



Registered report replication of cognitive dissonance

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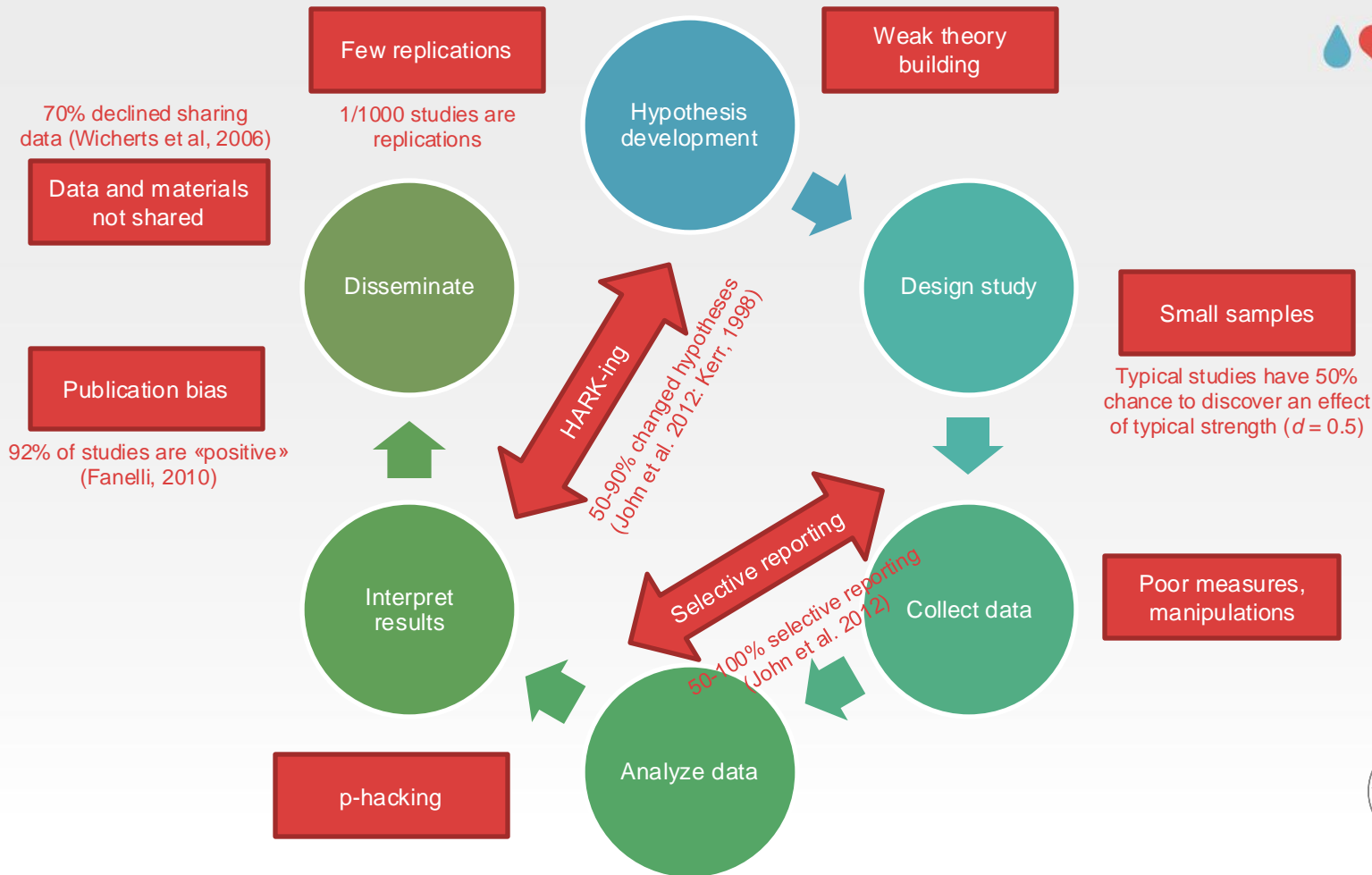
Agenda

- Registered reports
- Cognitive dissonance





Registered reports





Traditional research approach

- The researcher decides:
 - What is a good RQ
 - What is a good way to test
 - What is a convincing argument
- A trust-based process
- Publication as end-point



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Traditional publication model

- Multiple revision rounds
- Multiple journal attempts
- Unpredictable publication pipeline (and outcome)
- Hard to get good peer reviewers
- Feedback when it's too late to make changes
- Tax-paid work for commercial entities
 1. Work as authors
 2. Work as reviewers
 3. Work as editors
 4. Author processing charges
 5. University subscriptions
- No guarantee for research quality



@eugenia / unsplash.com





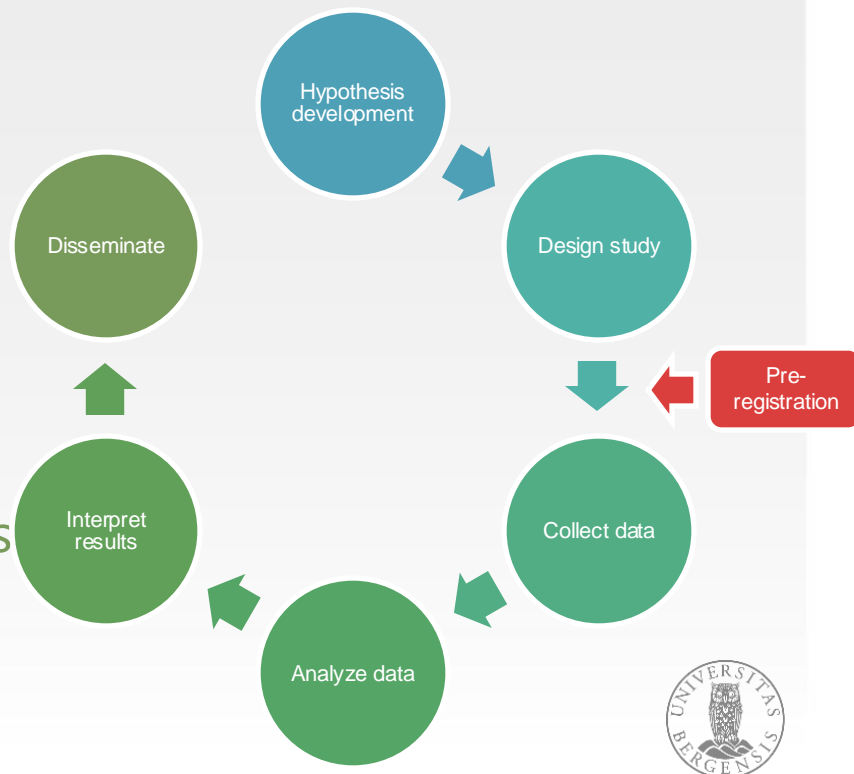
Downsides to journal publications

- Slow process (some issues are time-sensitive, want to add to ongoing debates, aim to make research public)
- Resource cost for reviews and revisions (for authors, reviewers, and editors)
- Published articles (or number of pages) claimed to be a limited resource
- Peer-reviews (and journals) are of varying (and unknown) quality
- Old boy's club regime (evaluates by "prestige" of authors and institutions)
- Published paper seen as being above criticism
- Does not guarantee research quality (replication rates are low)
- Publication bias (journal preference for some types of findings)
- File-drawer effect (authors chose not to publish some research)
- Paywalled product (limits the readership)
- A for-profit entity claims ownership to the product (tax-payers pay for the work of authors, reviewers, editors, and libraries)



Preregistration

- Declaring what the study will do:
 - What is the hypothesis,
 - Which method will be used,
 - How will it be analysed,
 - What will we consider important
- Leads to:
 - Honest reporting / tied hands
 - Transparency / trust, accountability
 - Provides structure, a research plan, reproducible results





The preregistration revolution

- In 10 years:
 - From being a curiosity...
 - To be an expectation (when hypothesis testing)
 - Non-registered research viewed with suspicion?
- Remaining challenges
 - Publication bias
 - Research waste
 - Pipeline bottlenecks
 - Research ownership

Nosek et al. (2018). The preregistration revolution. *PNAS*, 115(11).





Unresolved issues

- «Good» results are easier to publish
 - Incentives → Questionable research practices
 - Incentives \neq Research quality
- Issues with preregistrations
 - Study is not necessarily completed
 - Study is not necessarily published
 - Preregistrations are seldom 100% followed
 - Readers do not check preregistration
- Fundamental issue remains:
 - Researchers doing their best to examine an issue...
 - ...and decide what and how to publish...
 - Can lead to hundreds of supporting studies...
 - ...surviving across decades...
 - ...to later be revealed as a false positive
 - Example: Ego-depletion theory
 - Example: Mortality salience



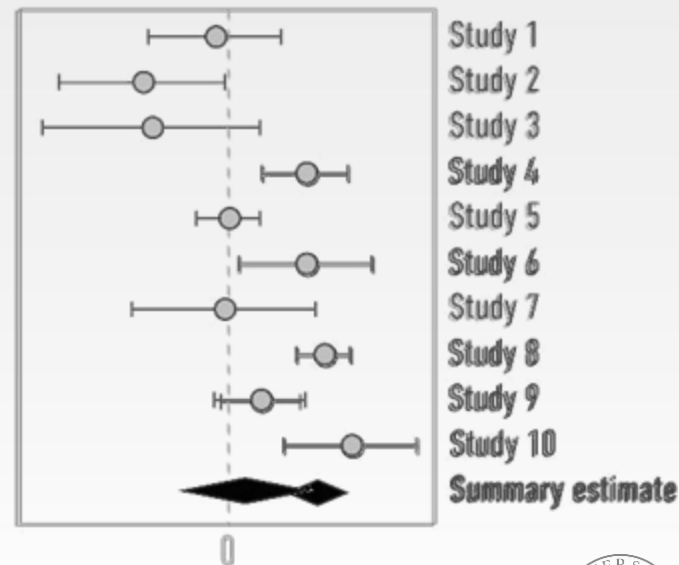


Publication bias

- *Results look “unclear”*
- *Contradicts our past findings*
- *Team member does not like results*
- *Need a “strong result” or “a coherent story”*
- *Uncertain about aspects of research*
- *Journal only accepts “novel results”*
- *Journals require stronger evidence when “going against the grain”*
- *Peer reviewers think result “muddles the water”*
- *Researchers prioritize working on other studies*

- All effects in literature are exaggerated
- Some effects are false positives

Effect across all performed studies





What if we had a model that...

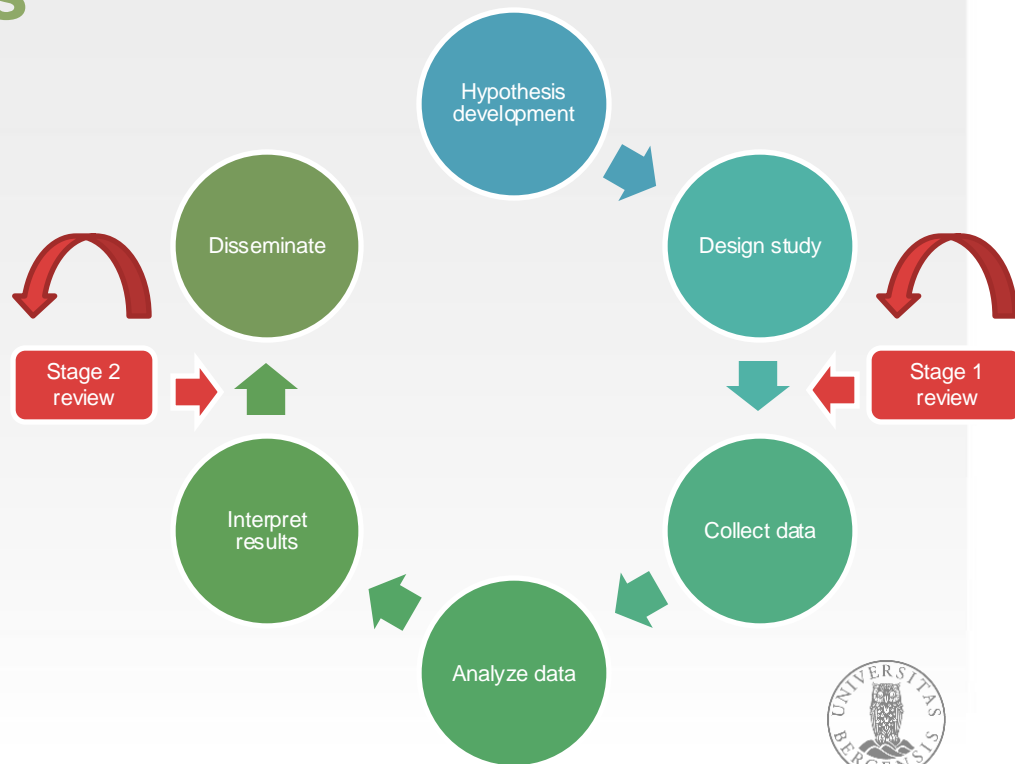
- Placed a premium on scientific quality
- Gave feedback at a useful stage
- Had a predictable pipeline
- Published all research
- Was owned by the community





Registered reports

- Write stage 1 manuscript:
 - Introduction + Method
- Stage 1 review / revisions
 - Emphasis on hypotheses
 - «In principle acceptance»
- Perform study
- Write stage 2 manuscript:
 - Results + Discussion
- Stage 2 review / revisions
 - Check if plan was followed
- Publication





Advantages to registered reports

- Decision to publish is independent of findings
- Same advantages as preregistration
- In addition:
 - Researchers get usable feedback
 - Avoids publication bias





Approach overview

Two models:

- Handled by journal (original model, now less popular)
- Handled by «peer community in registered reports»
- Submission is assigned a “recommender” (an editor)
 - Finds reviewers, supervises process
 - Writes “a recommendation” at end
 - Stands as guarantor for the research
- Scheduled review (optional)
 - Submit «snapshot»
 - Recommender finds reviewers that commit to a schedule
 - Submit Stage 1
 - Receive feedback within 2 weeks
 - Deadline for performing study

A COMMUNITY, NOT A JOURNAL >

PCI RR doesn't publish Registered Reports but instead manages peer review of Registered Report preprints across STEM, medicine, the social sciences and humanities

ESTABLISHED BENEFITS >

Rigorous and constructive pre-study review at a point in time where it helps the most, with in-principle acceptance to neutralise publication bias and reporting bias

TRUST >

Led by the architects of Registered Reports, with the review process managed by accredited recommenders

INDEPENDENCE >

Peer review independent of journals but endorsed by a growing list of journals that accept PCI RR recommendations

POWER TO AUTHORS >

Once a submission is recommended by PCI RR, authors can choose any eligible PCI RR-friendly journal to publish the article without further peer review

FLEXIBILITY >

No need for authors to decide which journal to publish in - or any journal at all - until after a final Stage 2 recommendation

TRANSPARENCY >

Recommended preprint remains citable on a preprint server, with peer reviews published under a DOI by PCI RR and reviewers having the option to sign

INNOVATION >

Unique policy features including Scheduled Review and Programmatic Registered Reports to accelerate peer review and widen access to different modes of research

ZERO COST >

PCI RR is a non-profit, non-commercial platform that is free to use for all, including authors, readers, and supporting journals



Publishing RR in traditional journals

- Currently [281 journals](#)
- Journal name less important
- Profit / Not for profit
- Diamond OA / Gold OA / hybrid
- Varies in expectation of prior knowledge
- Evaluation:
 - Auto-accept
 - Answer within 5-7 days
 - Considers PCI evaluation





Self-interested advantages to RR

- Get feedback when it can be used
- Less pressure for exploratory analyses
- Less focus on alternative explanations
- Less concern about outcome
- Predictable publication pipeline
- Feasible for PhD candidates?

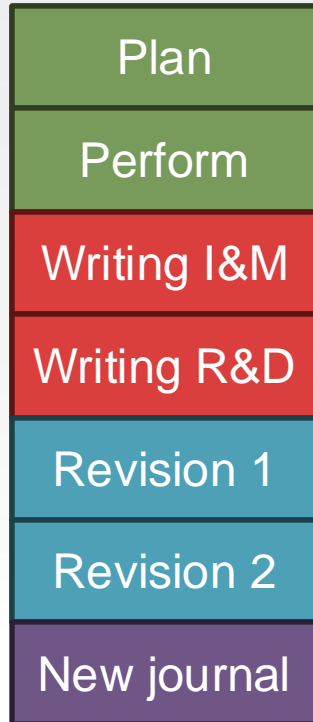




Does RR take more time?

Traditional approach

RR approach





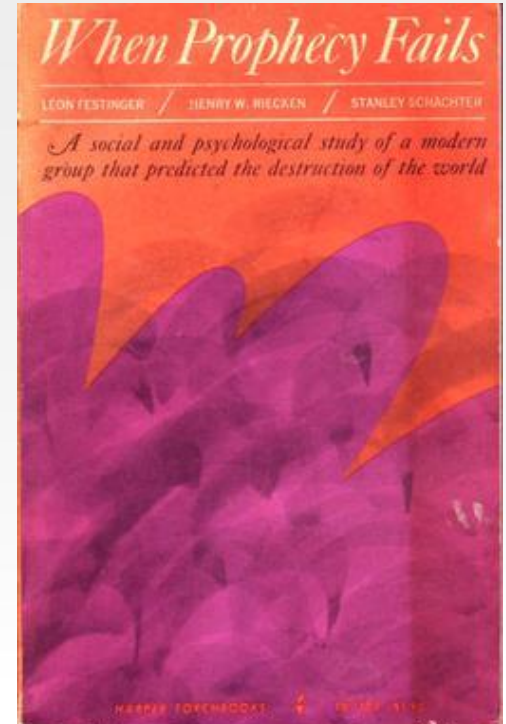
A Multilab Replication of (...) Cognitive Dissonance

Vaidis, D.C., Sleegers, W.W.A., Leeuwen F, DeMarree K.G.,
Sætrevik, B., (...) Priolo, B.



A core psychological theory

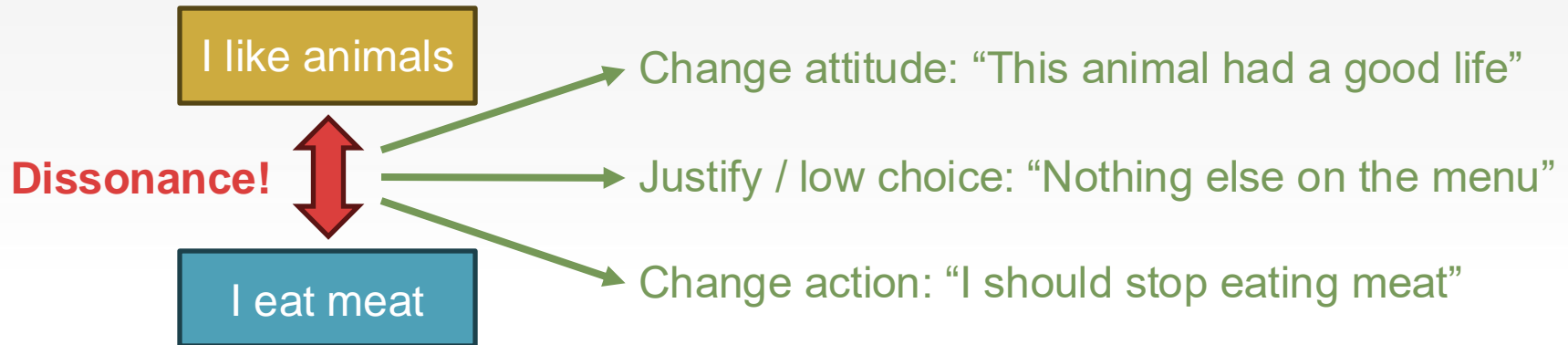
- Lewin's field theory (1935-1951):
 - You are a combination of all your experiences
 - Pushes and pulls on social navigation
 - Mentored Festinger
- Festinger, Riecken & Schachter (1956):
- Festinger (1957): A theory of cognitive dissonance
 - An uncomfortable state
 - Motivates for consistency
- A general human desire for consistent cognitions
 - A “motivational theory”
 - Integrated into other theories
 - Accounts for *confirmation bias*
- A general model for how the mind works





Cognitive dissonance mechanism

- See ourselves acting against attitudes
- Creates dissonance
- → Attitudes are changed
- But only when action is voluntary!





Cognitive dissonance application

- Education
- Social behaviour
- Political psychology
- Persuasion
 - COVID-19 compliance
- Psychotherapy
- Suggested as model for “strong AI”
- Competing theories
 - Self-perception theory
 - Balance theory
 - Cost–benefit analysis
 - Self-discrepancy theory





CD experimental paradigms

- Free-choice paradigm
 - Make a tough decision between two moderately and appreciated options
 - How much did you like the chosen and the non-chosen option?
 - “Spreading of alternatives” effect
 - Most / cross-cultural research uses this
 - Methodological weaknesses
- Induced compliance paradigm
 - Perform a task that is consistent or inconsistent with attitudes
 - Manipulate the ability to justify performance

A: Task **consistent** with attitudes

→ Manipulate reward

→ If you got a reward, maybe you didn't really like it?

→ Reduces (positive) attitude

B: Task **inconsistent** with attitudes

→ Manipulate perceived free will

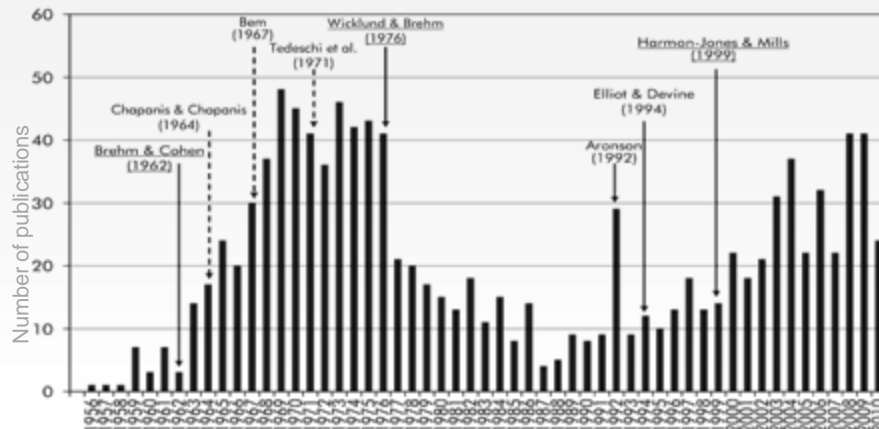
→ If you could have chosen not to, maybe you didn't dislike it?

→ Reduces (negative) attitude



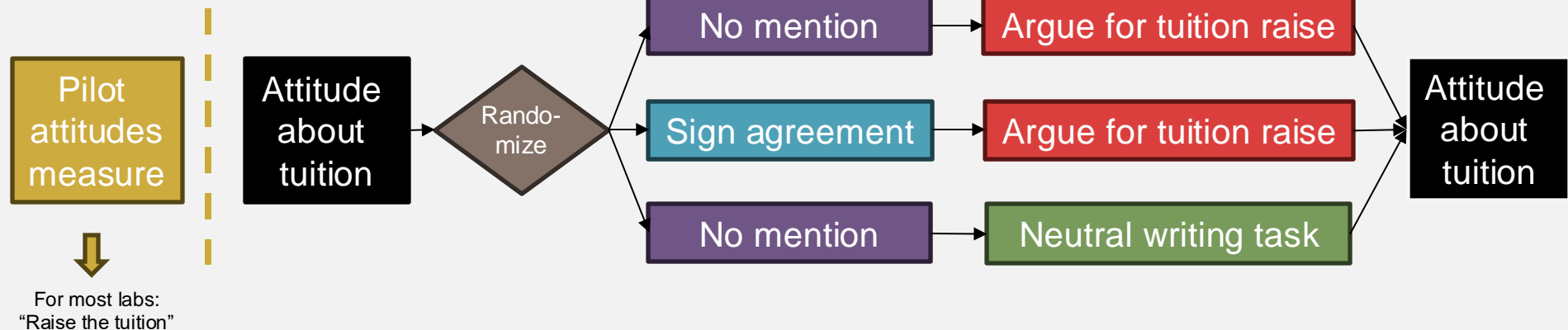
Why do an RR replication (RRR)?

- A fundamental effect in psychology
 - One of the most influential theories
 - Mentioned in textbooks and in popular psychology
 - Relevant for wide range of behaviours
- Lots of prior research
 - Samples are mostly small ($n < 20$)
 - Implausibly large effects ($d = 2.4$)
 - No double-blind designs, poor control
 - No standard experiment procedure
- A “constructive replication” of classical study (Cooper & Croyle, 1983)
- Why do it as a registered report?
 - Make a seminal replication
 - Take all possible arguments into account



Experiment design

- A “many labs” approach: 39 labs, 19 countries, 4,898 participants, 108 authors
- In-person (lab) experiment using Qualtrics, data stored centrally



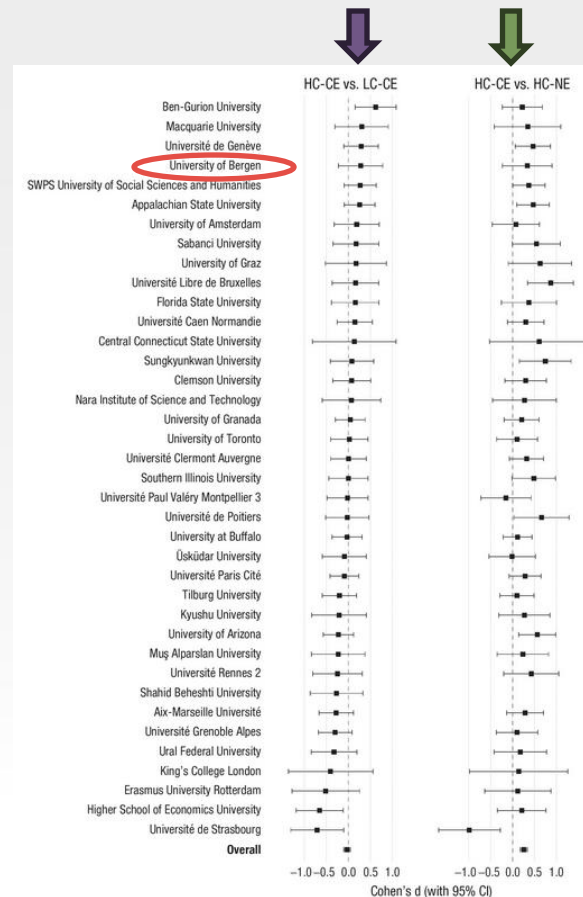
- Conditions
 - HC-CE: Perceived high-choice for writing counter-attitudinal arguments
 - LC-CE: Perceived low-choice for writing counter-attitudinal arguments (choice control)
 - HC-NE: Perceived high-choice for writing neutral writing task (inconsistency control)

Experimenters
blinded



Results

- A successful large-scale data collection
 - Manipulation check successful
- Attitude change after writing counter-attitudinal essay $t(1,725.20) = 6.72, p < .001, d = 0.31$
- But perceived choice did not have any effect! ($t(1,969.56) = 0.38, p = .35, d = 0.017$)
- Robust to data exclusions, lab variability, and attitude assessment
- Cognitive dissonance appears to be real...
 - But perhaps not due to the normally assumed mechanisms / methods





Registered report timeline

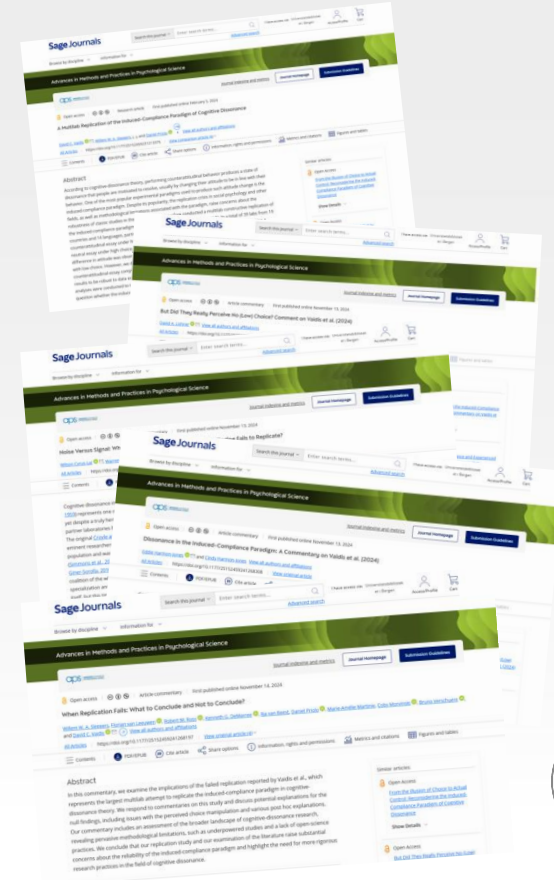
- 2018: Project initiated
- 2019: Researcher recruitment at SIPS
 - Discussion, choose paradigm and design
- 2020: Stage 1 manuscript first review:
 - Extensive methodological changes
 - Moderating expectations / conclusions
- 2020: Stage 1 manuscript second review:
 - Two minor methodological changes
 - → “In principle accepted”
- 2020-2022: Data collection (under COVID)
- 2023: Stage 2 review:
 - Reviewers agreed that the plan had been followed
 - Phrasing of the conclusion, checking some alternative explanations
 - One reviewer now tried to raise post-hoc issues with study design
- 2024: Published





Status

- Published February 2024: Vaidis et al.: [“A Multilab Replication of the Induced-Compliance Paradigm of Cognitive Dissonance”](#) in “Advances in Methods and Practices in Psychological Science”
- Four commentaries November 2024:
 - Lishner: [“But Did They Really Perceive No \(Low\) Choice?”](#)
 - Cyrus-Lai, Tierney, & Uhlmann: [“Noise Versus Signal: What Can One Conclude When a Classic Finding Fails to Replicate?”](#)
 - Harmon-Jones & Harmon-Jones: [“Dissonance in the Induced-Compliance Paradigm”](#)
 - Sleegers et al.: [“When Replication Fails: What to Conclude and Not to Conclude?”](#)





Further work: Variability in CD

- Why did our RRR show the predicted pattern?
 - Freedom of choice influence not supported
 - People may vary on their “baseline” ways of thinking about choice, freedom, responsibility
 - Intra-cultural and inter-cultural variation
 - Large dataset with similar set-up allows us to explore this
- Individual variation in [self-construal](#)
 - People define themselves in terms of stable, internal attributes
 - Vs.: People define themselves in terms of relationships to others
- Cultural differences in [individualism](#)
 - 18 countries
 - Cultures see behaviour as resulting from individual decisions
 - Vs.: Cultures see behaviour as resulting from group pressures

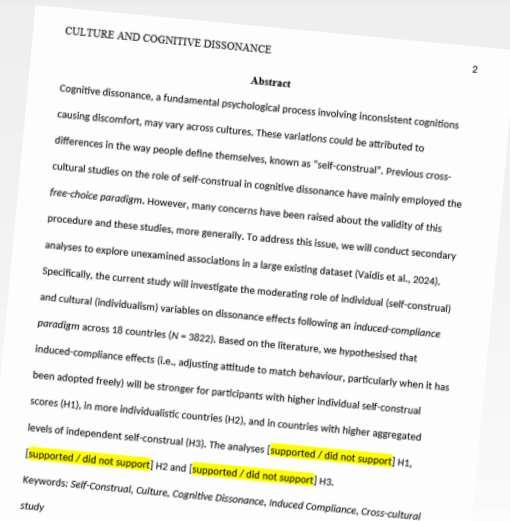


1. *Power Distance*, related to the different solutions to the basic problem of human inequality;
 2. *Uncertainty Avoidance*, related to the level of stress in a society in the face of an unknown future;
 3. *Individualism* versus *Collectivism*, related to the integration of individuals into primary groups;
 4. *Masculinity* versus *Femininity*, related to the division of emotional roles between women and men;
 5. *Long Term* versus *Short Term Orientation*, related to the choice of focus for people's efforts: the future or the present and past.
 6. *Indulgence* versus *Restraint*, related to the gratification versus control of basic human desires related to enjoying life.
- [Hofstede, G. \(2011\). Dimensionalizing cultures](#)



Further work: Variability hypotheses

- Hypotheses:
 - H1: More attitude-change for independent (as opposed to interdependent) self-construal
 - H2: More attitude-change in individualistic countries (Hofstede index)
 - H3: More attitude-change in countries with on average more independent self-construal
- Currently a stage 1 RR:
<https://osf.io/preprints/psyarxiv/fk3pd>





Our general RR experiences

- Different from “business as usual”
- More “front-loading” of the research process
- Feels like the way research should be done!





For more on such issues...

- We have a monthly ReproducibiliTea journal club
- Early career and senior members
- Credited as a 1 ECST PhD course
- Contact me to join the [ReproducibiliTeaM](https://www.reproducibili.team)





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