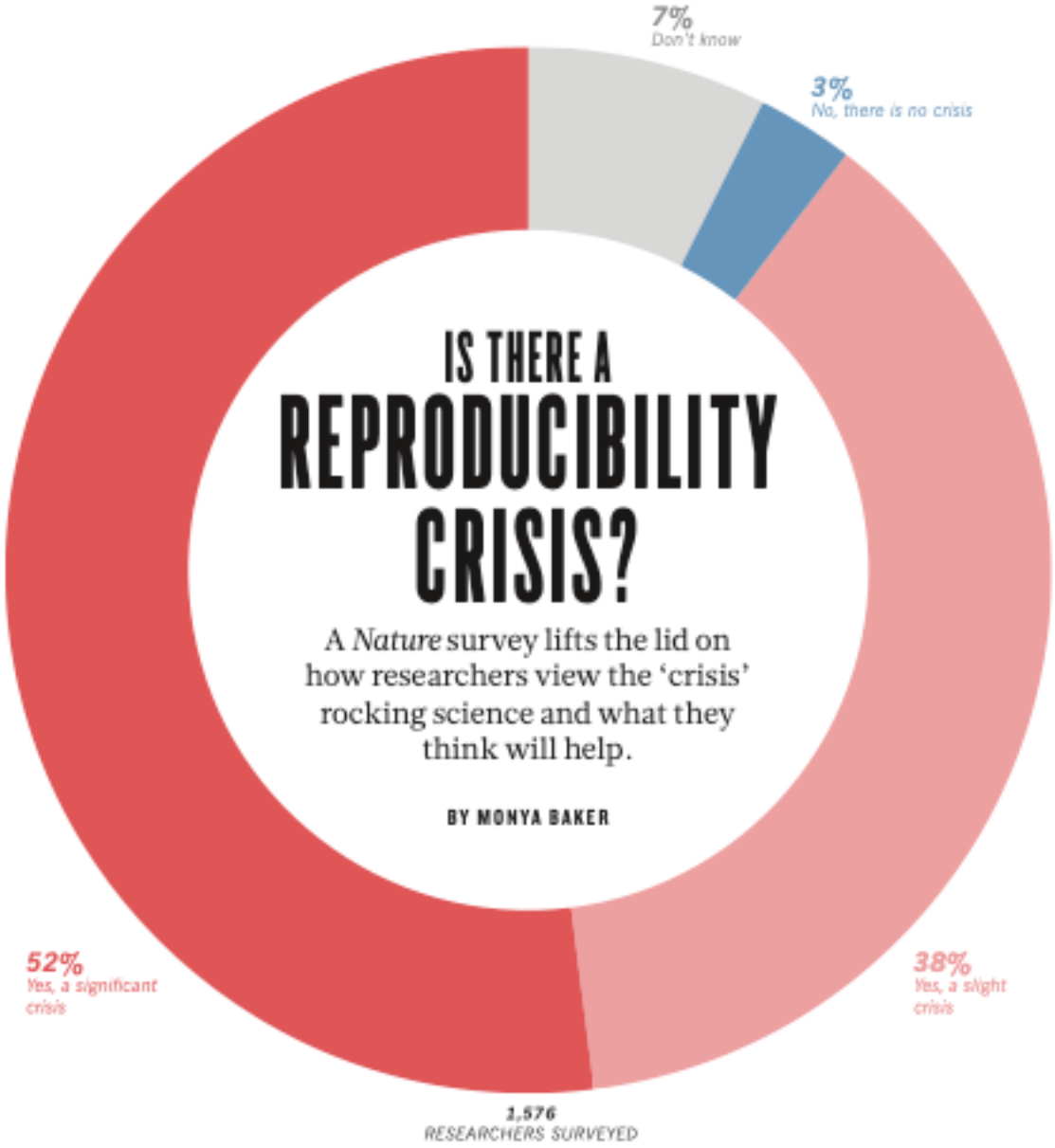
eLife

Challenges for assessing replicability in preclinical cancer biology

TIMOTHY M ERRINGTON*, ALEXANDRIA DENIS†, NICOLE PERFITO‡, ELIZABETH IORNS AND BRIAN A NOSEK

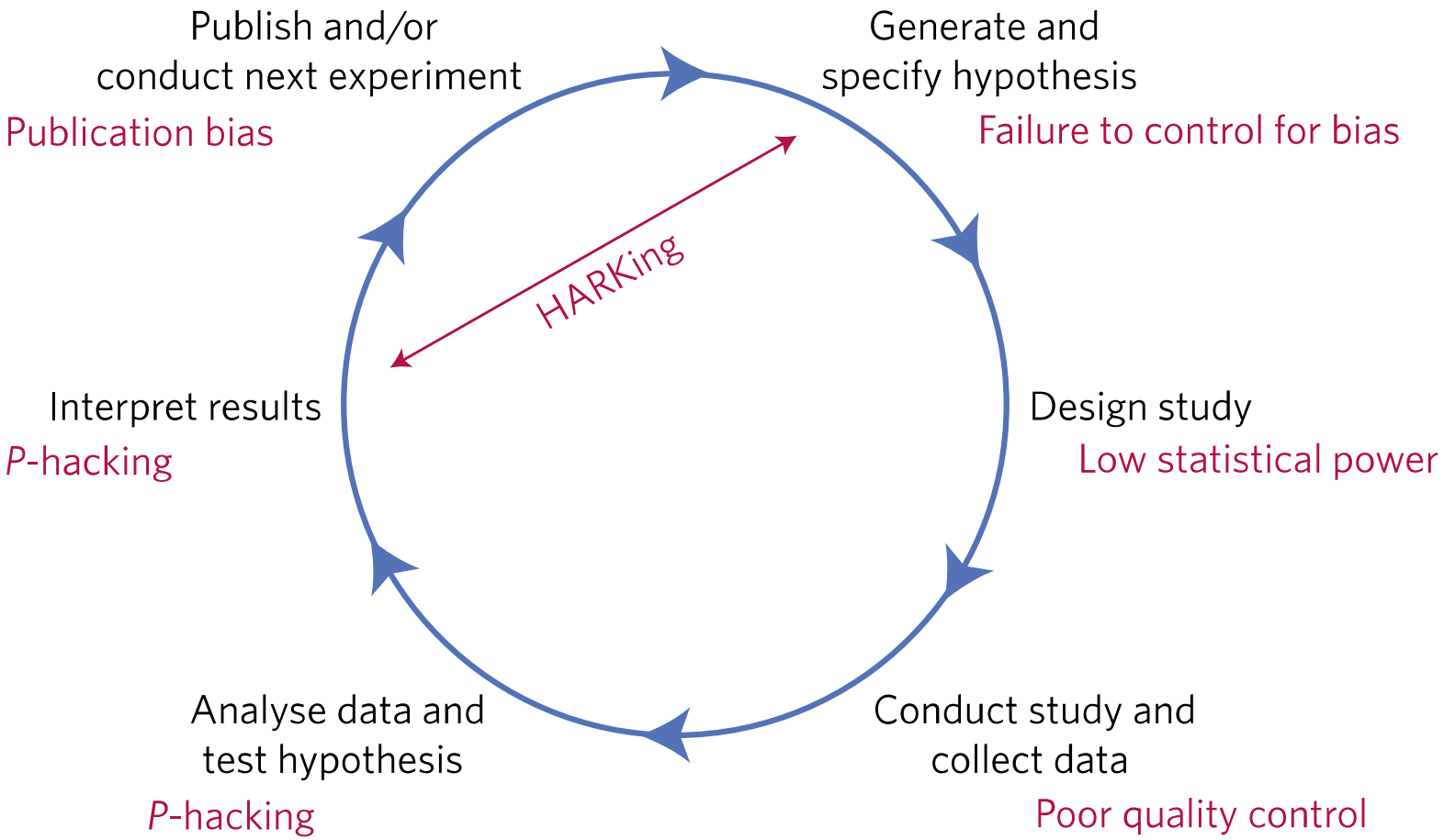
Abstract We conducted the Reproducibility Project: Cancer Biology to investigate the replicability of preclinical research in cancer biology. The initial aim of the project was to repeat 193 experiments from 53 high-impact papers, using an approach in which the experimental protocols and plans for data analysis had to be peer reviewed and accepted for publication before experimental work could begin. However, the various barriers and challenges we encountered while designing and conducting the experiments meant that we were only able to repeat 50 experiments from 23 papers. Here we report these barriers and challenges. First, many original papers failed to report key descriptive and inferential statistics: the data needed to compute effect sizes and conduct power analyses was publicly accessible for just 4 of 193 experiments. Moreover, despite contacting the authors of the original papers, we were unable to obtain these data for 68% of the experiments. Second, none of the 193 experiments were described in sufficient detail in the original paper to enable us to design protocols to repeat the experiments, so we had to seek clarifications from the original authors. While authors were *extremely* or *very helpful* for 41% of experiments, they were *minimally helpful* for 9% of experiments, and *not at all helpful* (or did not respond to us) for 32% of experiments. Third, once experimental work started, 67% of the peer-reviewed protocols required modifications to complete the research and just 41% of those modifications could be implemented. Cumulatively, these three factors limited the number of experiments that could be repeated. This experience draws attention to a basic and fundamental concern about replication – it is hard to assess whether reported findings are credible.

nature



"REPRODUCIBILITY IS LIKE BRUSHING YOUR TEETH. ONCE YOU LEARN IT, IT BECOMES A HABIT."

nature human behaviour



A manifesto for reproducible science

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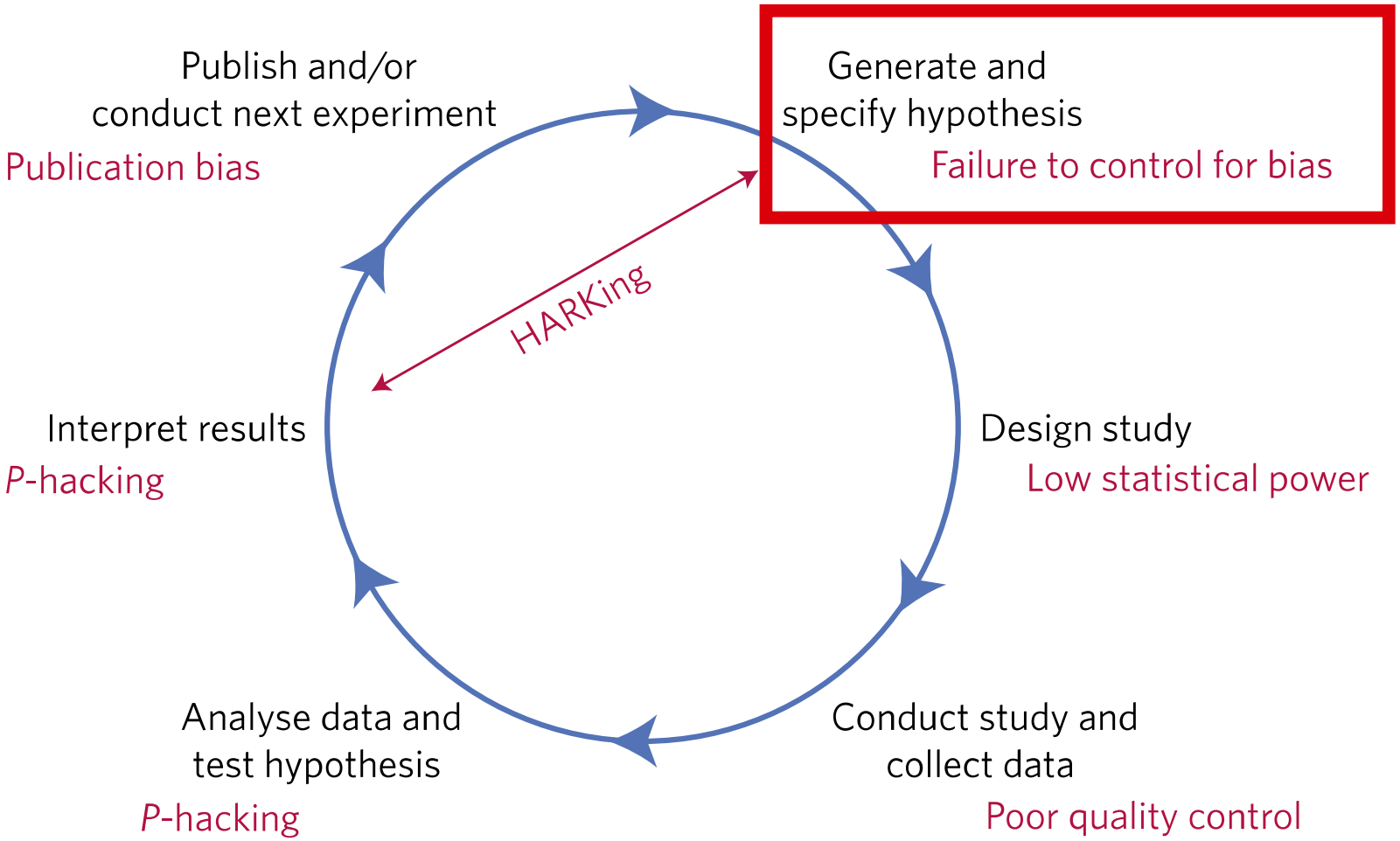

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Perspectives on Psychological SCIENCE

Registered Replication Report: Strack, Martin, & Stepper (1988)

E.-J. Wagenmakers*, T. Beek*, L. Dijkhoff *, Q. F. Gronau,*
A. Acosta, R. B. Adams, Jr., D. N. Albohn, E. S. Allard, S. D. Benning,
E.-M. Blouin-Hudon, L. C. Bulnes, T. L. Caldwell, R. J. Calin-Jageman,
C. A. Capaldi, N. S. Carfagno, K. T. Chasten, A. Cleeremans, L. Connell,
J. M. DeCicco, K. Dijkstra, A. H. Fischer, F. Foroni, U. Hess, K. J. Holmes,
J. L. H. Jones, O. Klein, C. Koch, S. Korb, P. Lewinski, J. D. Liao, S. Lund,
J. Lupianez, D. Lynott, C. N. Nance, S. Oosterwijk, A. A. Ozdoğru,
A. P. Pacheco-Unguetti, B. Pearson, C. Powis, S. Riding, T.-A. Roberts,
R. I. Rumiati, M. Senden, N. B. Shea-Shumsky, K. Sobocko, J. A. Soto,
T. G. Steiner, J. M. Talarico, Z. M. van Allen, M. Vandekerckhove,
B. Wainwright, J. F. Wayand, R. Zeelenberg, E. E. Zetzer, and R. A. Zwaan
*Proposing authors

Multilab direct replication of: Study 1 from Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, *54*, 768-777.

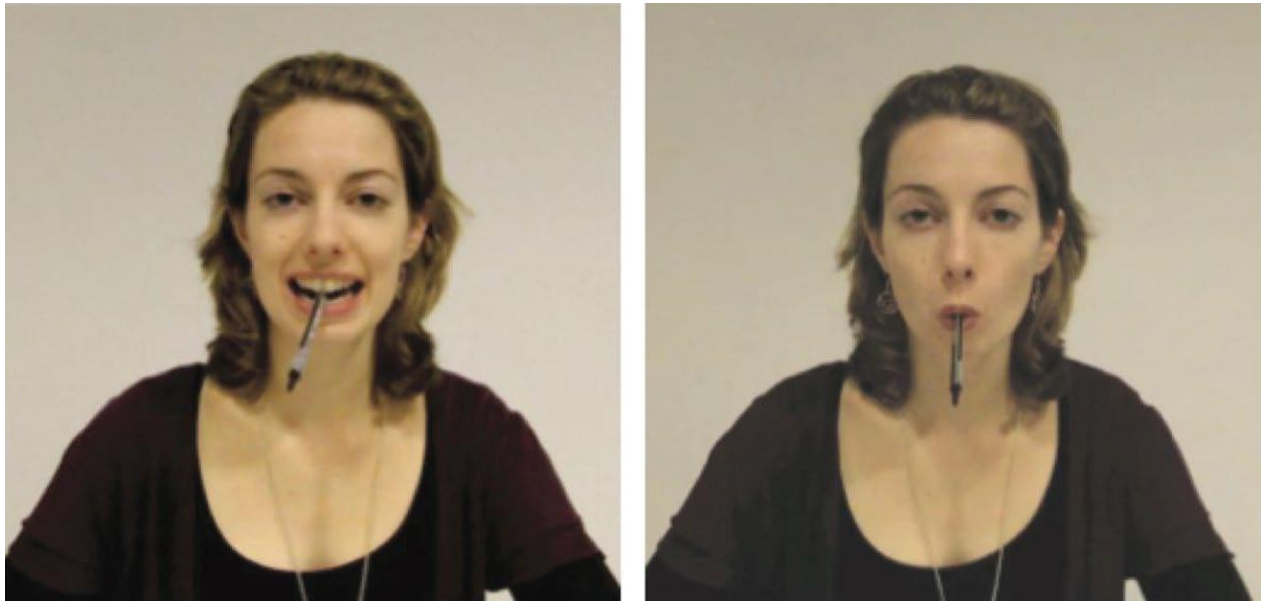
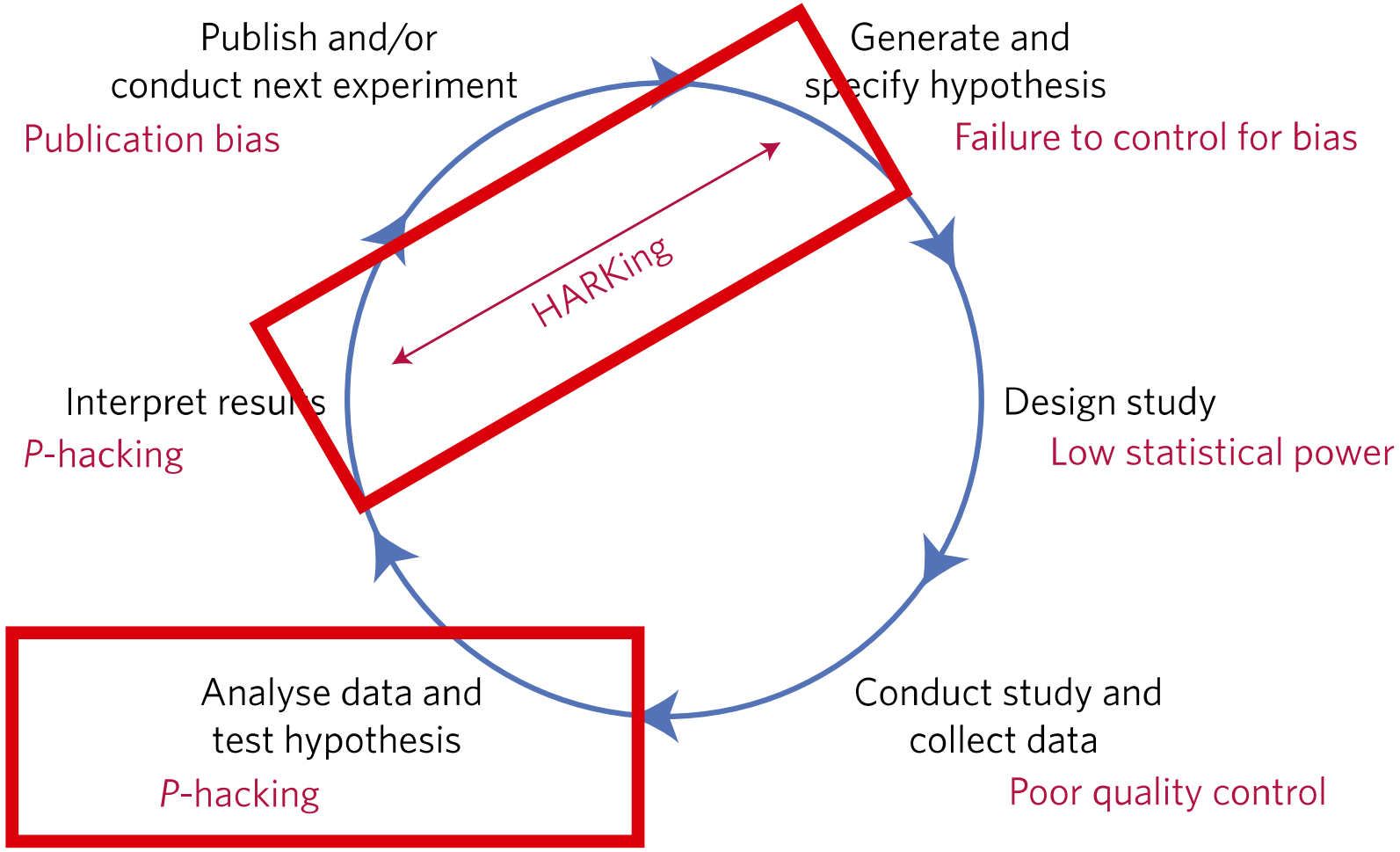


Fig. 1. Illustration of the two ways in which participants were instructed to position the pen for rating the funniness of cartoons. Left panel: the pen is held with the teeth, inducing a facial expression similar to smiling. Right panel: the pen is held with the lips, inducing a facial expression similar to pouting. Figure available at http://tinyurl.com/zm7p9l7 under CC license https://creativecommons.org/licenses/by/2.0/.

nature human behaviour



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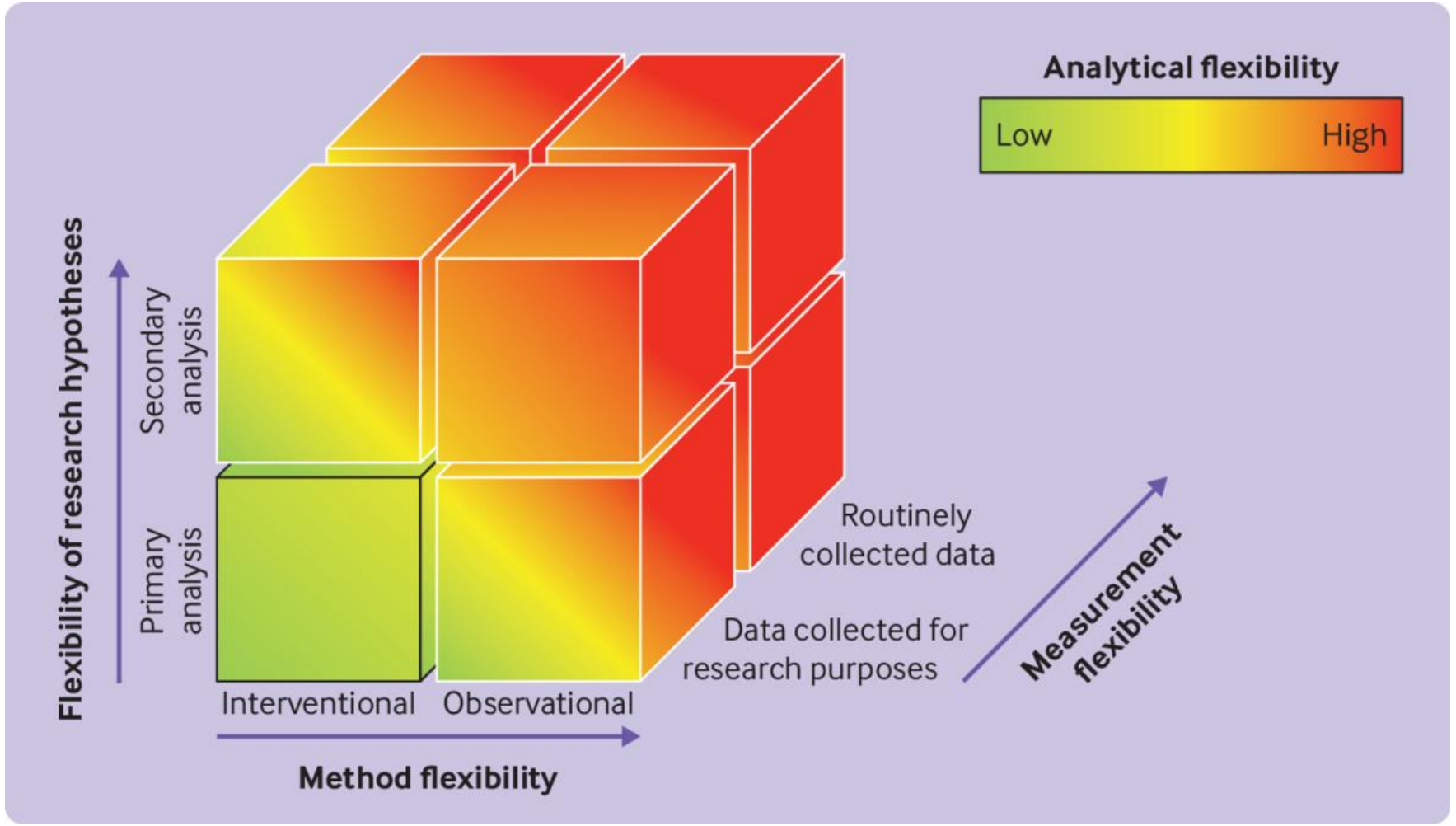


Fig 1 | Idealised version of analytical flexibility across the research landscape. Analytical flexibility is greater for observational research because the research question does not shape the design of the experiment (methods flexibility). Unlike clinical trials, which require prespecified measures, researchers analysing routinely collected data have to choose among many imperfectly measured variables that may have to be curated, combined, cleaned, and derived, with each step adding opportunities for analytical choices (measurement flexibility). Use of existing data also allows the analysis of relations between many variables, making it easy to test multiple hypotheses (flexibility in research hypotheses). The black line delimits the studies for which the International Committee of Medical Journal Editors requires registration

Improving the transparency and reliability of observational studies through registration

Florian Naudet, [1,2] Chirag J Patel, [3] Nicholas J DeVito, [4] Gérard Le Goff, [5] Ioana A Cristea, [6] Alain Braillon, [7] Sabine Hoffmann[8,9]

BMJ EBM

Education

What is the vibration of effects?

Constant Vinatier ,[1] Sabine Hoffmann,[2,3] Chirag Patel,[4] Nicholas J DeVito ,[5] Ioana Alina Cristea ,[6] Braden Tierney,[7] John P A Ioannidis ,[8] Florian Naudet [1,9]

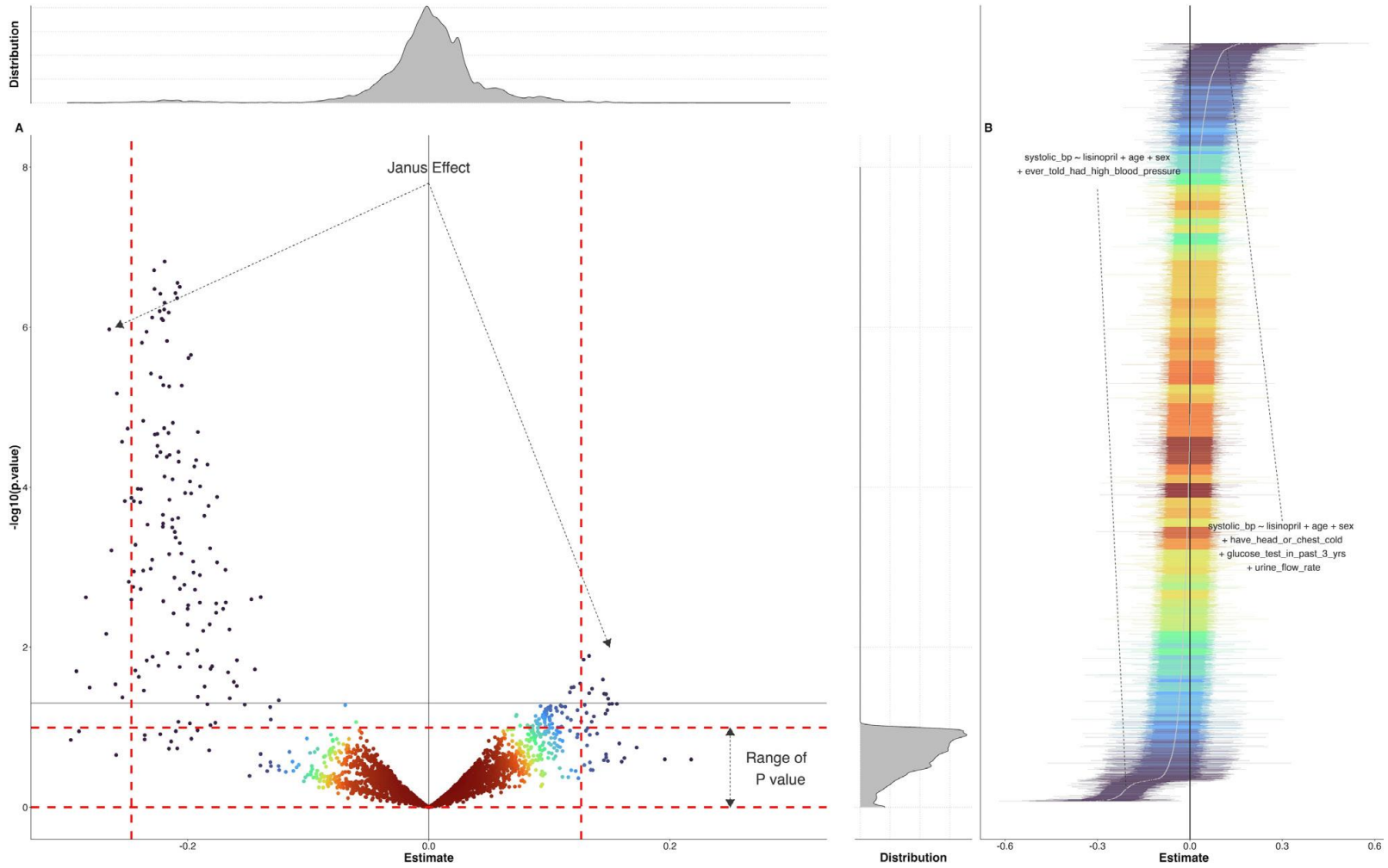
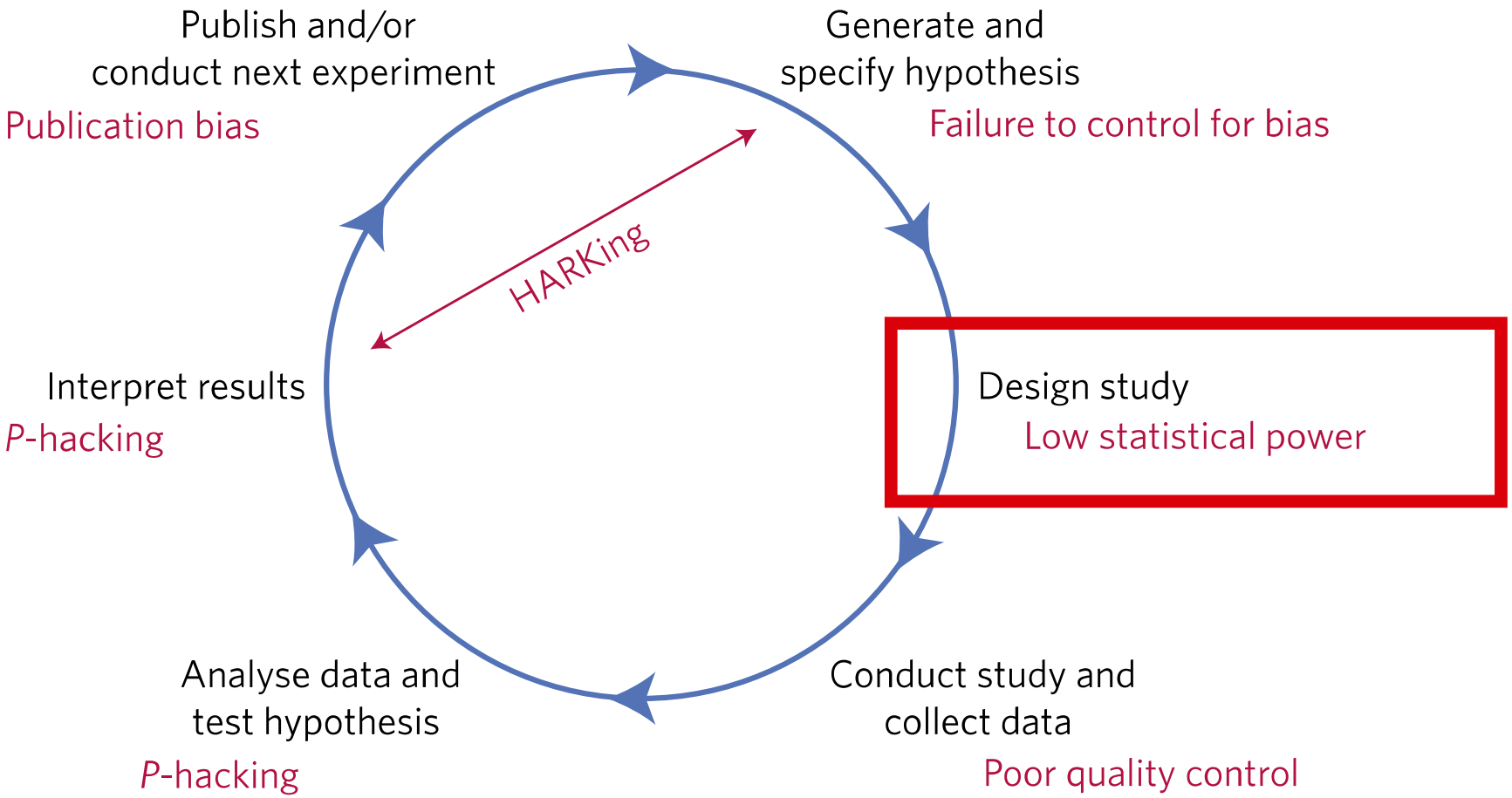


Figure 1 Vibration of effects of beta coefficient in the exploration of the association between lisinopril usage and systolic blood pressure. An estimate ‹0 suggests lower systolic blood pressure with lisinopril. This figure was produced using data from Tierney *et al*[10] by fitting 9595 random select models, among all possible models, exploring the association and using 253 covariates, with a maximum number of variables in the model set to 20. Data and code to reproduce the figure are available on the Open Science Framework at https://osf.io/xfy75/. (A) Dots represent the 6242 convergent regression models among the 9595 randomly selected models. Colours represent densities (red=high, blue=low), with marginal density plot of distributions. (B) Point estimates and 95% CIs for all models. Colours represent densities (red=high, blue=low).

nature human behaviour



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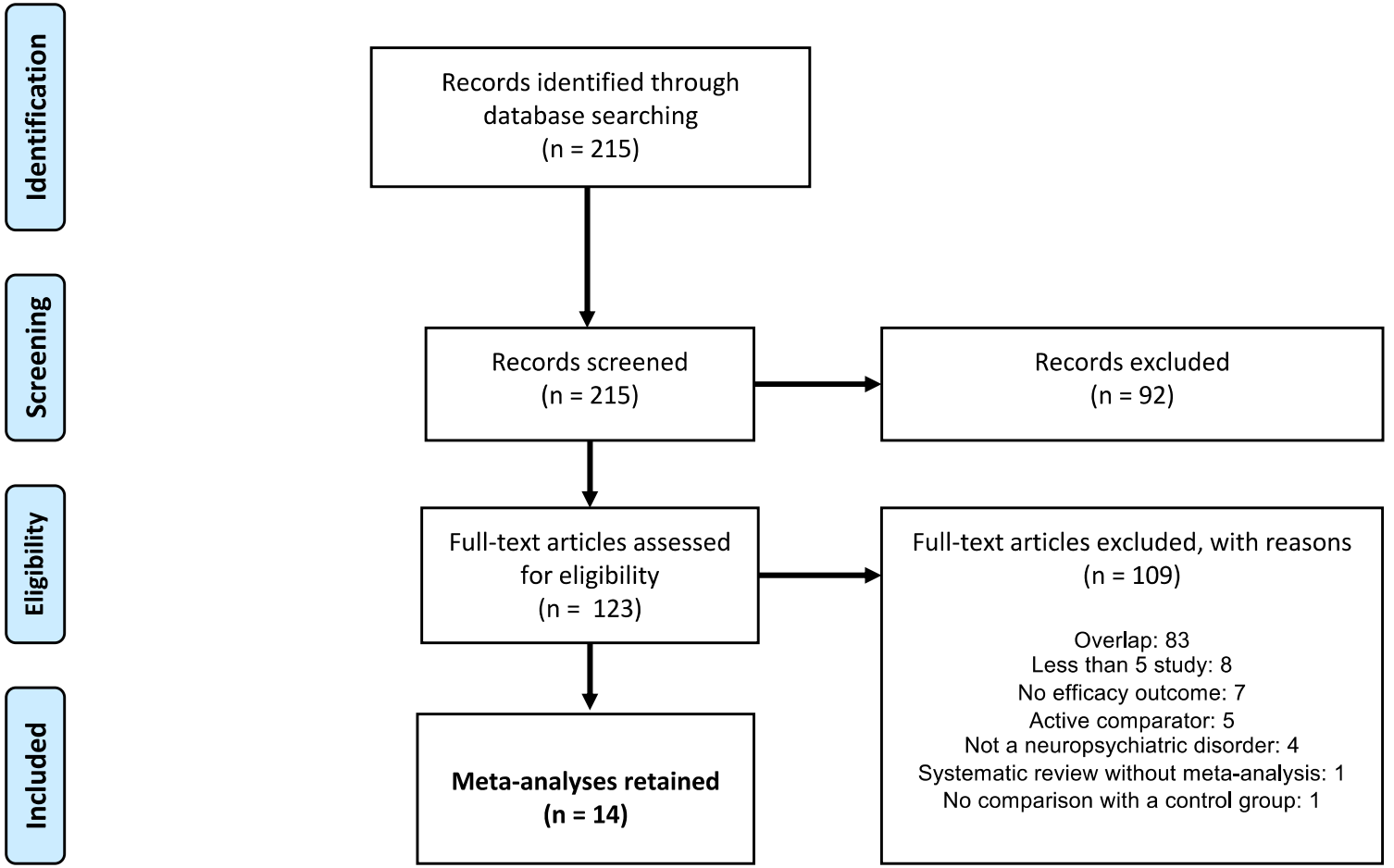
Psychotherapy and Psychosomatics



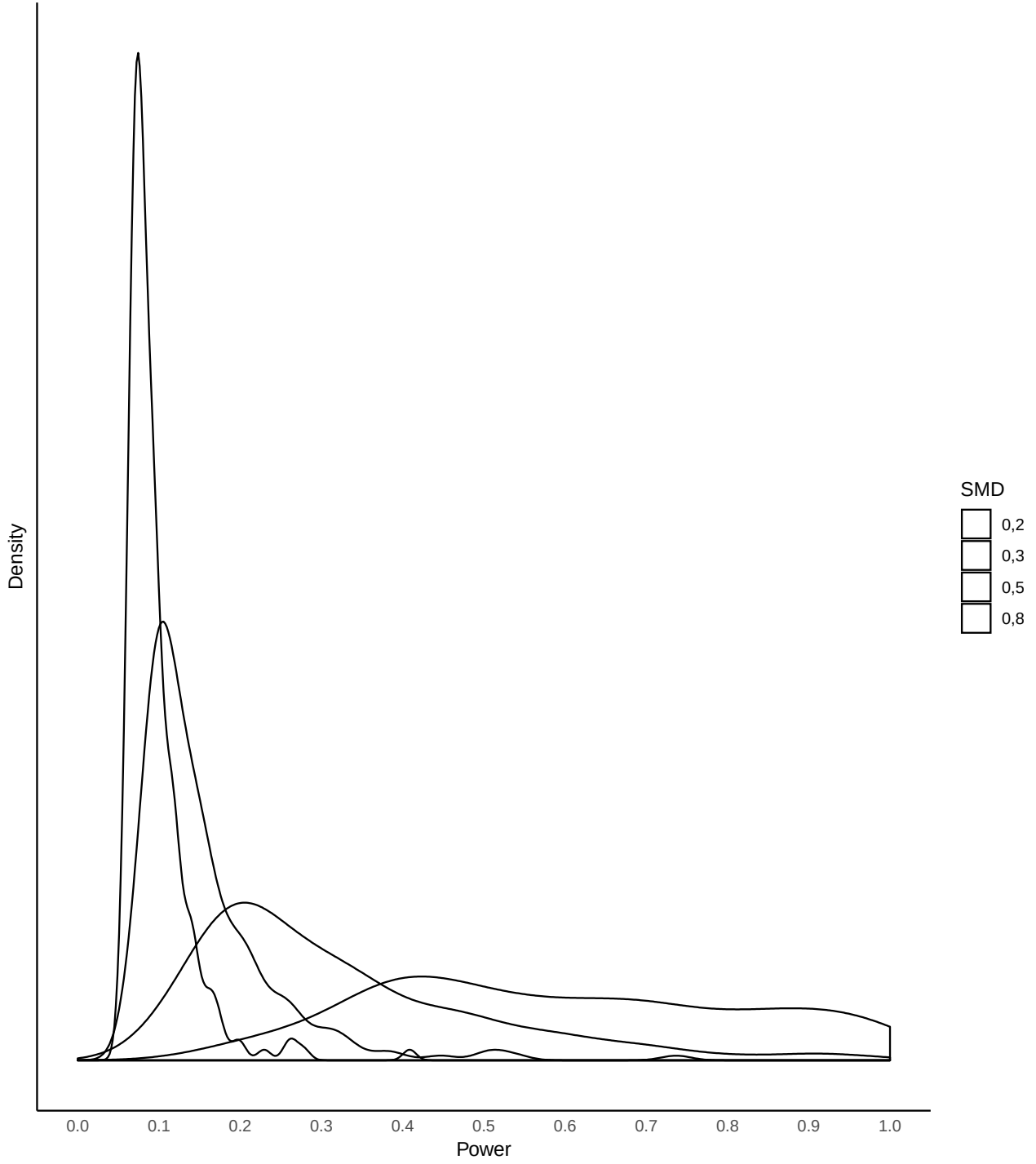
Excess Significance Bias in Repetitive Transcranial Magnetic Stimulation Literature for Neuropsychiatric Disorders

Ali Amad[a–c] Renaud Jardri[a, b] Chloé Rousseau[d] Yann Larochelle[d] John P.A. Ioannidis[e, f] Florian Naudet[d]

Meta-analysis	Topic	Number of individual studies	Observed number of positive studies	Expected number of positive results (SMD = 0.3)	*p* value (SMD = 0.3)	Expected number of positive results (SMD = 0.2)	*p* value (SMD = 0.2)	Expected number of positive results (SMD = 0.5)	*p* value (SMD = 0.5)	Expected number of positive results (SMD = 0.8)	*p* value (SMD = 0.8)
Ren et al. [18], 2014	Aphasia in stroke patients	5	3	0.48	0.0074	0.35	0.0031	0.89	0.0425	1.86	0.2694
Liao et al. [19], 2015	Cognitive impairment in Alzheimer's disease	10	6	1.14	0.0003	0.78	<0.0001	2.31	0.0133	4.81	0.3308
Jin et al. [20], 2015	Chronic neuropathic pain	25	18	5.19	<0.0001	2.99	<0.0001	11.07	0.0047	18.92	NA
Liao et al. [21], 2016	Dysphagia after stroke	9	6	0.95	0.0001	0.67	<0.0001	1.89	0.0039	4.05	0.1651
Chung et al. [22], 2016	Motor signs in Parkinson's disease	18	3	2.50	0.4668	1.60	0.2119	5.27	NA	10.15	NA
Hou et al. [23], 2016	Fibromyalgia	11	3	1.19	0.1069	0.83	0.0446	2.35	0.4265	4.84	NA
Graef et al. [24], 2016	Motor function after stroke	8	0	0.87	NA	0.60	NA	1.71	NA	3.40	NA
Shen et al. [25], 2017	Post-stroke depression	24	22	5.87	<0.0001	3.25	<0.0001	13.04	<0.0001	21.00	0.4075
All neurological disorders		110	61	18.18	<0.0001	11.07	<0.0001	38.52	<0.0001	69.02	NA
Slotema et al. [26], 2013	Auditory verbal hallucinations	25	5	3.64	0.2955	2.30	0.0733	7.88	NA	15.54	NA
Shi et al. [27], 2014	Negative symptoms in schizophrenia	12	4	1.26	0.0305	0.90	0.0093	2.49	0.2253	5.24	NA
Trevizol et al. [28], 2016	Post-traumatic stress disorder	8	3	0.76	0.0337	0.56	0.0147	1.43	0.1591	3.019	NA
Trevizol et al. [29], 2016	Obsessive compulsive disorder	15	3	1.93	0.3032	1.27	0.1275	4.05	NA	8.18	NA
Maiti et al. [30], 2016	Craving in substance use disorder	8	1	1.08	NA	0.7	0.5181	2.30	NA	4.61	NA
Brunoni et al. [12], 2017	Major depressive disorder	50	17	8.36	0.0023	5.14	<0.0001	16.95	0.5469	30.94	NA
All psychiatric disorders		118	33	17.04	0.0001	10.85	<0.0001	35.11	NA	67.52	NA
Global analysis		228	94	35.22	<0.0001	21.92	<0.0001	73.63	0.0028	136.54	NA

NA, test not applicable: the expected number of "positive" studies was larger than the observed number of "positive" studies.

Psychotherapy and Psychosomatics



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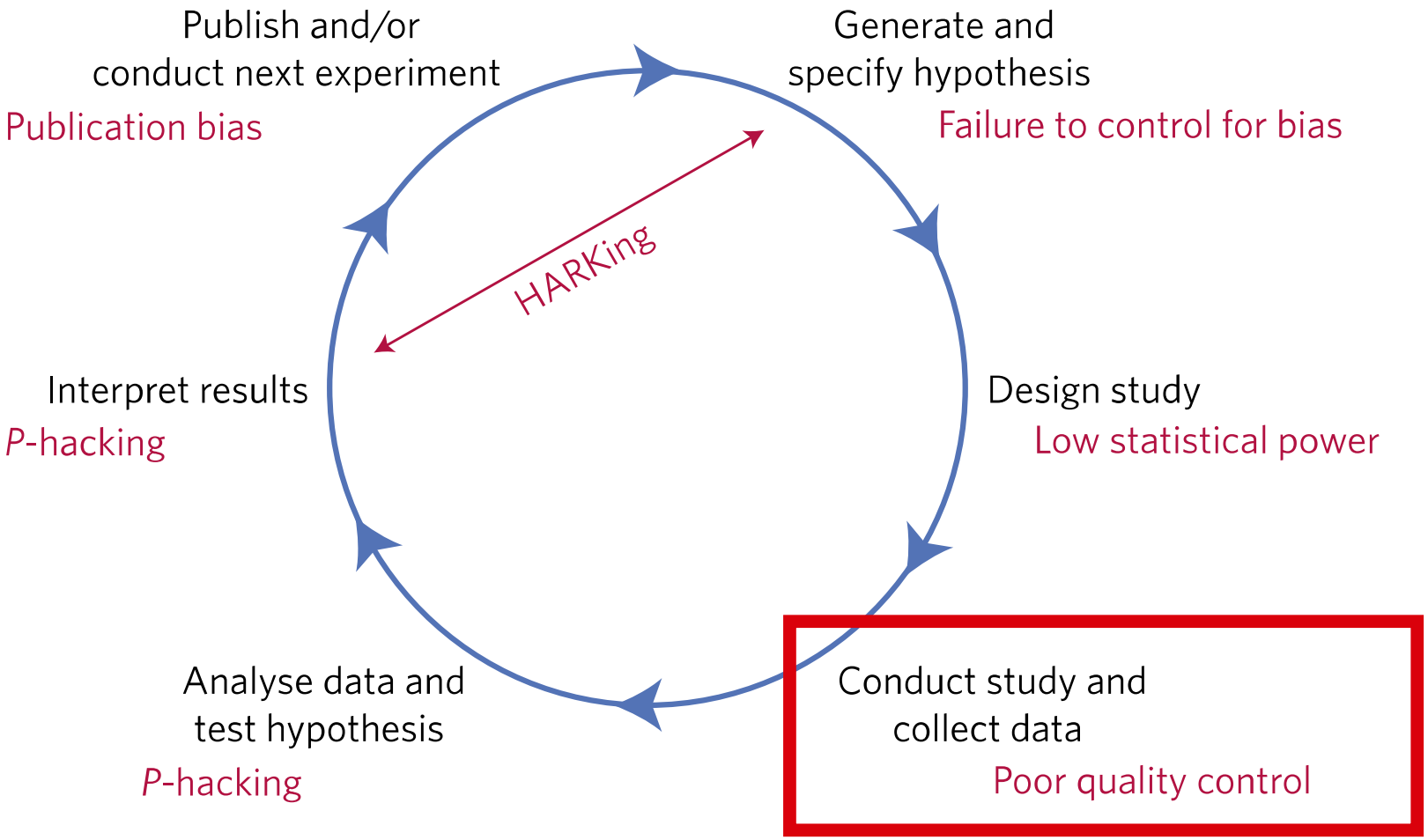

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PRELIMINARY COMMUNICATION

Effect of Folate and Mecobalamin on Hip Fractures in Patients With Stroke

A Randomized Controlled Trial

Yoshihiro Sato, MD
Yoshiaki Honda, MD
Jun Iwamoto, MD
Tomohiro Kanoko, PhD
Kei Satoh, MD

JAMA® The Journal of the American Medical Association

Table 1. Baseline Characteristics of the Study Population*

Characteristic	Received Placebo (n = 314)	Received Folate and Vitamin B_{12} (n = 314)
Age, y	71.2 (4.2)	71.6 (5.1)
Sex, No. (%)		
Female	169 (53.8)	169 (53.8)
Male	145 (46.2)	145 (46.2)
Duration of illness, mo	16.9 (3.6)	16.9 (4.4)
Lacunar infarction/atherothrombotic infarction, No. of patients	217/97	212/102
Barthel Index†	67 (16)	68 (16)
Degree of hemiplegia‡		
Hand	4.5 (1.3)	4.5 (1.3)
Leg	4.5 (1.5)	4.5 (1.4)
Body mass index	22.3 (1.9)	22.3 (1.6)
Fallers, No. (%)§	70 (22)	70 (22)
Prevalence of vascular risk factors, No. (%)		
Hypertension	182 (58)	175 (56)
Diabetes mellitus	70 (22)	68 (22)
Hypercholesterolemia	59 (19)	59 (19)
Current smoker	64 (20)	64 (20)
Previous vascular event	62 (20)	58 (18)
BMD, mm Al		
Hemiplegic side‖	2.30 (0.24)	2.30 (0.25)
T score¶	−2.9 (1.0)	−2.9 (1.0)
Intact side	2.41 (0.24)	2.42 (0.24)
T score¶	−1.8 (1.0)	−1.8 (0.9)
Concentration levels		
Plasma homocysteine, μmol/L	19.9 (20.4)	19.9 (21.3)
Serum cobalamin, pg/mL	590 (332)	606 (382)
Serum folate, ng/mL	2.4 (1.5)	2.4 (1.5)

Abbreviations: Al, aluminum; BMD, bone mineral density.
SI conversion factors: To convert serum cobalamin to pmol/L, multiply by 0.7378; and serum folate to nmol/L, multiply by 2.266.
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‖$P<.001$ vs intact side.
¶Defined as the individual BMD value relative to the standard mean BMD for young adult population. According to the World Health Organization, a T score of less than −2.5 SD is diagnostic of osteoporosis, and a score between −1.0 and −2.5 SD is diagnostic of osteopenia.

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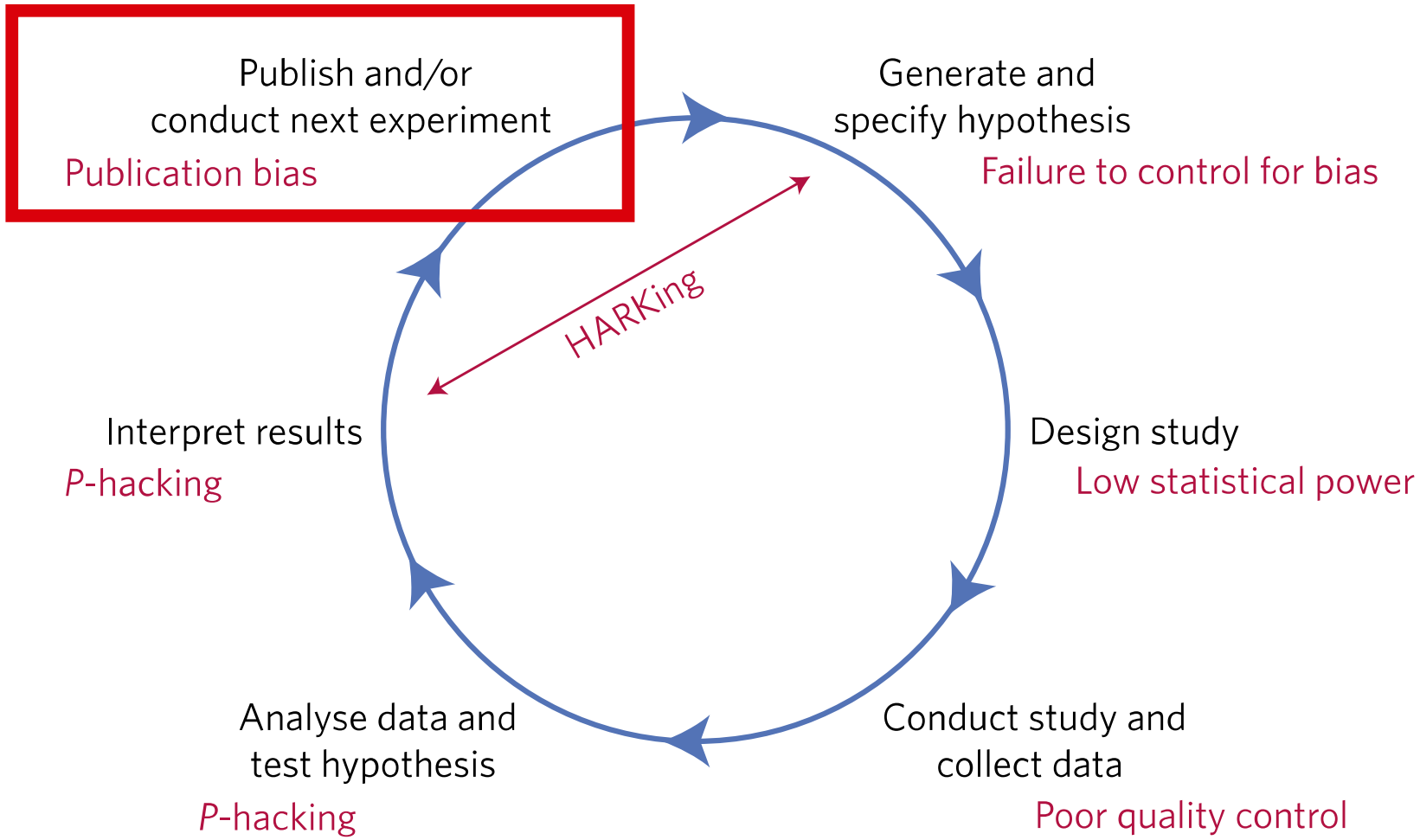

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PROCEEDINGS
OF THE ROYAL SOCIETY B
BIOLOGICAL SCIENCES

Left-right asymmetry of the Maxwell spot centroids in adults without and with dyslexia

Albert Le Floch[1,2,3] and Guy Ropars[1,3]

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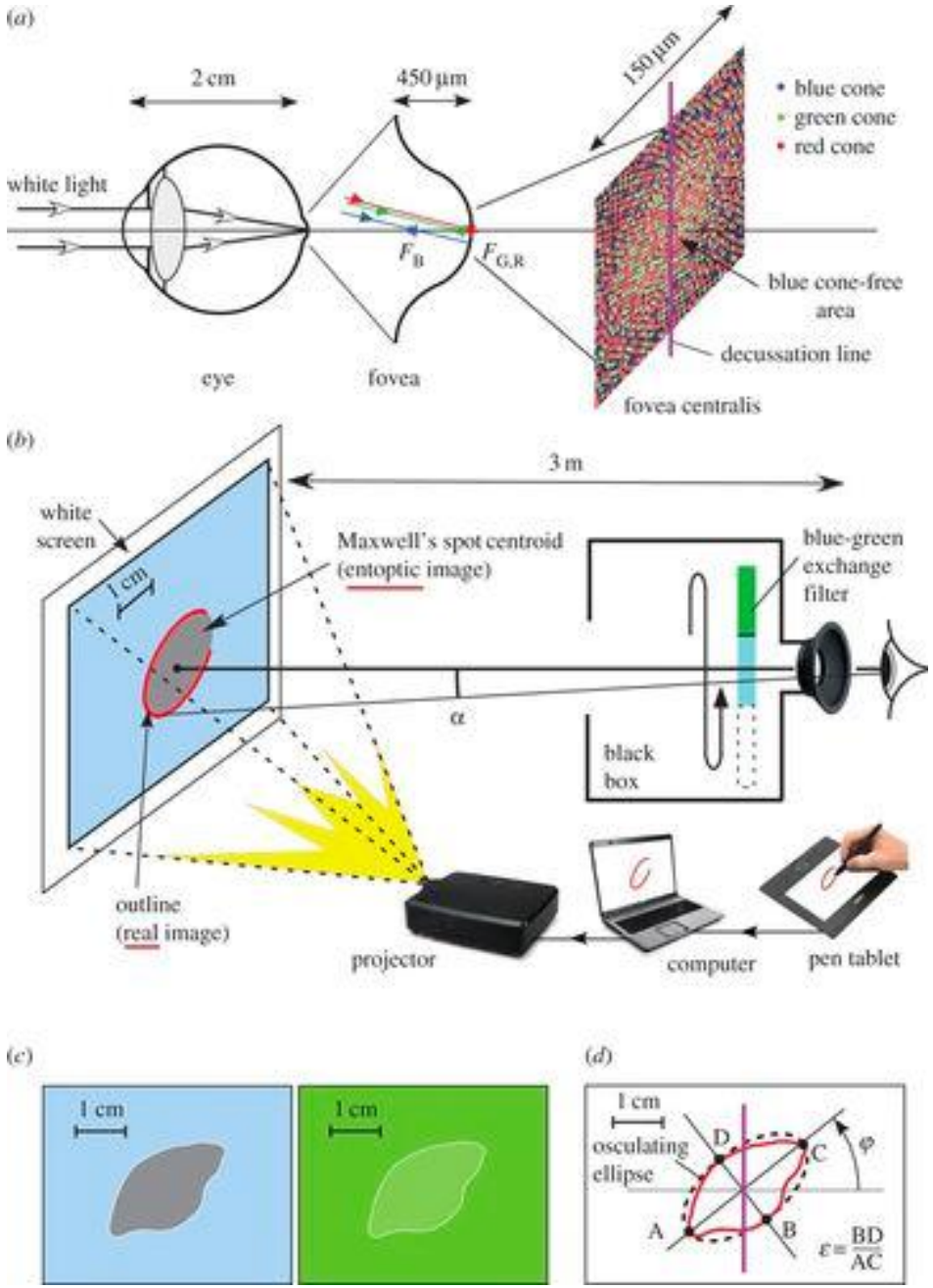
[2]Laboratoire d'Electronique Quantique et Chiralités, 20 Square Marcel Bouget, 35700 Rennes, France
[3]Université Bretagne Loire, 35044 Rennes, France



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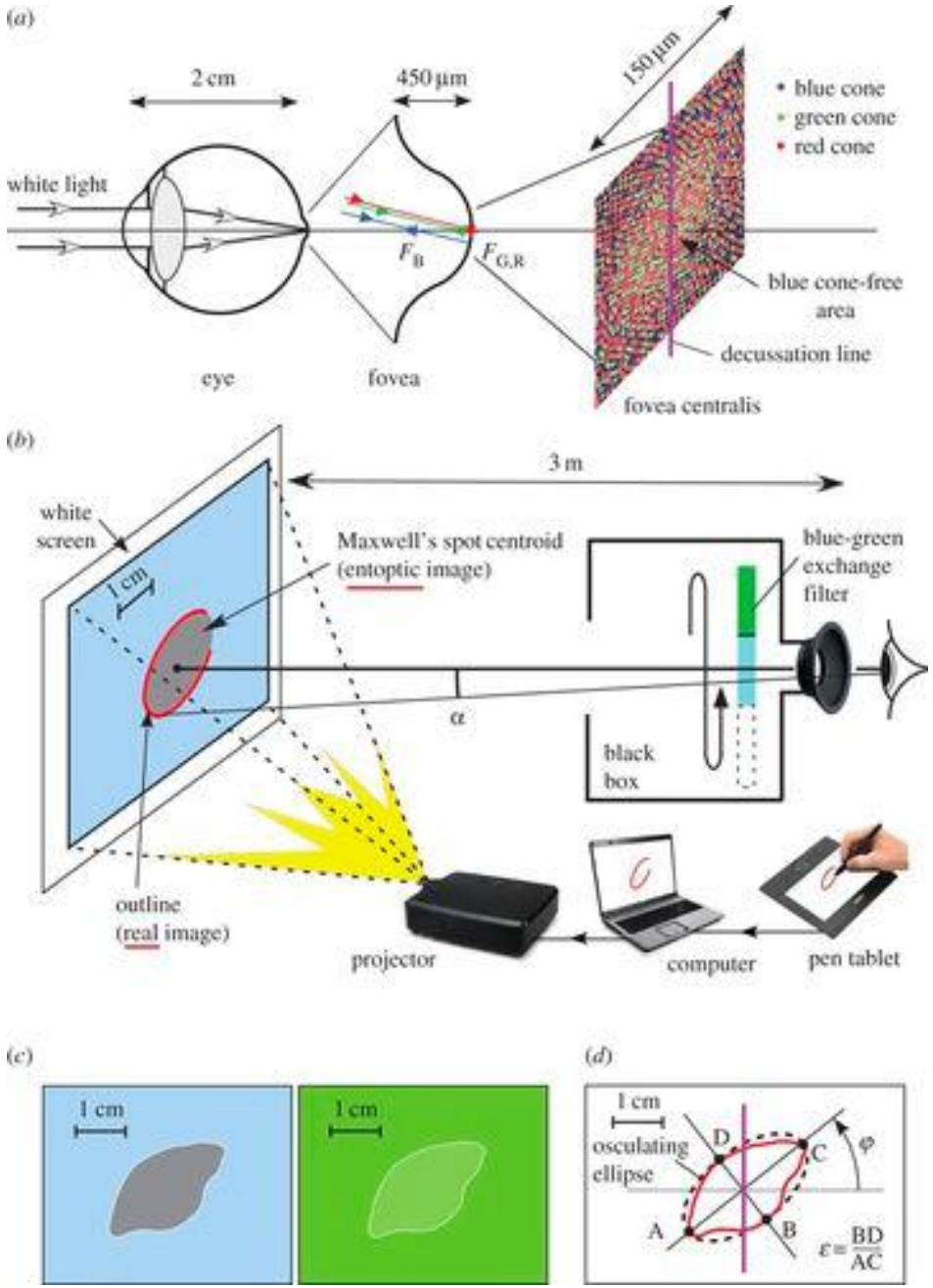
[3]Université Bretagne Loire, 35044 Rennes, France

SCAN ME



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OF THE ROYAL SOCIETY B
BIOLOGICAL SCIENCES

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Left-right asymmetry of the Maxwell spot centroids in adults without and with dyslexia

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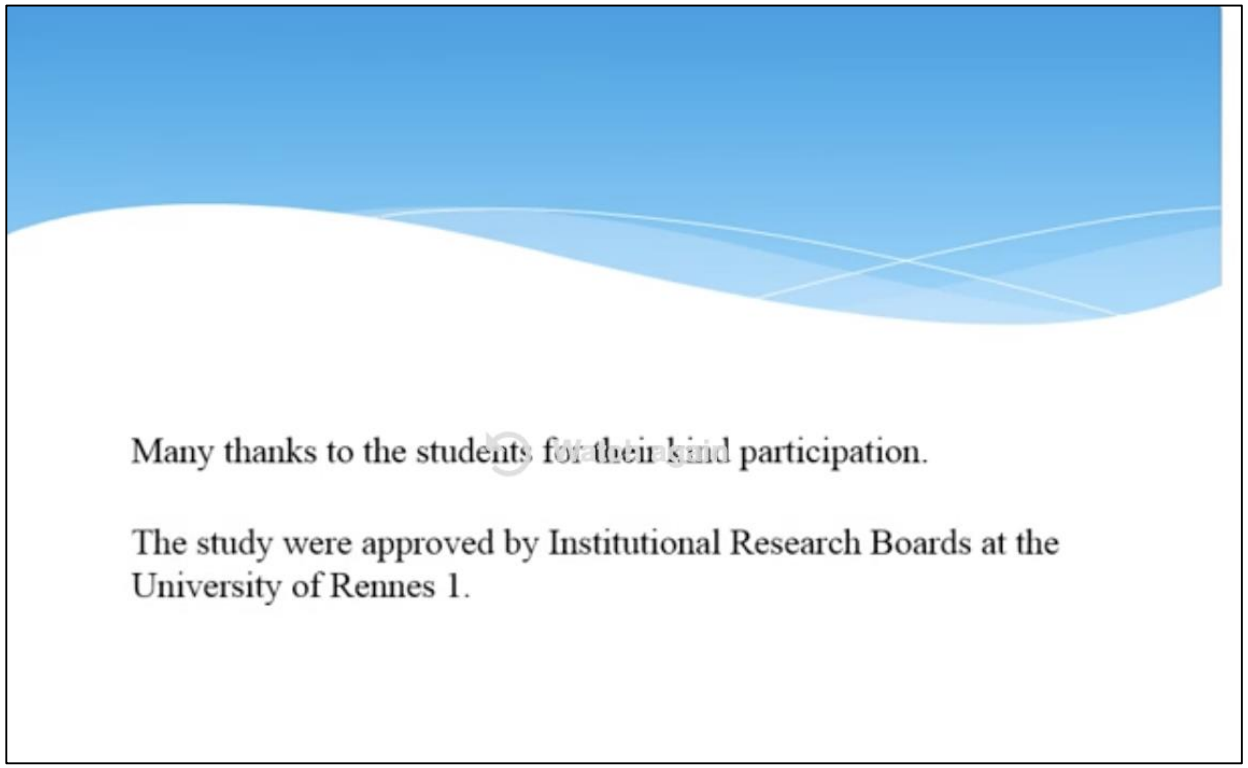

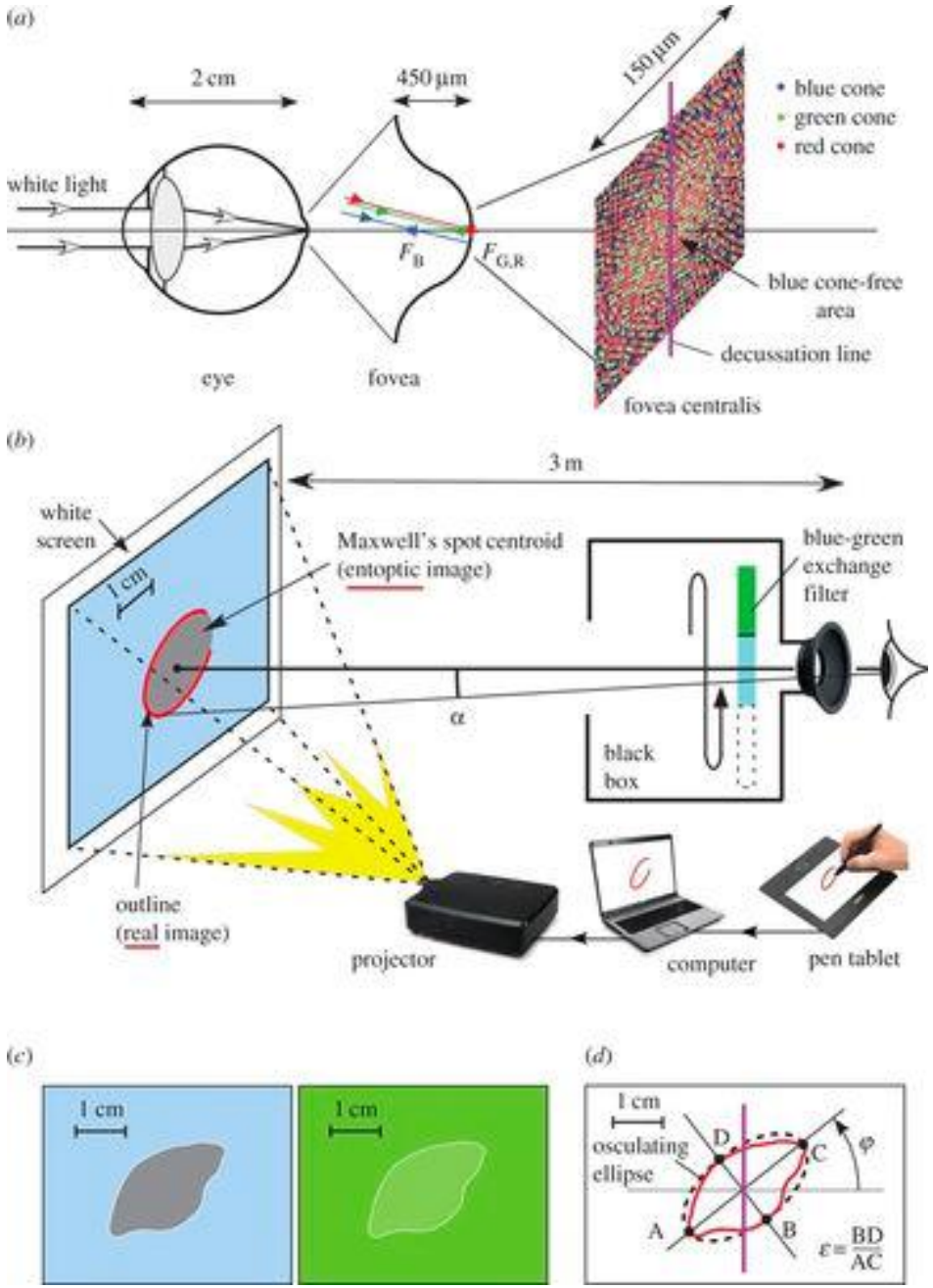

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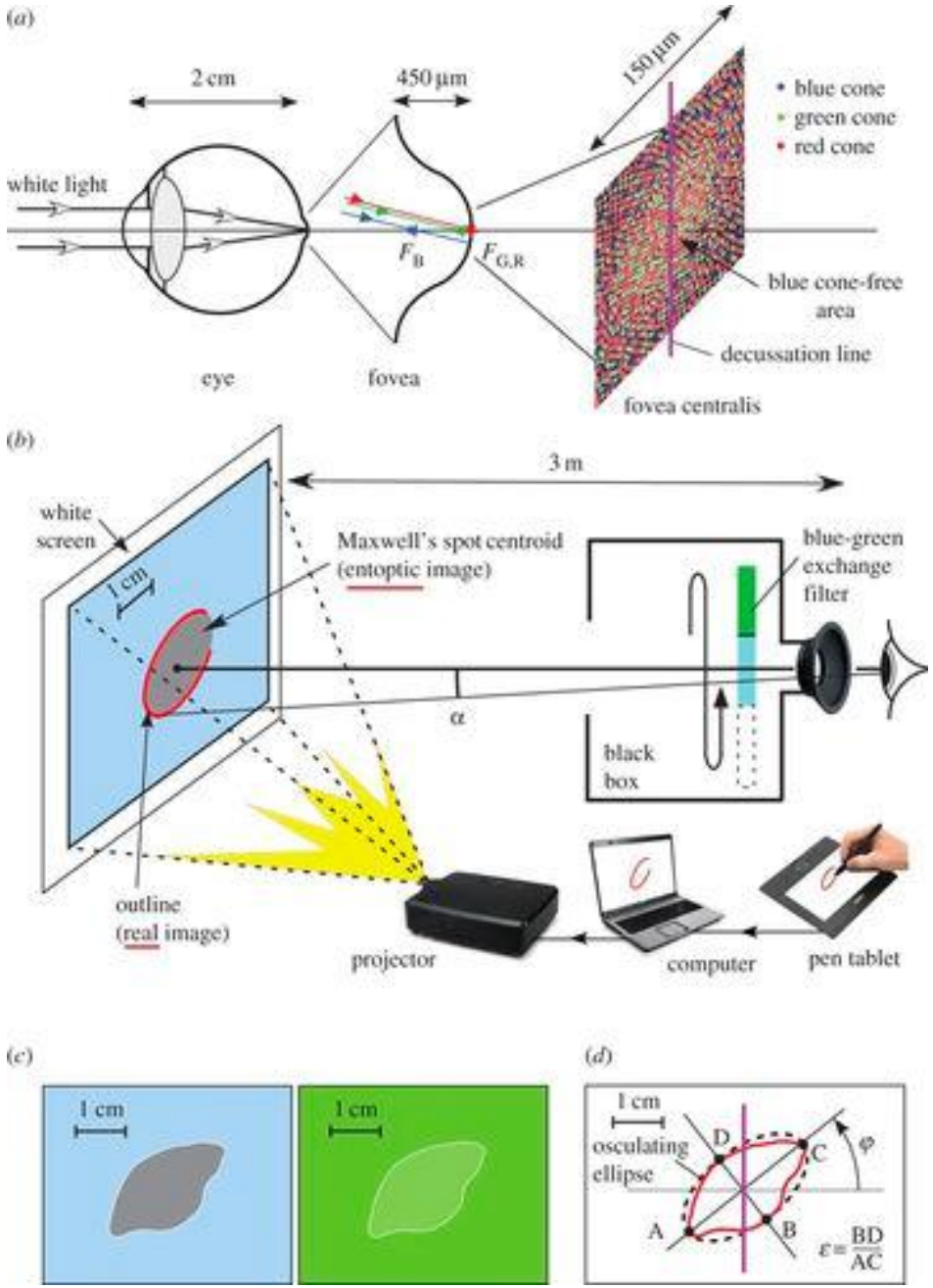

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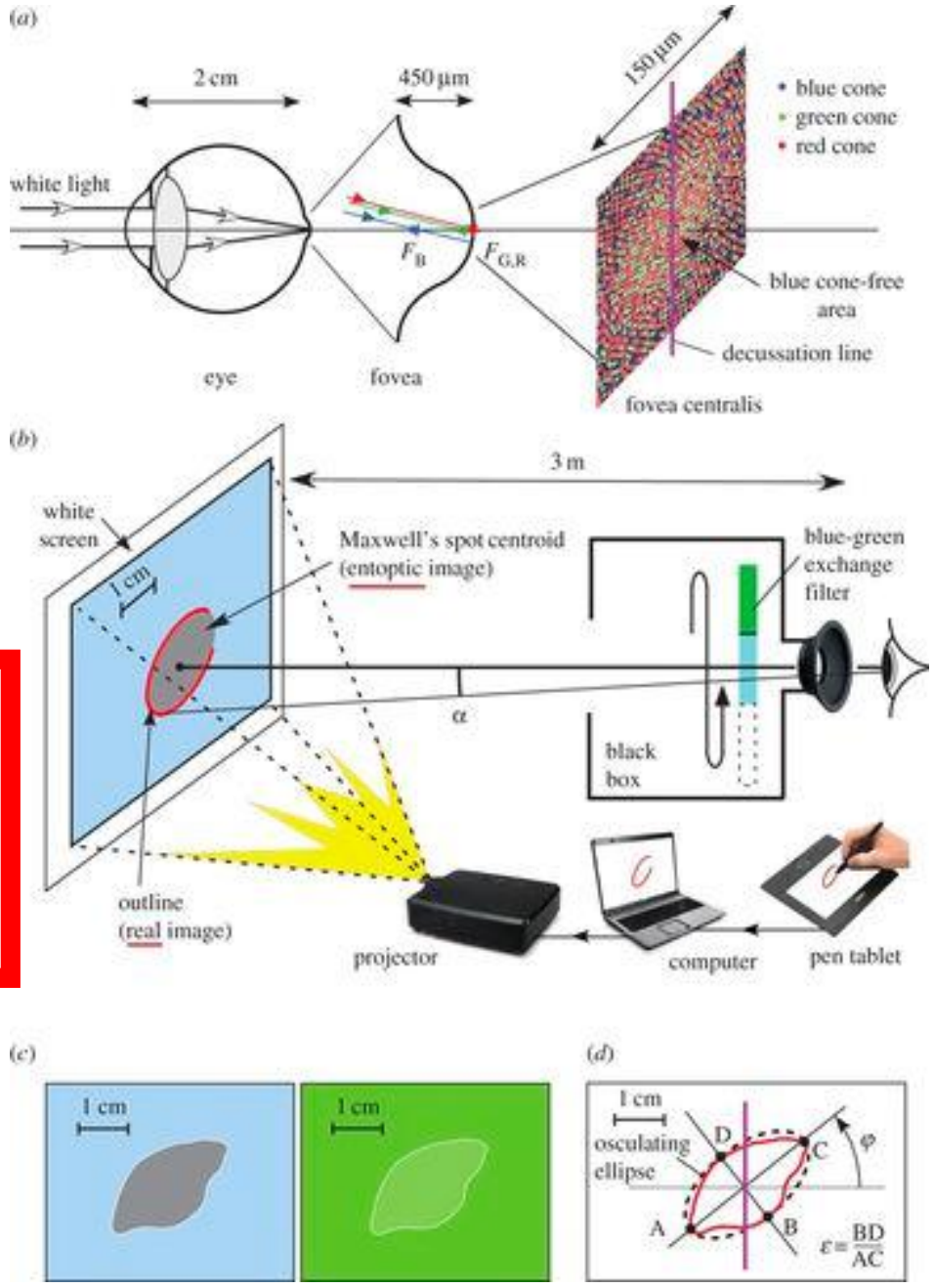

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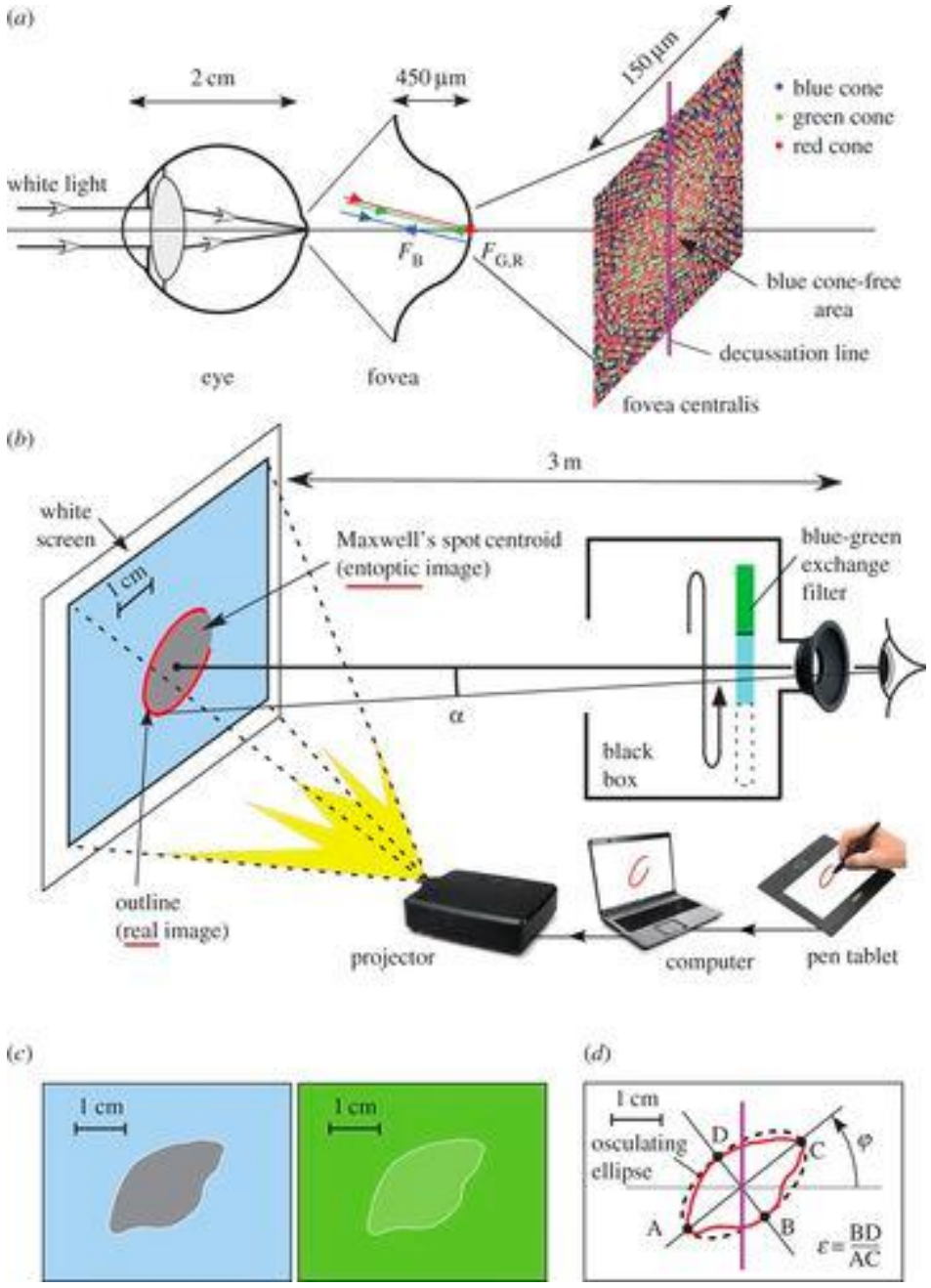

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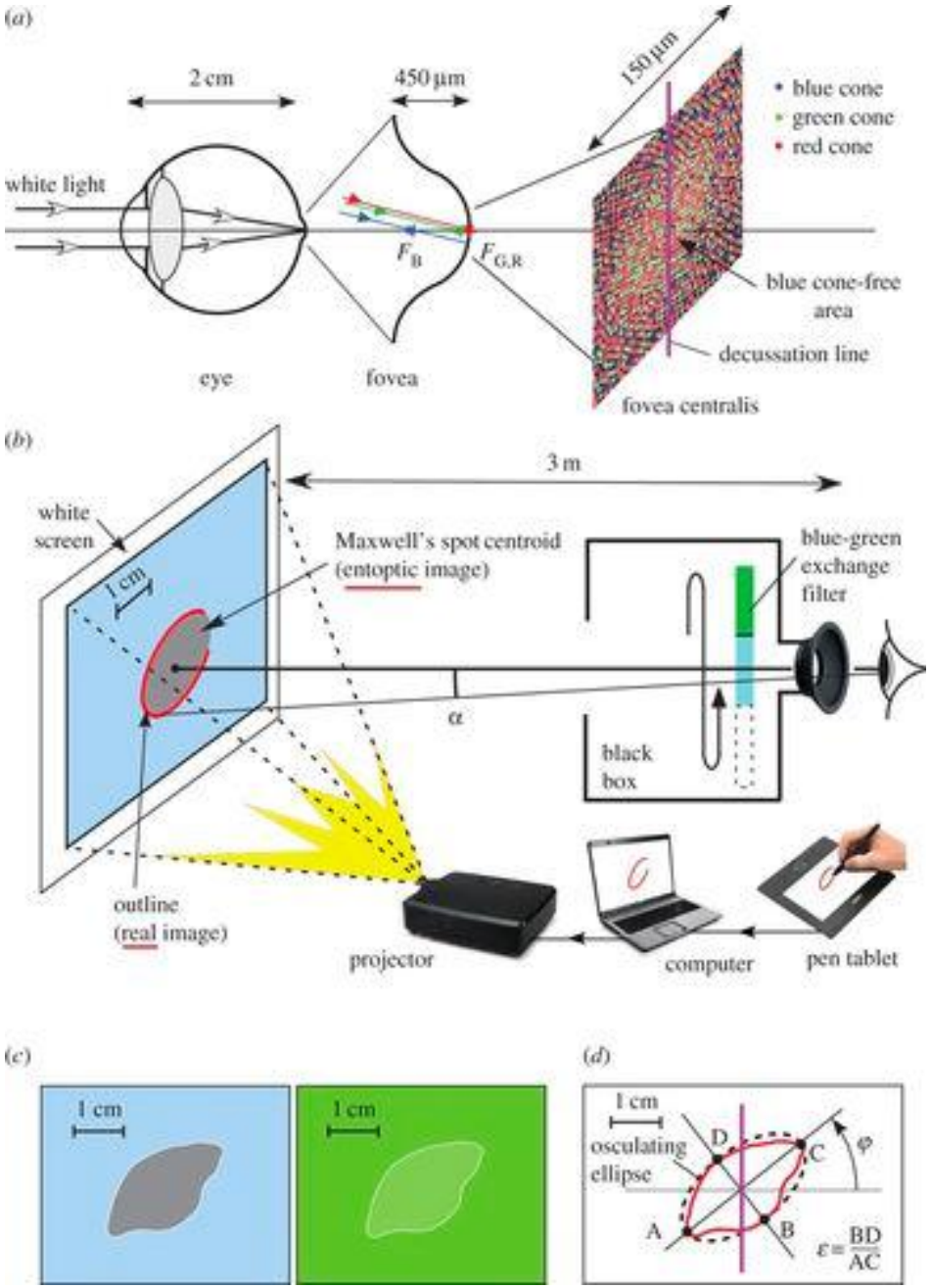

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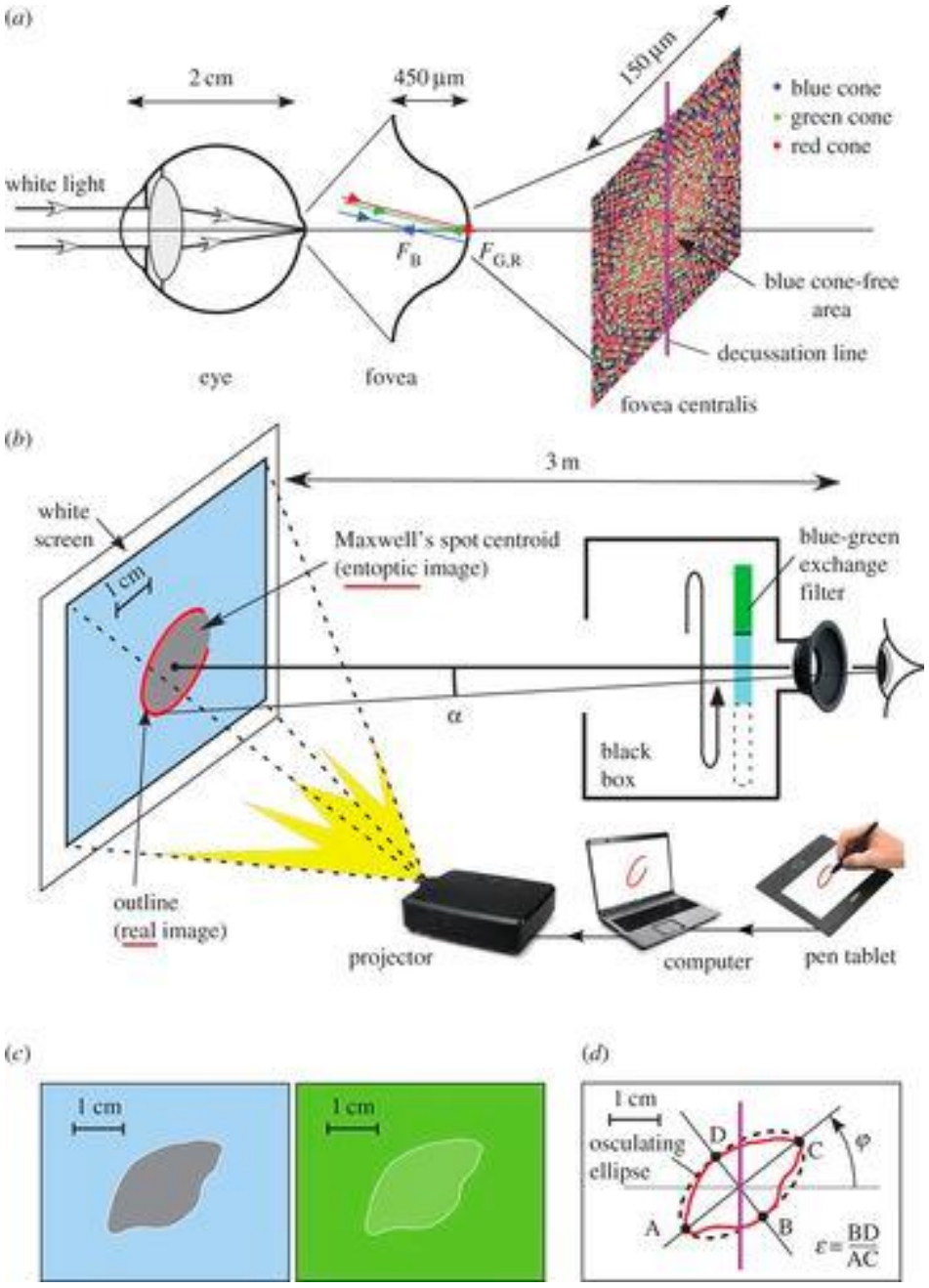

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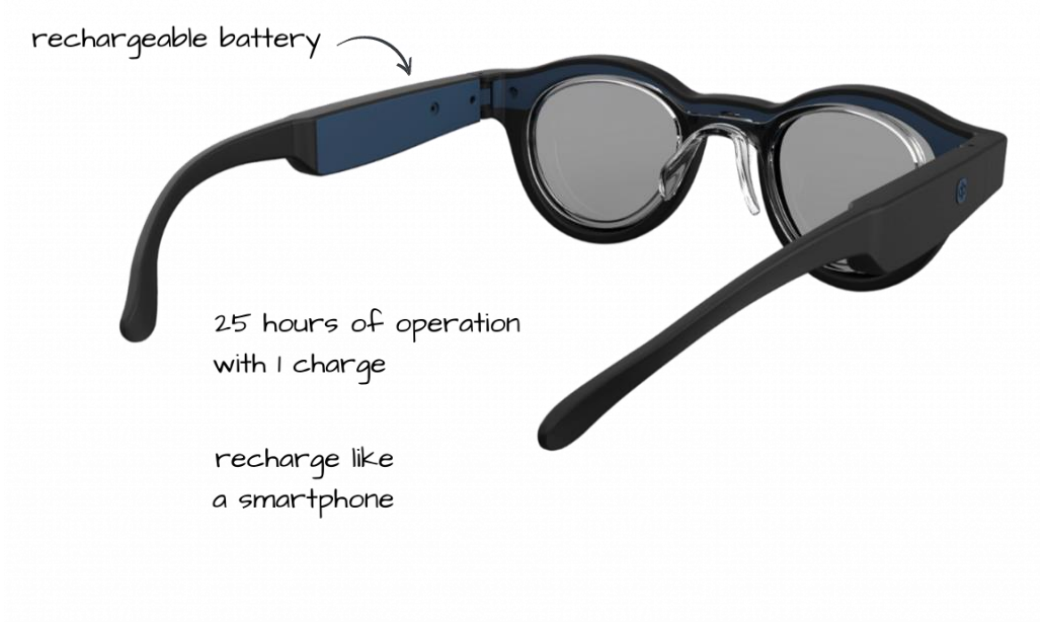

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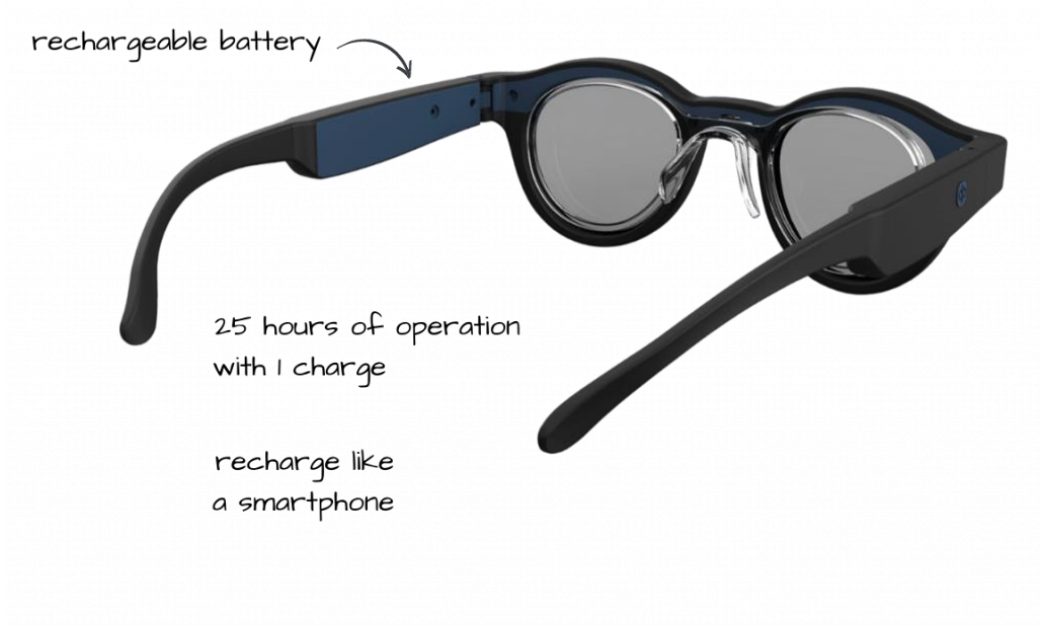

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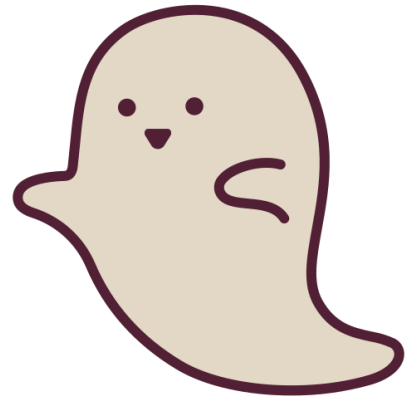

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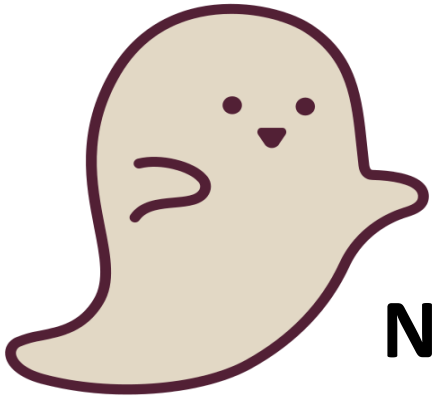

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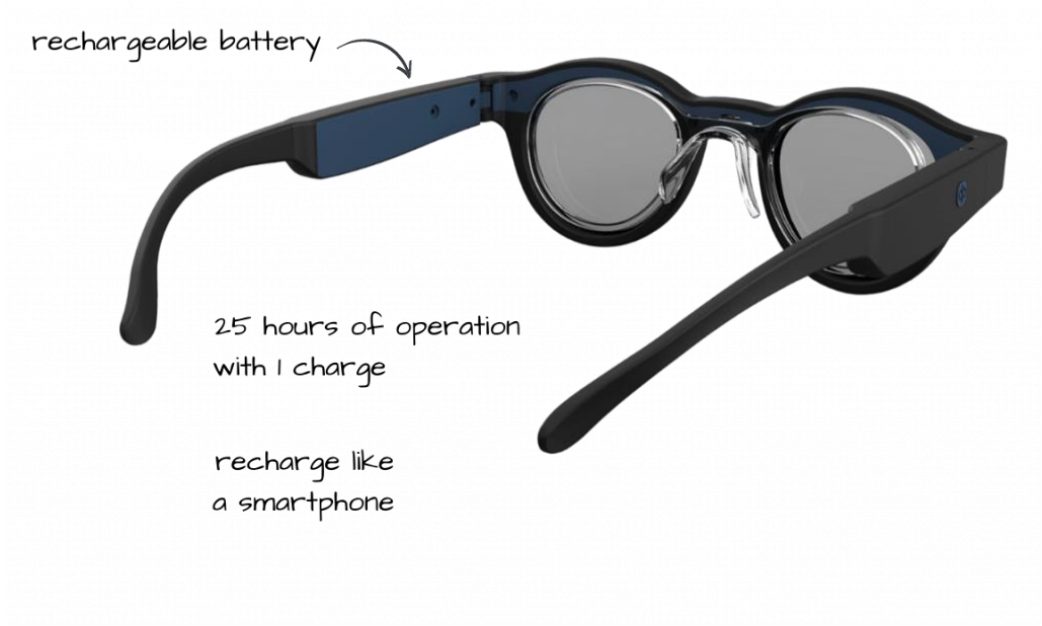

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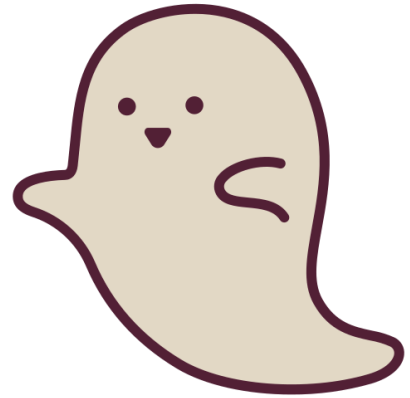

PROCEEDINGS
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Comment on Le Floch & Ropars (2017) 'Left–right asymmetry of the Maxwell spot centroids in adults without and with dyslexia'

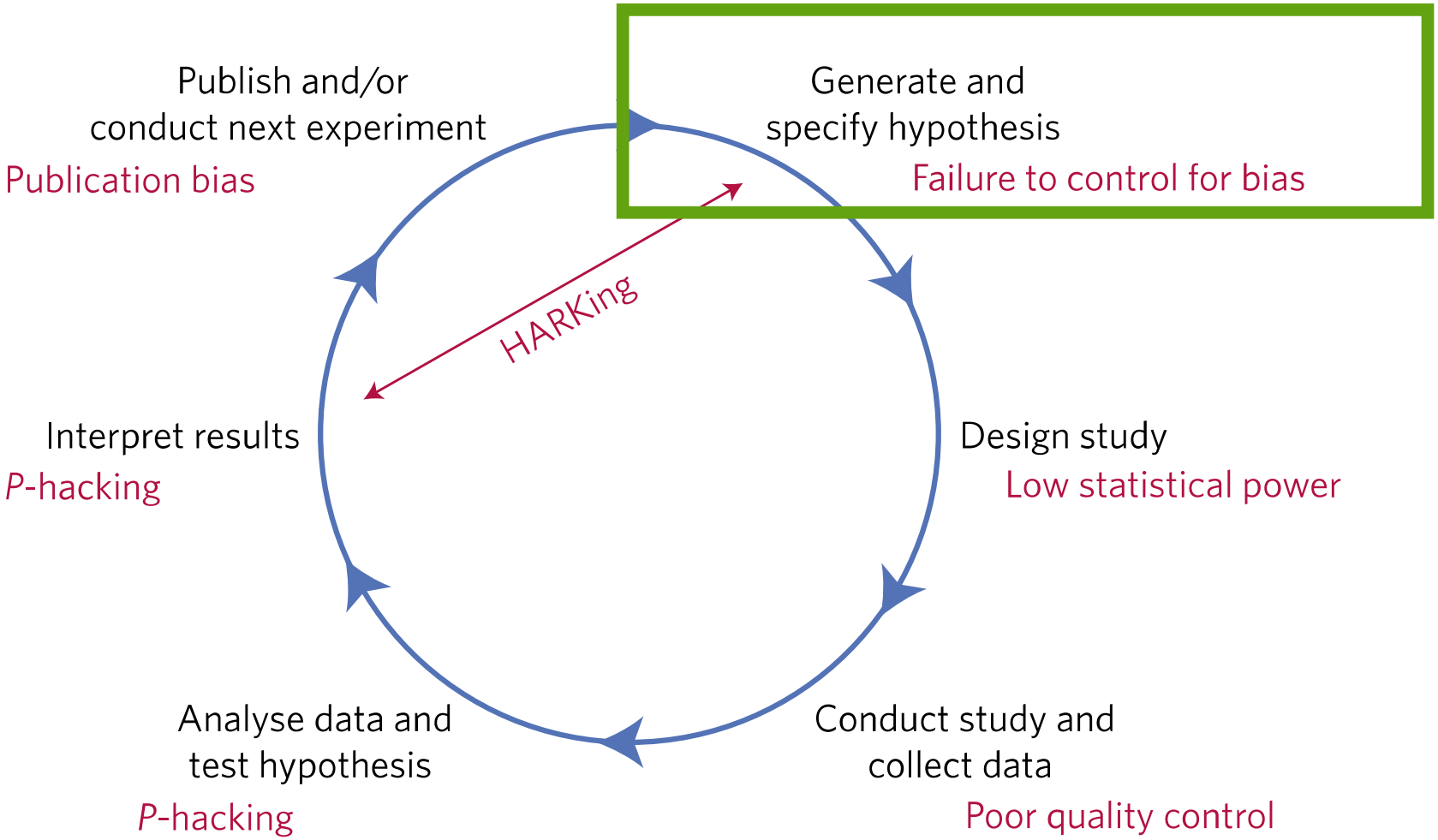
Florian Naudet[1,2], Mark Seidenberg[3] and Dorothy V. M. Bishop[4]

[1]Univ Rennes, CHU Rennes, Inserm, EHESP, Irset (Institut de recherche en santé, environnement et travail) - UMR_S 1085, Centre d'investigation clinique de Rennes (CIC1414), F-35000 Rennes, France
[2]Institut Universitaire de France (IUF), Paris, France
[3]University of Wisconsin-Madison, Madison 53706-1314, USA
[4]Department of Experimental Psychology, University of Oxford, Oxford OX1 3UD, UK

FN, 0000-0003-3760-3801; MS, 0000-0001-8519-3259; DVMB, 0000-0002-2448-4033

In October 2017, *Proceedings of the Royal Society B* published an article by Le Floch & Ropars [1] claiming that dyslexia could be caused by a visual anomaly that led to confusion between images from the two eyes when reading letters. This article attracted considerable media attention, with an Altmetric score of 829, including coverage by 83 news outlets, and has subsequently been cited in promotional material for devices that are designed to ameliorate the problem. A number of international experts raised concerns about the study on the post-publication peer review site PubPeer [2], but this has not led to any moderation of the claims made for therapeutic implications of the study. Given that our view is that the study suffers from methodological, interpretive and ethical problems that should have precluded publication, we are grateful to the editors for providing this opportunity to document these issues.

nature human behaviour



A manifesto for reproducible science

Marcus R. Munafò[1,2*], Brian A. Nosek[3,4], Dorothy V. M. Bishop[5], Katherine S. Button[6], Christopher D. Chambers[7], Nathalie Percie du Sert[8], Uri Simonsohn[9], Eric-Jan Wagenmakers[10], Jennifer J. Ware[11] and John P. A. Ioannidis[12,13,14]

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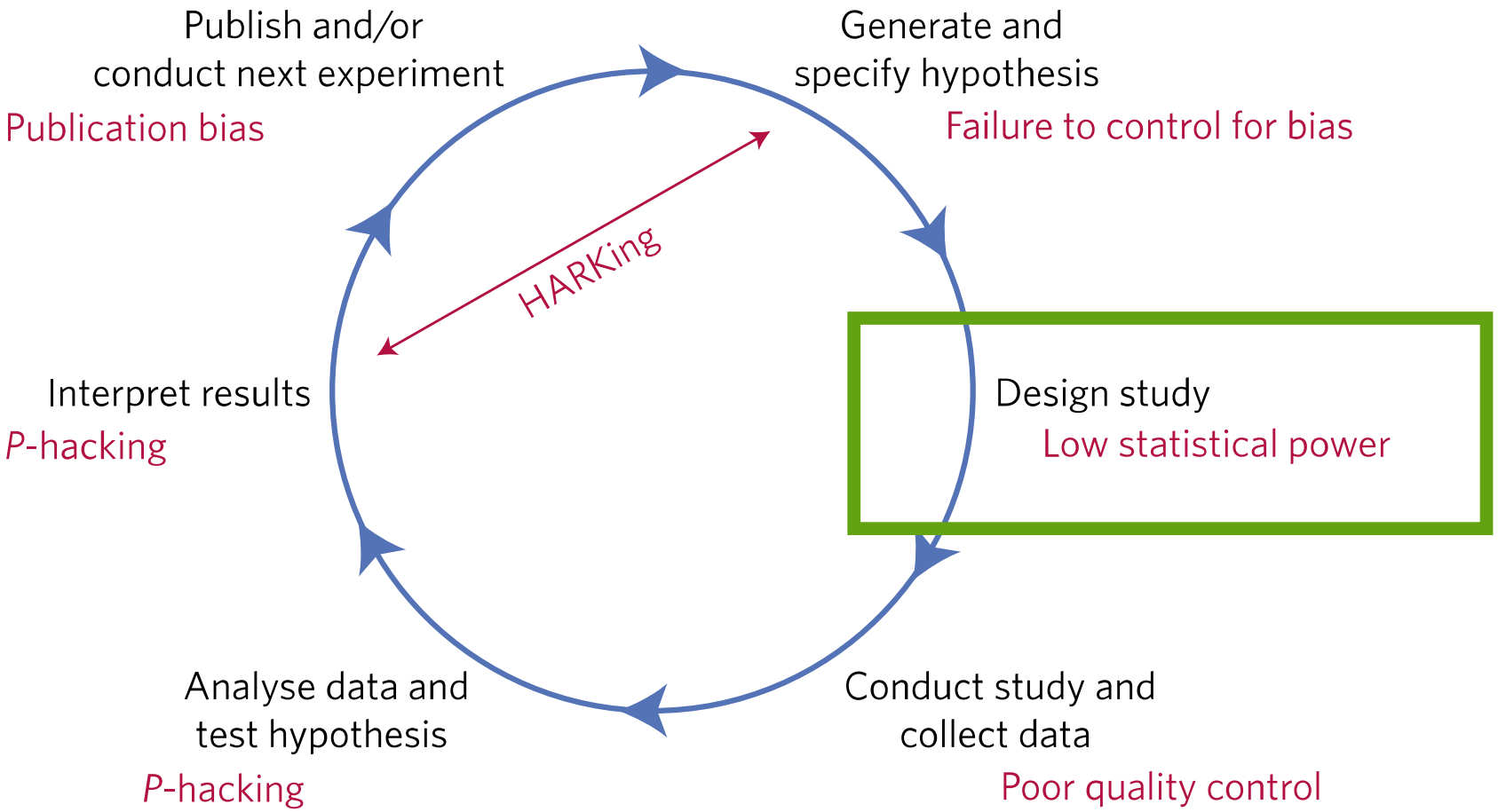

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Perspectives on Psychological SCIENCE

Registered Replication Report: Strack, Martin, & Stepper (1988)

E.-J. Wagenmakers*, T. Beek*, L. Dijkhoff *, Q. F. Gronau,*
A. Acosta, R. B. Adams, Jr., D. N. Albohn, E. S. Allard, S. D. Benning,
E.-M. Blouin-Hudon, L. C. Bulnes, T. L. Caldwell, R. J. Calin-Jageman,
C. A. Capaldi, N. S. Carfagno, K. T. Chasten, A. Cleeremans, L. Connell,
J. M. DeCicco, K. Dijkstra, A. H. Fischer, F. Foroni, U. Hess, K. J. Holmes,
J. L. H. Jones, O. Klein, C. Koch, S. Korb, P. Lewinski, J. D. Liao, S. Lund,
J. Lupianez, D. Lynott, C. N. Nance, S. Oosterwijk, A. A. Ozdoğru,
A. P. Pacheco-Unguetti, B. Pearson, C. Powis, S. Riding, T.-A. Roberts,
R. I. Rumiati, M. Senden, N. B. Shea-Shumsky, K. Sobocko, J. A. Soto,
T. G. Steiner, J. M. Talarico, Z. M. van Allen, M. Vandekerckhove,
B. Wainwright, J. F. Wayand, R. Zeelenberg, E. E. Zetzer, and R. A. Zwaan
*Proposing authors

Multilab direct replication of: Study 1 from Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, *54*, 768-777.

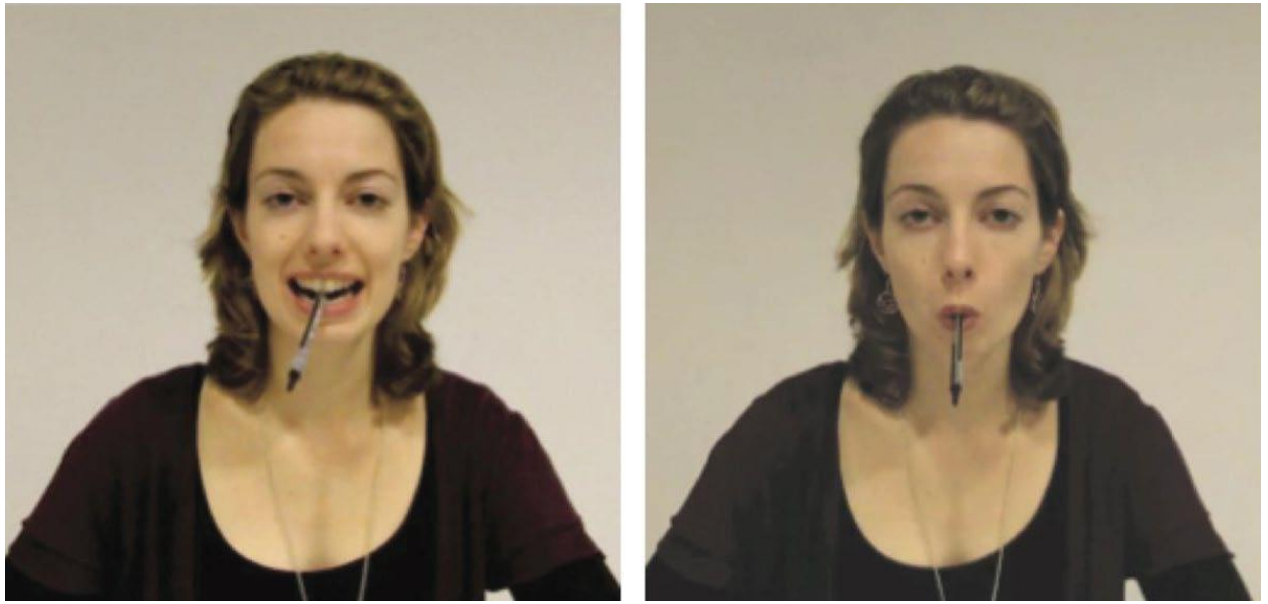
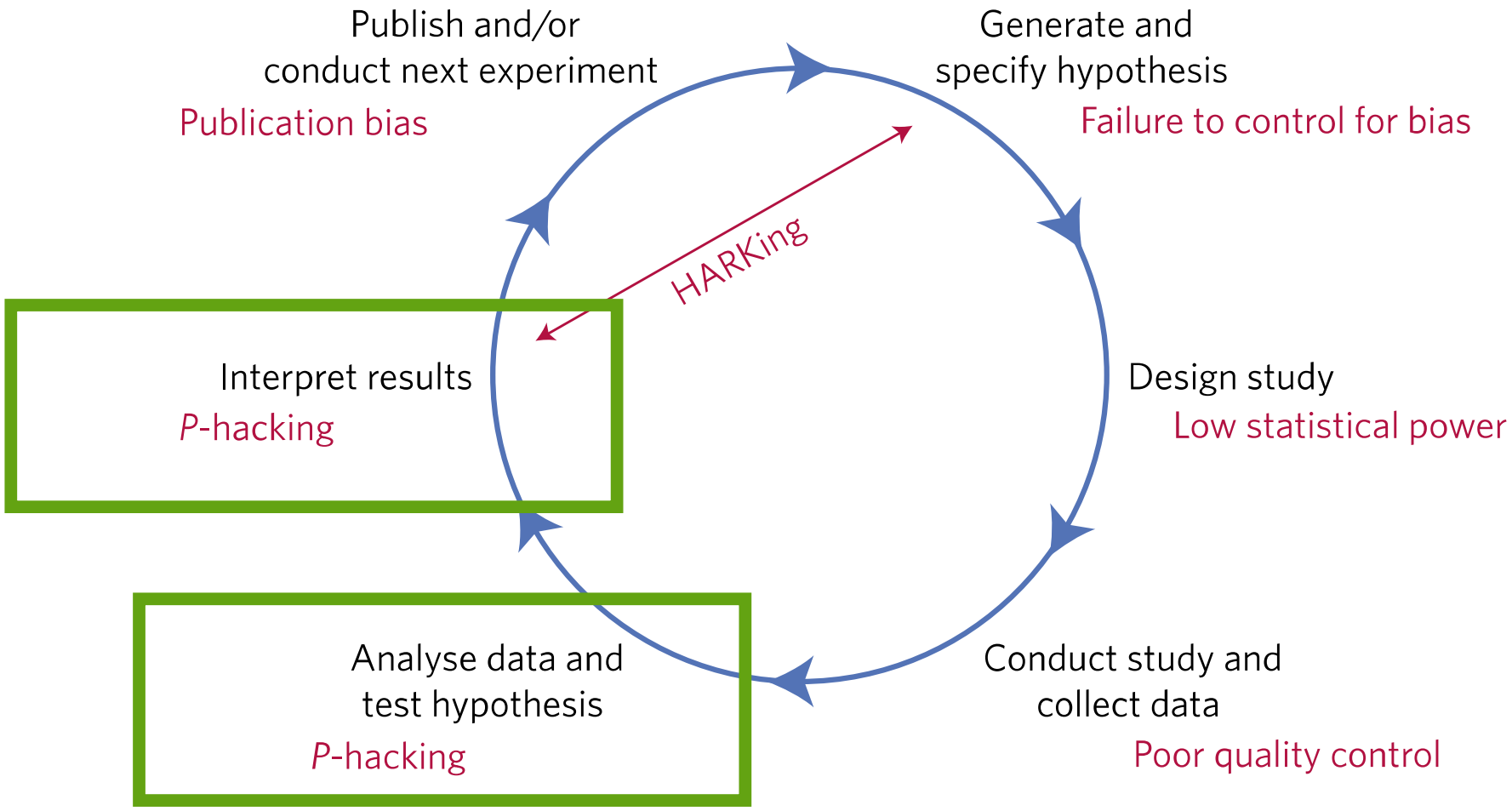


Fig. 1. Illustration of the two ways in which participants were instructed to position the pen for rating the funniness of cartoons. Left panel: the pen is held with the teeth, inducing a facial expression similar to smiling. Right panel: the pen is held with the lips, inducing a facial expression similar to pouting. Figure available at http://tinyurl.com/zm7p9l7 under CC license https://creativecommons.org/licenses/by/2.0/.

nature human behaviour



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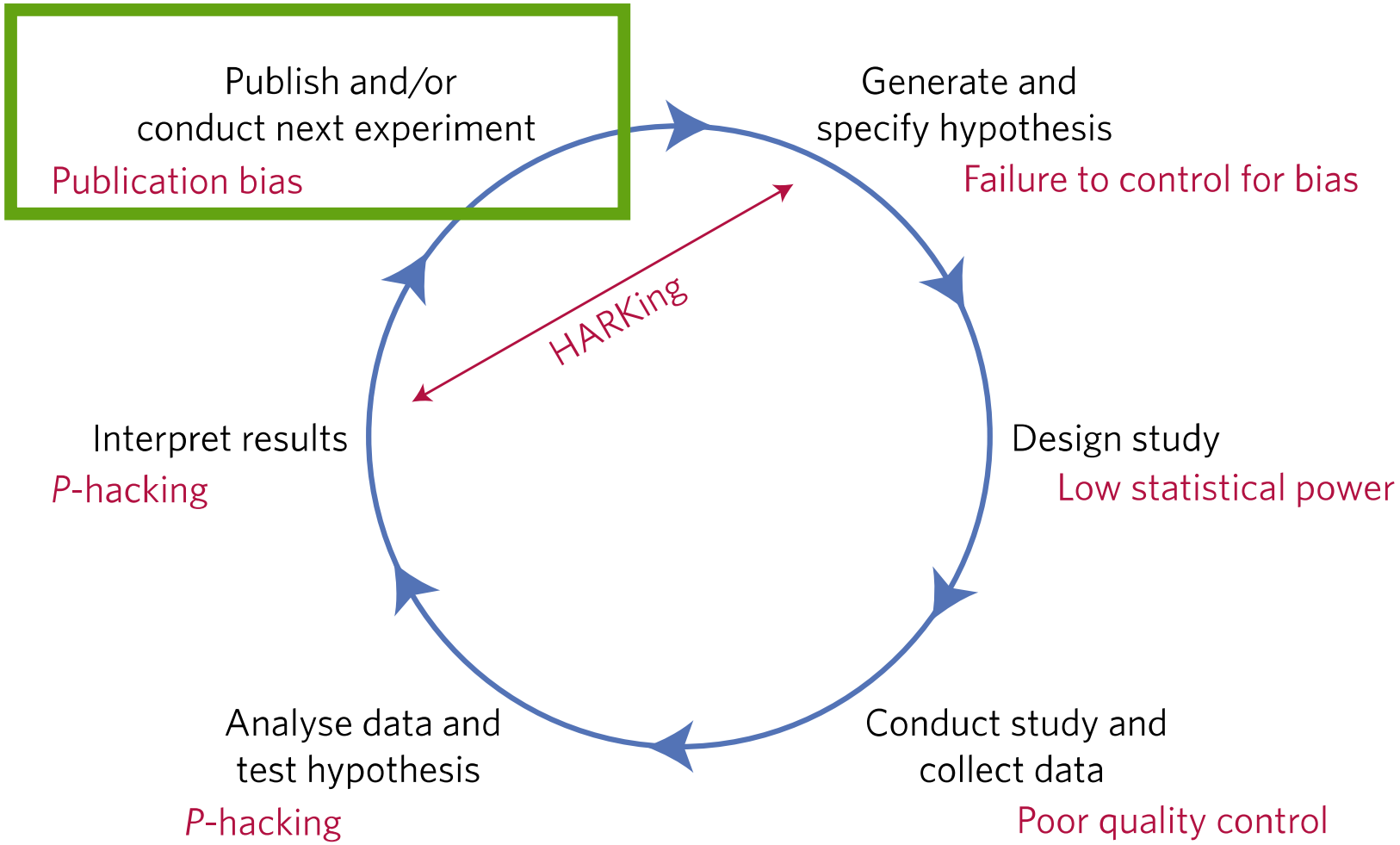

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- Not sure which reporting guideline to use?
- Reporting guidelines under development
- Visit the library for more resources

Reporting guidelines for main study types

Randomised trials	CONSORT	Extensions
Observational studies	STROBE	Extensions
Systematic reviews	PRISMA	Extensions
Study protocols	SPIRIT	PRISMA-P
Diagnostic/prognostic studies	STARD	TRIPOD
Case reports	CARE	Extensions
Clinical practice guidelines	AGREE	RIGHT
Qualitative research	SRQR	COREQ
Animal pre-clinical studies	ARRIVE	
Quality improvement studies	SQUIRE	Extensions
Economic evaluations	CHEERS	

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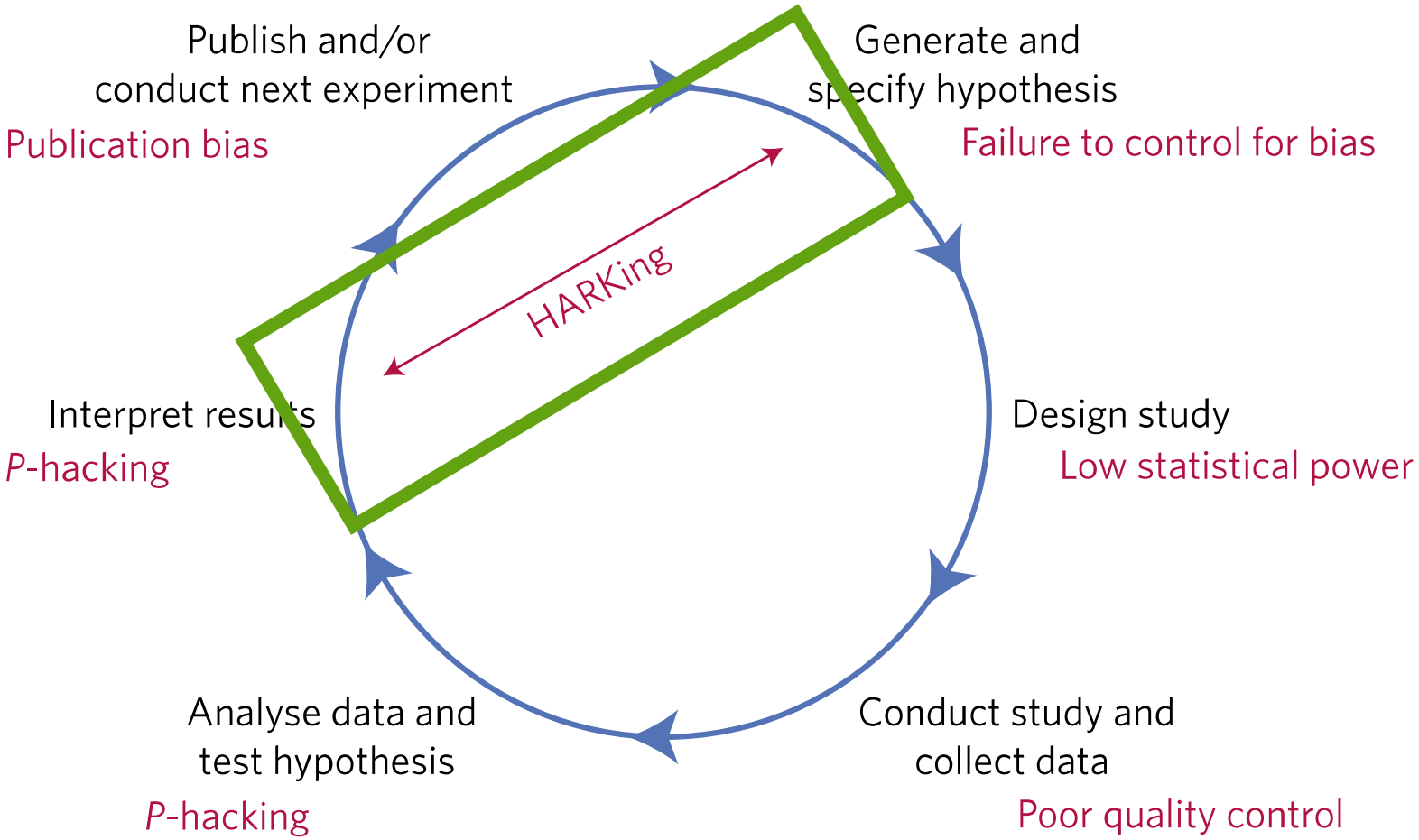

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Registered Reports: Peer review before results are known to align scientific values and practices.

The NEW ENGLAND JOURNAL of MEDICINE

A second concern held by some is that a new class of research person will emerge — people who had nothing to do with the design and execution of the study but use another group's data for their own ends, possibly stealing from the research productivity planned by the data gatherers, or even use the data to try to disprove what the original investigators had posited. There is concern among some front-line researchers that the system will be taken over by what some researchers have characterized as "research parasites."

Data Sharing

Dan L. Longo, M.D., and Jeffrey M. Drazen, M.D.

The NEW ENGLAND JOURNAL of MEDICINE

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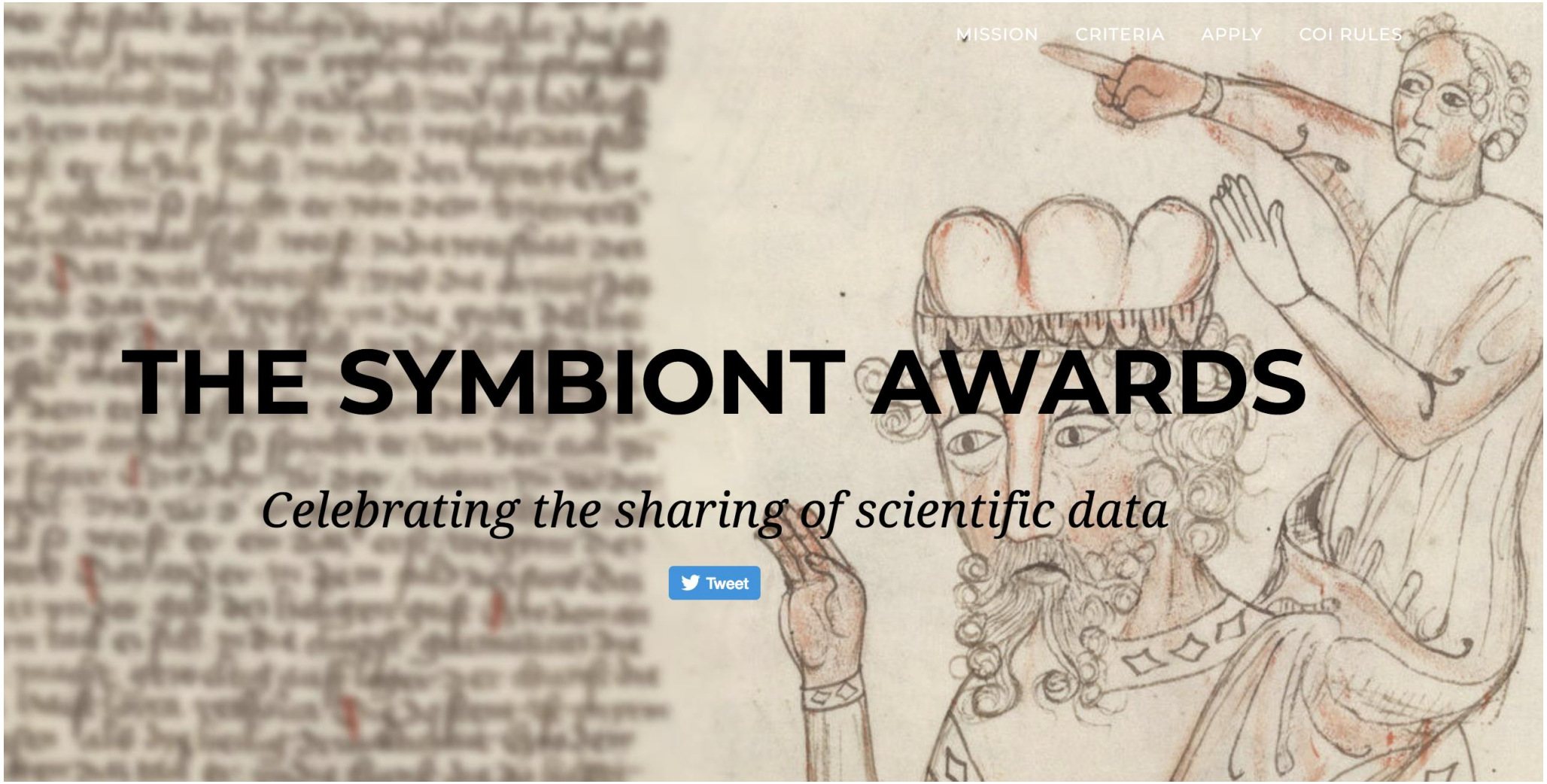

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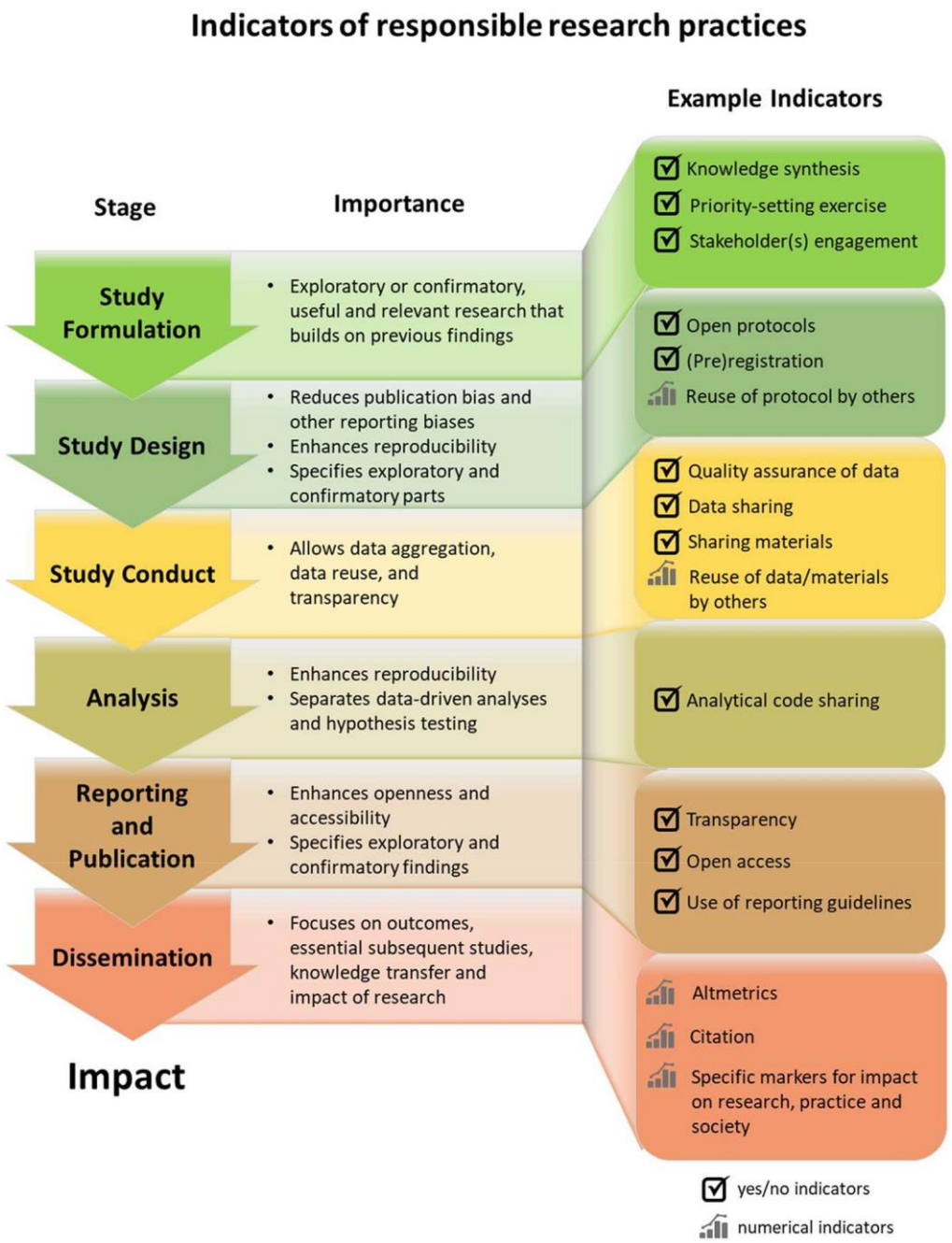

Fig 1. Indicators of responsible research practices.

https://doi.org/10.1371/journal.pbio.3000737.g001

ESSAY

The Hong Kong Principles for assessing researchers: Fostering research integrity

David Moher[1,2]*, Lex Bouter[3,4], Sabine Kleinert[5], Paul Glasziou[6], Mai Har Sham[7], Virginia Barbour[8], Anne-Marie Coriat[9], Nicole Foeger[10], Ulrich Dirnagl[11]

The Organization for Ethical and Responsible Research at Inserm : LORIER

The aim of the LORIER programme is to build and share with you a culture of ethical and responsible research that meets the highest international standards.

The role of the LORIER portal is to facilitate the co-construction process and the sharing of resources and tools that will help instate sound practices among researchers.

Download LORIER leaflet :
-> in english : low-definition file or high-definition file
-> in french : low-definition file or high-definition file

KEY CHALLENGES

- Based on values, not evidence.
- Evidence isn’t free from bias.
- Sometimes, evidence exists but isn’t implemented.
  - Implementation requires strong coordination.
  - Many initiatives and a lack of coordination.
- Additional motivations
  - The move toward open science is slow.
  - « When a measure becomes a target, it ceases to be a good measure » (a.k.a. Goodhart's law).

Global Research Initiative on Open Science

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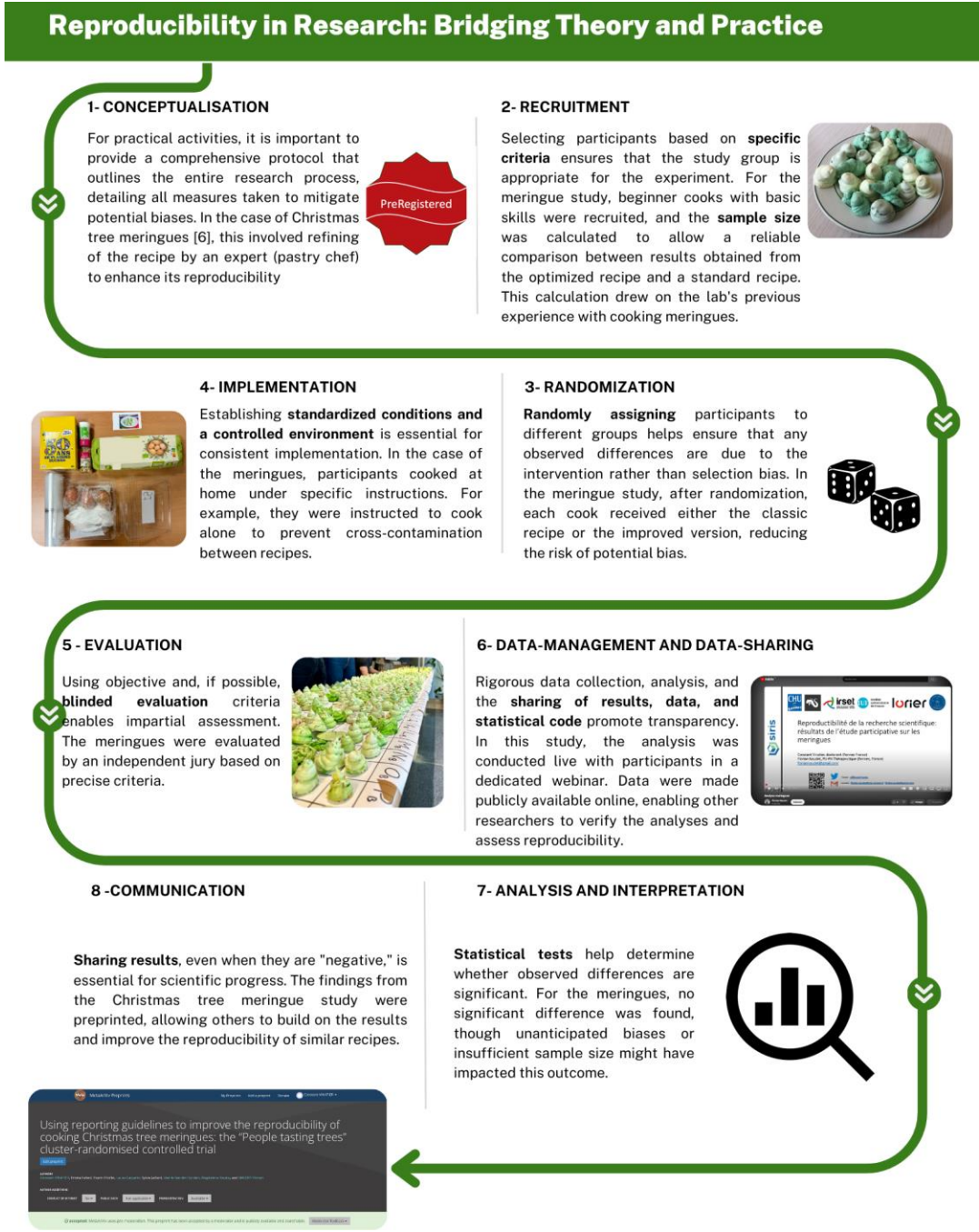

Public Engagement with Research Reproducibility

Constant Vinatier, Magdalena Kozula, Veerle Van den Eynden, Laura Caquelin, Hynek Roubik, Inge Stegeman, Florian Naudet

WORK IN PROGRESS


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2) To provide standardized feedback both on the preprint server (whenever possible) and by e-mail
3) To offer the possibility to contact the evaluator

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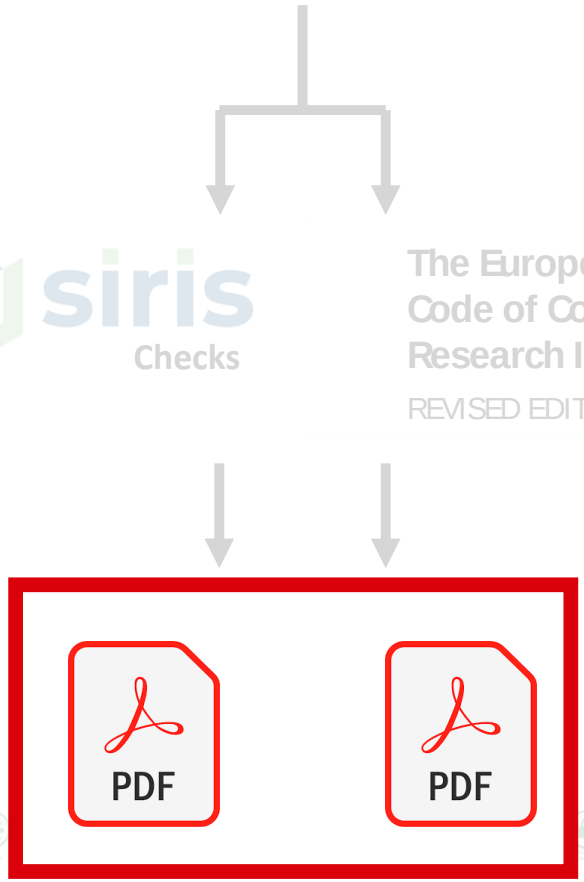
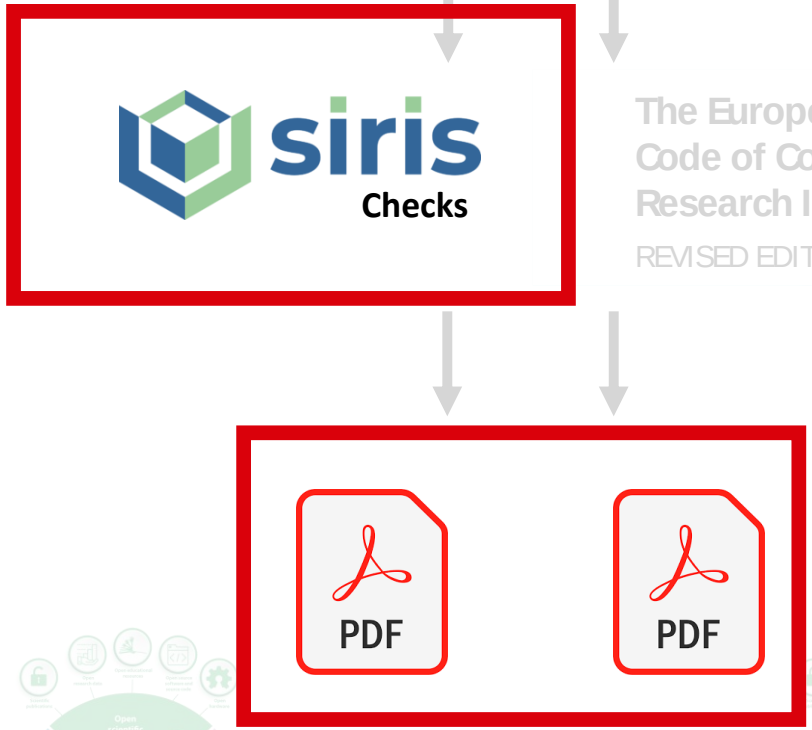


Following the hypothesis that reproducibility checks increase data sharing rates from 20% to 40 % we need to include a minimum of 80 studies per group (i.e. 160 studies) to achieve $\alpha=0.05$ and $\beta=0.2$. This calculation will be adjusted after a small preliminary extraction on the different platforms and institution to evaluate the actual percentage of data sharing.

400 evaluations

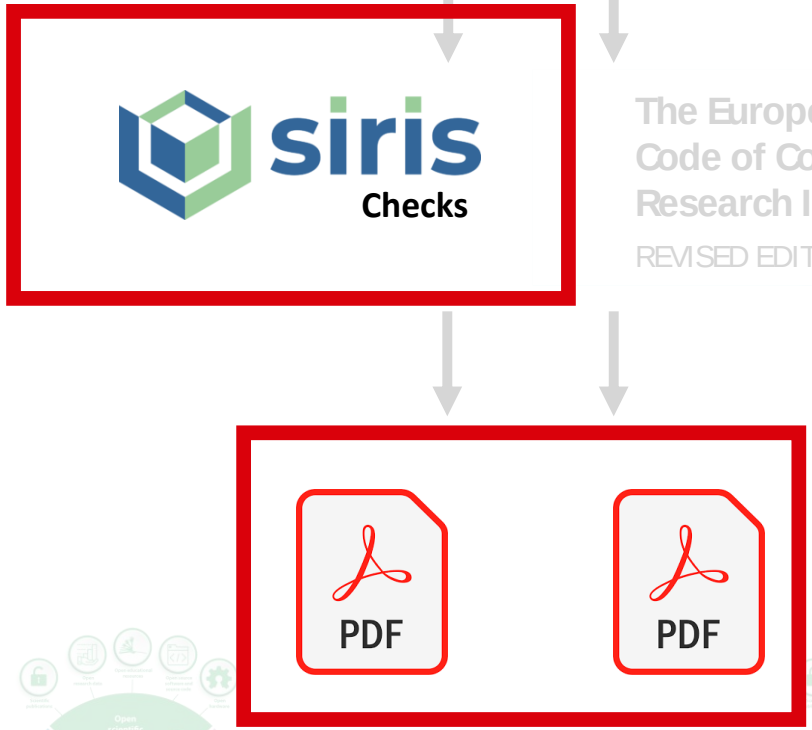
80 checks



80 per group = 160*2 blinded outcome assessors = 320 outcome assesments

400 evaluations

80 checks



80 per group = 160*2 blinded outcome assessors = 320 outcome assesments

Who ?

1. Researchers/engineers from our institutions with a clear idea of their background and skills - methods reproducibility / computational reproducibility-. It includes PhD students and Post doctoral researchers
2. With sufficient background in research
3. As broad as possible, then selected based on their specific skills for each project

Where ?

1. OSIRIS members
2. Institutions participating in OSIRIS (e.g. LORIER, Utrecht, MATE, etc.)
3. Reproducibility networks (e.g. Swiss, French, Dutch)
4. Other European projects

Why ?

1. Scientific activities, e.g. organization of trainings (for LORIER, for MATE)
2. Participation in the development of studies on reproducibility
3. Participation in studies: (computational reproducibility / reproducibility of methods): ask if they have skills. Could work for research but also creation of badges?
4. Verification of open science practices
5. Reproduce results with data / code.

Any incentives ?

1. Training in open science practices
2. Participating in collaborative research
3. Improving scientific practices
4. Participating in improving the scientific practices of researchers
5. Possibility of having one's own scientific articles evaluated (obtaining a ‘badge’ or a certificate)
6. Badge for being a reproducibility champion/ambassador
7. Being member of the authorship group for the collaborative project depending on a minimal number of contributions that will be defined prior running the studies
8. Facilitating collaboration by proposing new ideas to network members, who are free to participate or not
9. Possibility of presenting your work to others, giving visibility to your work

How to keep it alive after the project?

1. Linking the network with already existing networks ;
2. Avoiding overlap ;

OBJECTIVES

- Produce in-depth reviews of existing research on Open Science worldwide, in order to synthesize current knowledge and identify opportunities and challenges.
- Formulate recommendations for Open Science policies based on the results of the scientific research highlighted by the reviews.
- Propose a research agenda to fill gaps in current knowledge on Open Science and promote new research on the subject.

Existe-t-il une crise de la reproductibilité?

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