Thesis Seminar

Quantitative methods: Surveys, experiments, secondary data, longitudinal data, netnography, neuro-physiological data

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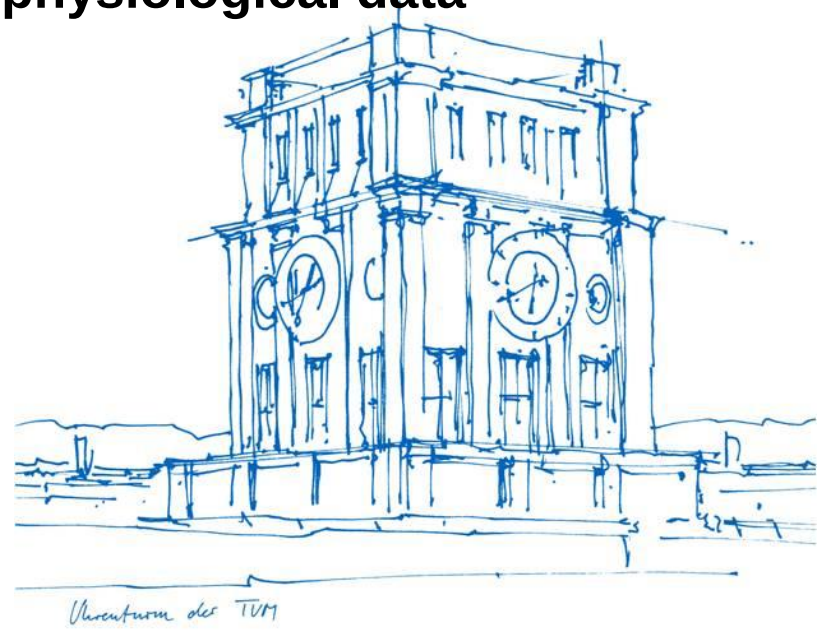
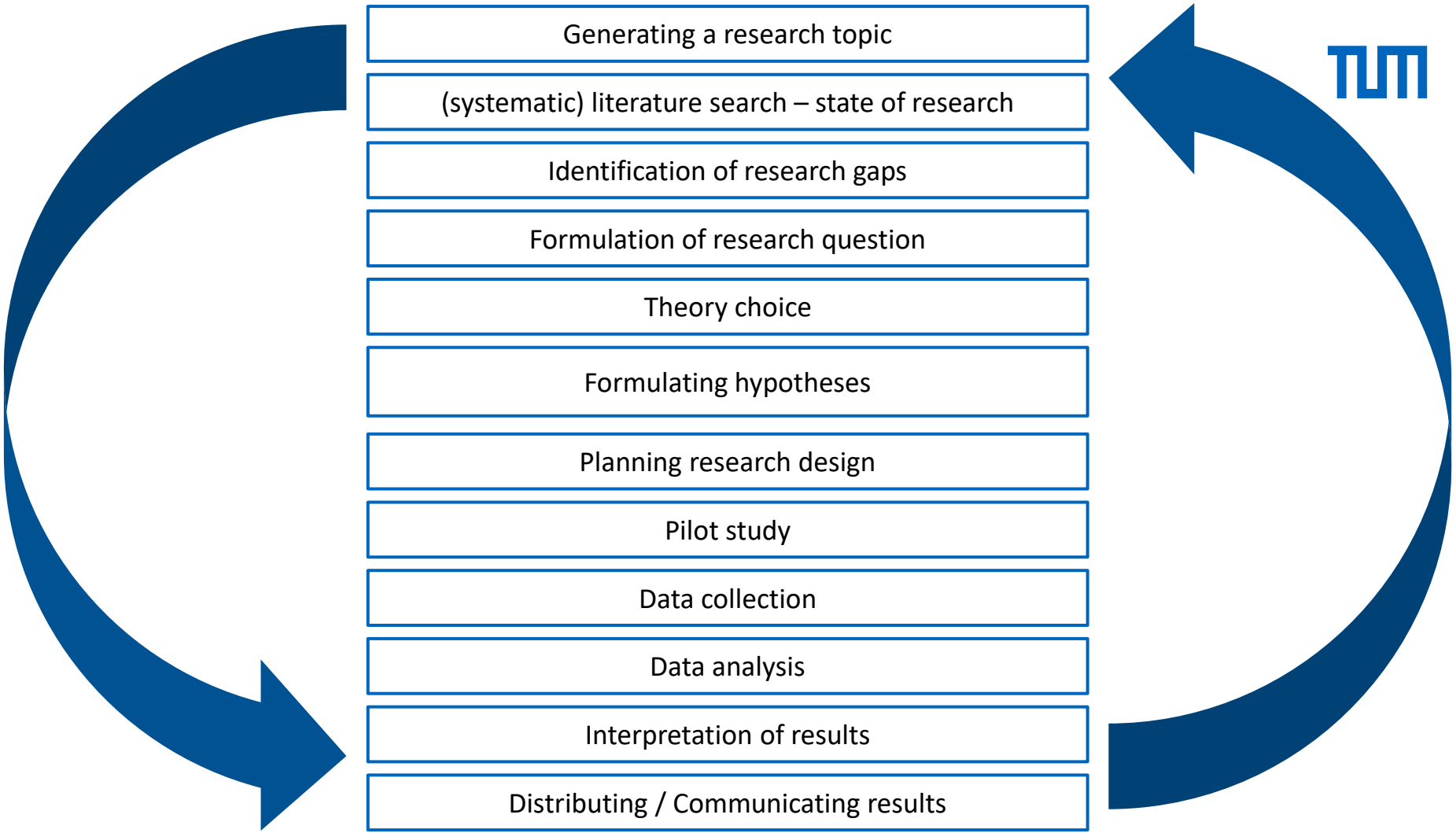


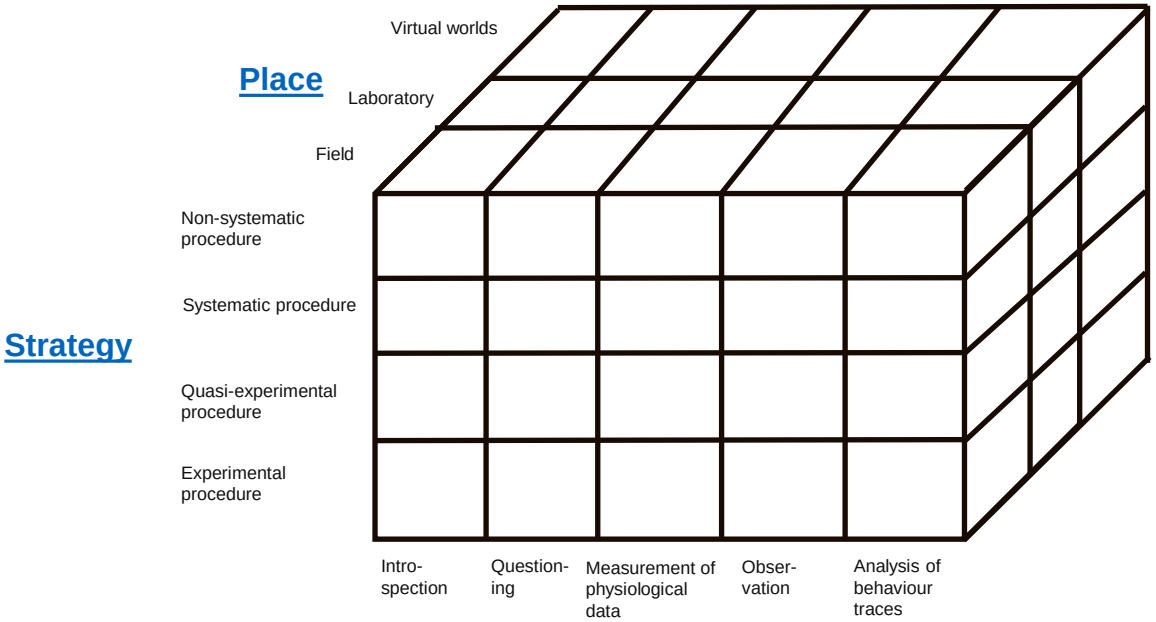

Generating a research topic
(systematic) literature search – state of research
Identification of research gaps
Formulation of research question
Theory choice
Formulating hypotheses
Planning research design
Pilot study
Data collection
Data analysis
Interpretation of results
Distributing / Communicating results

Which research designs are there?

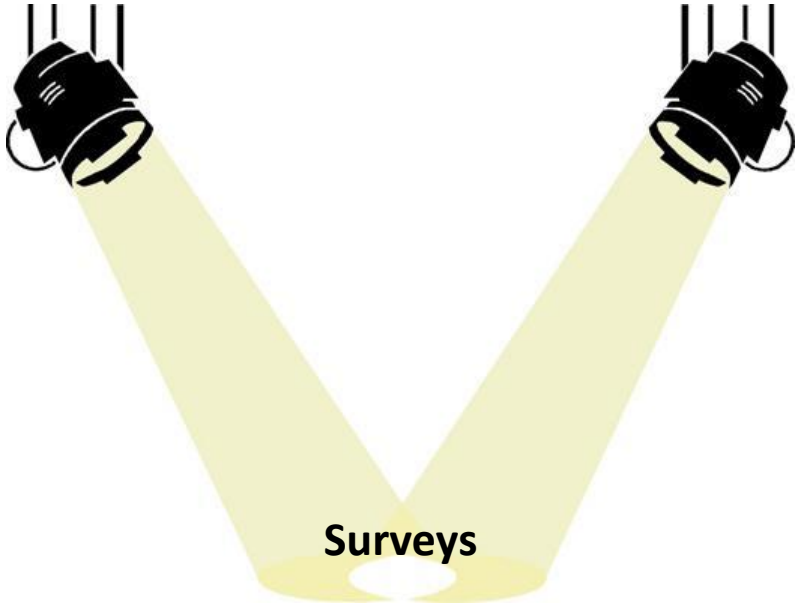
1. Qualitative research designs
2. Correlative research designs
3. Experimental (causal) research designs

All three are empirical

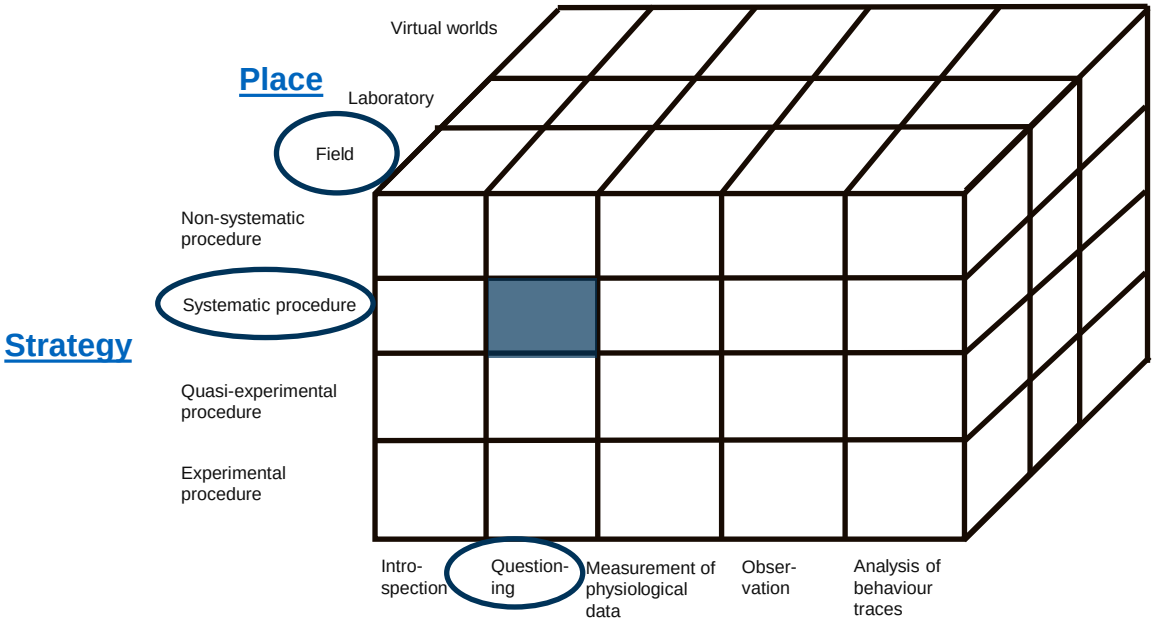
Classification of research designs



Spotlight on…



Field surveys



Questionnaire design

- A questionnaire is a rather standardized presentation of questions and statements (=items), that subjects answer
- Differences in attributes are inferred from the subjects‘ answers
- Theoretical constructs are operationalized with items
- Every latent attribute / construct is measured with several items
- Every item that loads on the same attribute form a scale (factor / variable)

Components of a questionnaire

1. Instructions (response-instructions for participants) – Email invitation
2. Closed-ended questions and statements (items)
3. Given response possibilities (scales)
4. Participants answer items through marking a scale level
5. Answers to several items / statements are summarized to one factor

Introduction to a questionnaire

Dear participant,

thank you for participating in our survey.

With this study, the Chair for Strategy and Organization of the Technical University of Munich (Prof. Dr. Isabell Welpe) seeks to better understand the current situation of the generation and implementation of innovative ideas within organizations. This study is exclusively addressed to **employees in a managing position**.

- The completion of this questionnaire will take about 10-15 minutes. For technical reasons, it is not possible to pause the questionnaire once it is started.
- The study solely serves scientific purposes and your answers will not be passed on to third parties. Neither your managerial colleagues nor your team members will receive your answers to our questions! You and your team members will be matched based on a coding system.
- Your answers will only be evaluated in aggregated form and completely anonymously by our research team. All information will be treated strictly confidential and stored according to the ethical guidelines of the Technical University of Munich.

If you are interested in receiving a summary of this study's results, you can provide your email address at the end of the questionnaire.

I have read and understood the information above. I hereby agree to be at least 18 years old and approve to the use of my data for internal analysis at the Technical University of Munich. I am aware that my participation is voluntary and that I can stop the survey at any time without giving reasons.

Thank you very much for your support!

Tim Kröger, Dr. Theresa Treffers, Dr. Maria Strobel, Prof. Dr. Isabell Welpe
Technical University of Munich, Chair for Strategy and Organization
https://www.professors.wi.tum.de/strategy/home/

For any questions or comments about this study please contact Tim Kröger

Privacy statement

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Questionnaire structure

- **Start with „ice breaker“** questions, simple questions, interesting questions.
- **No sensitive** questions at the **beginning**.
- Questions about the **constructs of interest.**
- Use **filters sparingly.**
- **Ask about socio-demographics and biographics**, e.g., age, gender, education, marital status, functional background in organization etc.
- …and **team features**, e.g., team size, team tenure etc.
- …and about **organizational features**, e.g., size of the company, service vs production company, industry etc.

Challenges with questionnaires

- **Don‘t ask unnecessary questions**. Always check, why you ask a question!
- Questionnaire should be **as short as possible** and as long as necessary.
- Questions are **inadequate**, e.g., are not context-specific, are too sensitive etc.
- Questionnaire design leads to **early dropout.**

Response biases and possible solutions

- **Social desirability**: Measure for statistical control, anonymous answers
- **Acquiesence** (content-independent agreeableness): variation of scale poles, but watch out when analyzing your data!
- **Regression to the mean**: avoid central pole in scales and use an even pole number in scales
- **Structural effects (Halo effects):** variation of construct and item sequence
- **Interviewer bias:** variation of interviewer
- **Self-selection of sample:** …solution depends on sample
- **Non-response bias:** solution depends on items / sample
  - For items: include a category „don‘t know“
  - For sample: Test early and late responders

Item/Scale-Design

1. Closed-ended questions

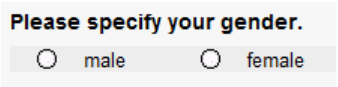
- Limited number of predefined response options
- Participant selects the response option(s) that matches her/his response

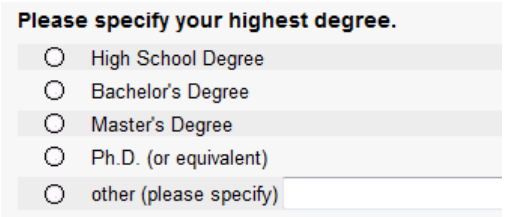
Pro:

⊕ Analysis of responses is clear and unambiguous

Con:

⊖ Response options may be too limited





Use **closed-ended questions** if the research question is clear and non-explorative **or** you know the response options that can be expected

Item/Scale-Design

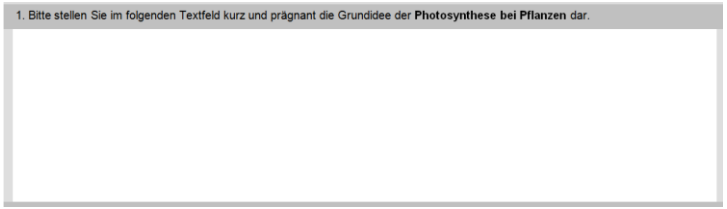
2. Open-ended questions

- Unlimited number of response options, no predefined response
- Usually an empty field or line(s) are provided for entering the response

Pro:

⊕ Complex answers are possible

⊕ Responses are not limited to the researcher‘s selection



Use **open-ended questions** if the research question is new and unexplored **or** you expect complex answers

Con:

⊖ Analysis can be difficult and time-consuming (responses need to be coded)

⊖ Objectivity is difficult to achieve (e.g., correcting an exam)

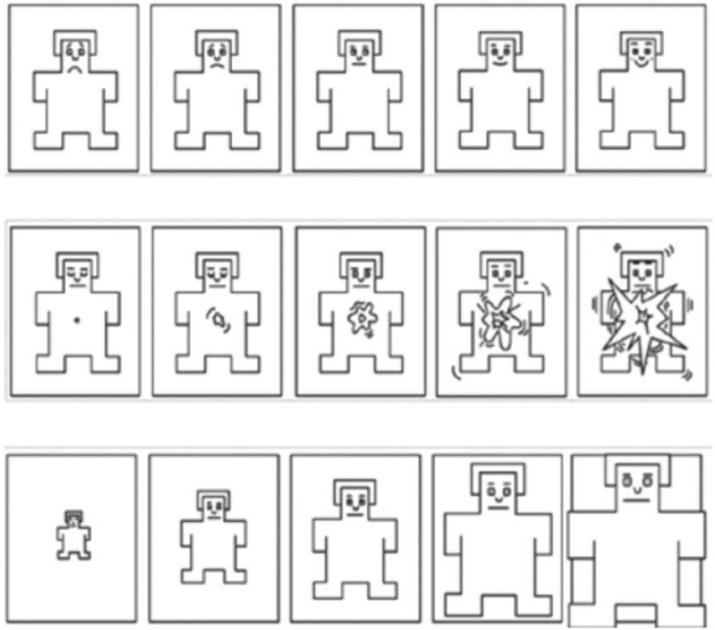
Drop-down AND open category for „other“

In which functional area of the company do you work?

Variablenname v_3	Externer Variablenname v_3	int	Functional area
		0	please select
		1	Accounting, Finance, or Controlling
		2	Purchasing
		3	Research & Development
		4	General Management
		5	IT
		6	Customer Service
		7	Logistics or Operations
		8	Marketing
		9	Human Resource
		10	Sales
		11	Administration
		12	Inventory
		13	Production
		14	Technical Services / Maintenance
		15	Other
Variablenname v_4	Externer Variablenname v_4	varchar	Other

Scale format

3. Rating scale



1. Tell us how much you agree or disagree with the following statements:

	Strongly Agree	Somewhat Agree	Neither agree nor disagree	Somewhat Disagree	Strongly Disagree
I found the website easy to navigate	○	○	○	○	○
I was able to easily find the information I needed	○	○	○	○	○
I found the overall website design to be intuitive	○	○	○	○	○

Using a scale of 0= Not at all important to 5=Very Important, please rate the following aspects of our service in the restaurant?

	Not at all important 0	1	2	3	4	Very Important 5	No Opinion
Speed of Service	☐	☐	☐	☐	☐	☐	☐
Friendliness of Staff	☐	☐	☐	☐	☐	☐	☐
Helpfulness of Staff	☐	☐	☐	☐	☐	☐	☐
Value for Money	☐	☐	☐	☐	☐	☐	☐

* When purchasing electronic products, how often do you do each of the following?

	Never	Rarely	Sometimes	Always	Often
Read Customer Reviews	○	○	○	○	○
Read Experts Reviews and Comments	○	○	○	○	○
Look at technical specs (e.g. dimensions and adapters)	○	○	○	○	○
Watch a video demonstration	○	○	○	○	○
Watch a video submitted from another customer	○	○	○	○	○

Scale format

4. Semantic differential

Aspirin

This brand is for me ..

1.	playful	3	2	1	0	1	2	3	serious
2.	wild	3	2	1	0	1	2	3	smooth
3.	healthy	3	2	1	0	1	2	3	sick
4.	generous	3	2	1	0	1	2	3	thrifty
5.	reserved	3	2	1	0	1	2	3	open
6.	blurred	3	2	1	0	1	2	3	clear
7.	submissive	3	2	1	0	1	2	3	dictorial

Source: Schaefer & Rotte (2010)

Self-rating / other-rating

1. Self-rating

The following items concern your behavior at work.

Please indicate the extent to which you agree with each of the following statements.

	strongly disagree						strongly agree
I help others who have been absent.	○	○	○	○	○	○	○
I help others who have heavy work loads.	○	○	○	○	○	○	○
I help orient new people even though it is not required.	○	○	○	○	○	○	○

2. Other-rating

Please refer to your colleague #u_firstname# #u_name# when answering the following questions.

Please indicate the extent to which you agree with each of the following statements.

This colleague...

	never true						always true
...helps others who have been absent.	○	○	○	○	○	○	○
...helps others who have heavy work loads.	○	○	○	○	○	○	○
...helps orient new people even though it is not required.	○	○	○	○	○	○	○

Scale formats

- **Frequencies:** never, rarely, sometimes, often, always
- **Intensities:** not at all, a little, moderate, quite a bit, very much / extremly
- **Probabilities:** not at all, rather unlikely, likely, rather likely, for sure
- **Evaluations:** totally wrong, quite wrong, neither, quite right, right
- **Agreeableness:** strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree…
- **…**

Use **original answer scales.**

Scientific translation of English measures

1. Back-translation

- A native speaker of the target language (e.g., German native), who speaks the language of the measure (e.g., English) well translates items.
- Items are translated back from German to English by another translator.
- Original items are checked with the translated items. If they deviate (strongly), revise. If they do not deviate, translation is ok.

Source: Brislin (1970)

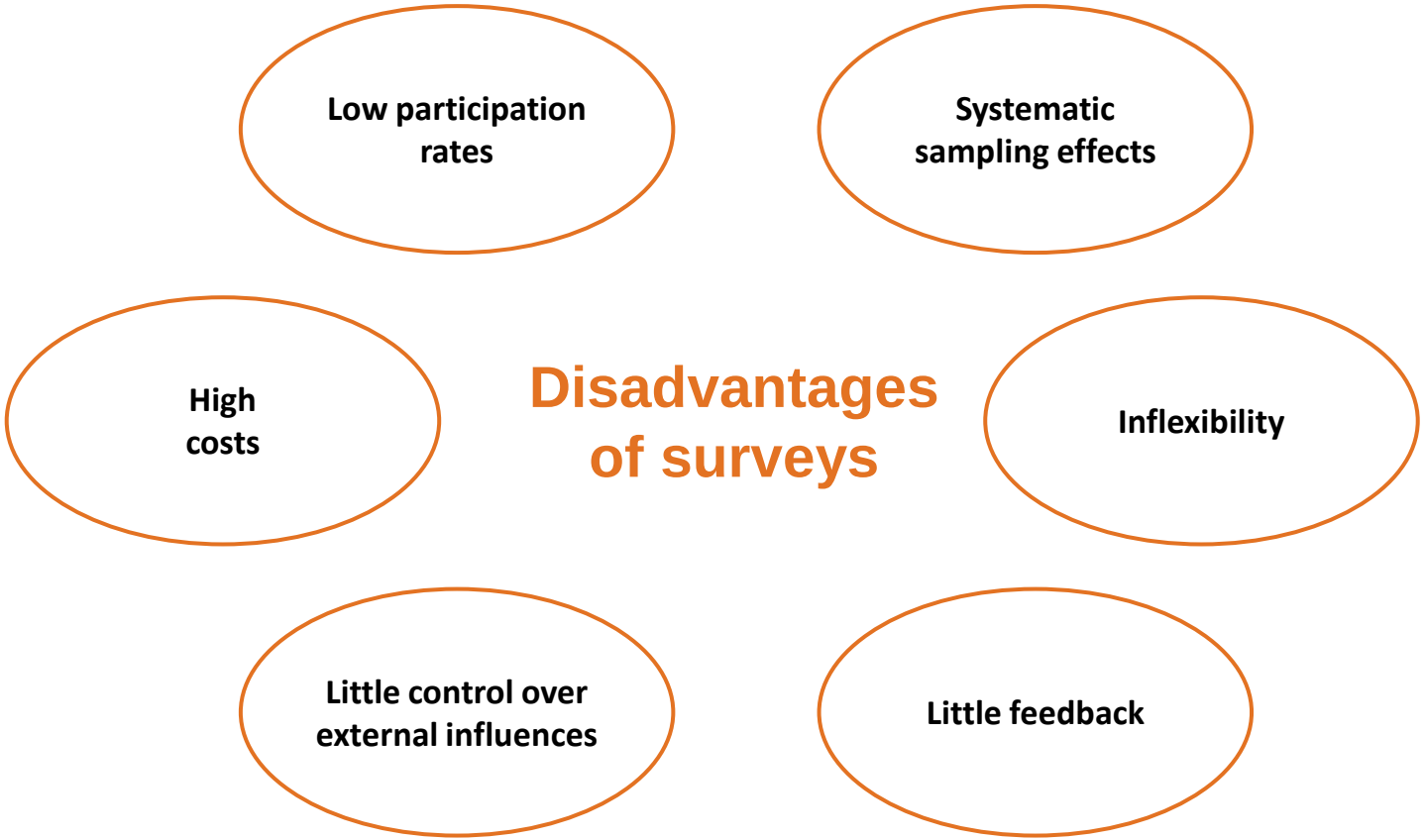
Scientific translation of English measures

2. Translation by more translators

- Items are translated by several persons independently.
- Another person compares these translations and checks for irregularities, different meanings, mistakes etc. This person decides which translation is the best and should be used in the questionnaire.
- **In general: All translators should have broad knowledge related to the measure that they should translate.**

Advantages of surveys

- Convenient data collection
- Low costs
- Assesses variables that are hard to vary
- Representative-ness
- High degree of standardization
- Easy to analyze


Low participation rates
Systematic sampling effects
High costs
Disadvantages of surveys
Inflexibility
Little control over external influences
Little feedback

Attention - Common method bias!

Common method variance = „Variance that is attributable to the measurement method rather than to the constructs the measures represent“ (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, p. 879)

Where can common method variance result from?

Common rater effect

- Consistency motive
- Implicit theories
- Acquiescence biases

Item characteristic effect

- Item social desirability
- Common scale formats / anchors

Item context effects

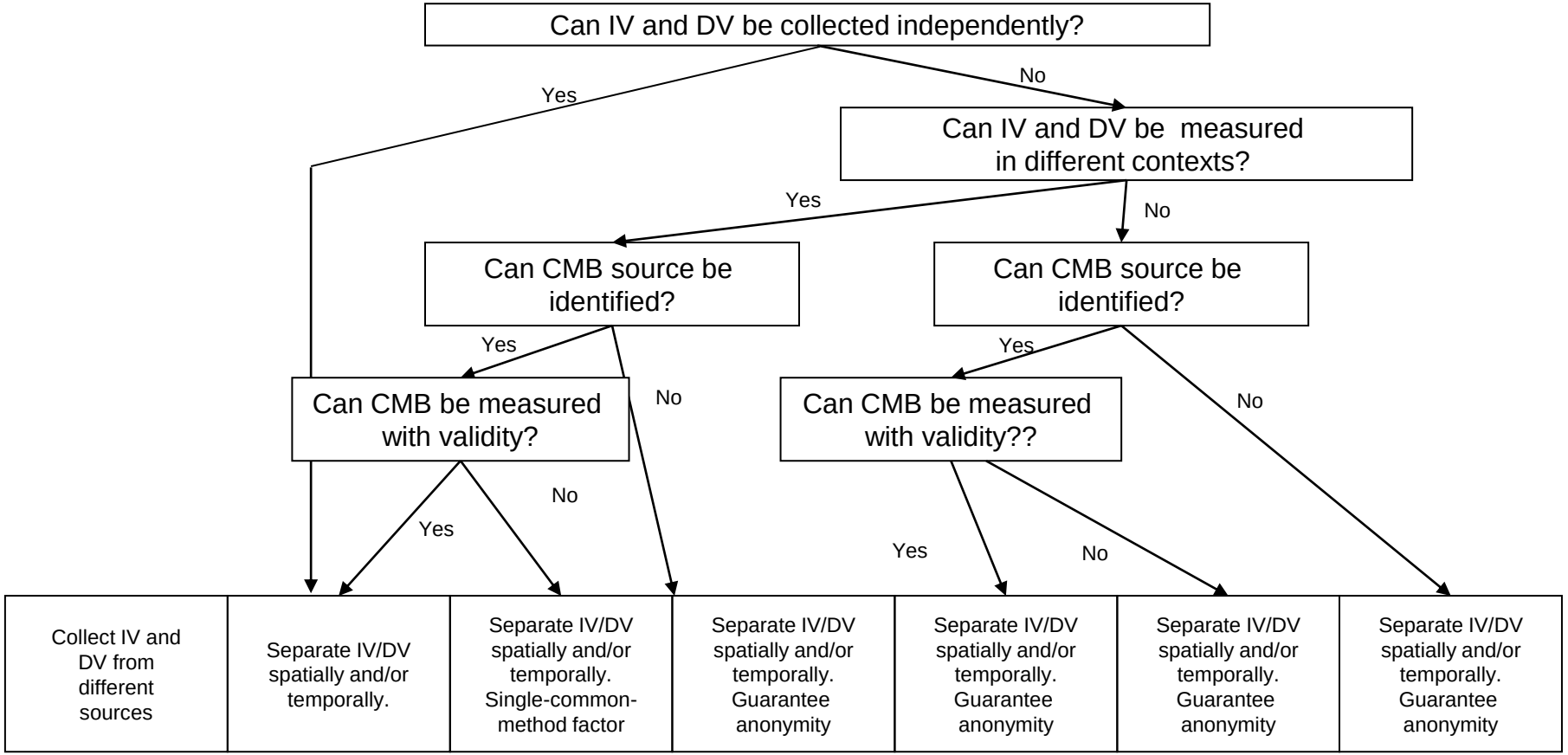
- Item priming effects
- Item embeddedness
- Scale length

Measurement context effects

- IV and DV measured at same time
- IV and DV measured at same location
- IV and DV measured with same medium

Podsakoff/MacKenzie/Lee/Podsakoff (2003)

How to control common method bias



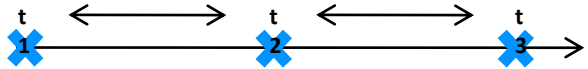
Podsakoff/MacKenzie/Lee/Podsakoff (2003)

Survey design

Cross Sectional Studies

Advantage: economical
Disadvantage: common method bias

Longitudinal Studies



Advantage: trends over time
Disadvantage: long study period

More than one respondent

Advantage: study of interactions, peer- report in addition to self-report
Disadvantage: high organisational effort

Aim: avoid same time / same source data

Which psychological tests do you know?

Explicit versus implicit tests

Explicit

- System 2
- Thinking Slow
- Deliberate
- Rational
- Logic-based

evaluations that can be directly expressed or publicly stated

Implicit

- System 1
- Thinking Fast
- Unconscious
- Intuitive
- Emotionally-base

evaluations that occur without conscious awareness towards an attitude, object or the self

Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.; https://implicit.harvard.edu/implicit/canada/background/faqs.html#faq19

Explicit Tests – Some examples

- **Intelligence:** Wechsler Adult Intelligence scale (WAIS-R; Silverstein, 1982)
- **Personality:** NEO-FFI (Big Five; Costa & McCrae, 1989)
- **Interest:** Strong Interest Inventory (Donnay & Borgen, 1996)
- **Cognition**
  - *Attention:* d2 test of attention (Bates et al., 2004)
  - *Creativity:* Alternate Uses Task (Guidford, 1967)
- **Affect & Mood**
  - *Affect: Positive and Negative Affect Schedule (*PANAS; Crawford et al., 2004)
  - *Stress:* Trier Social Stress Test (TSST; Kirschbaum et al., 1993, Individual version; von Dawans et al., 2011; Group version)

Paper example: *Positive and Negative Affect Schedule (PANAS)*

J Bus Ethics (2012) 111:179–193
DOI 10.1007/s10551-011-1200-7

An Examination of the Contribution of Dispositional Affect on Ethical Lapses

D. Jordan Lowe · Philip M. J. Reckers

Received: 13 September 2011 / Accepted: 28 December 2011 / Published online: 12 January 2012

Abstract The popular press and academic research has focused primarily on the characteristics of corporate leaders. Subordinates have been studied much less frequently than leaders and yet they play a pivotal role in destructive leadership processes. An area holding significant potential to bring clarity to subordinates' ability to withstand (or succumb) to pressures from superiors is dispositional exaggerated) triggering event to elicit affective states. Fourth, we examined specific affective states rather than examining only general positive and negative valence categories.

Keywords Affect · Passive · Active · Unethical behavior · Conformer · Colluder

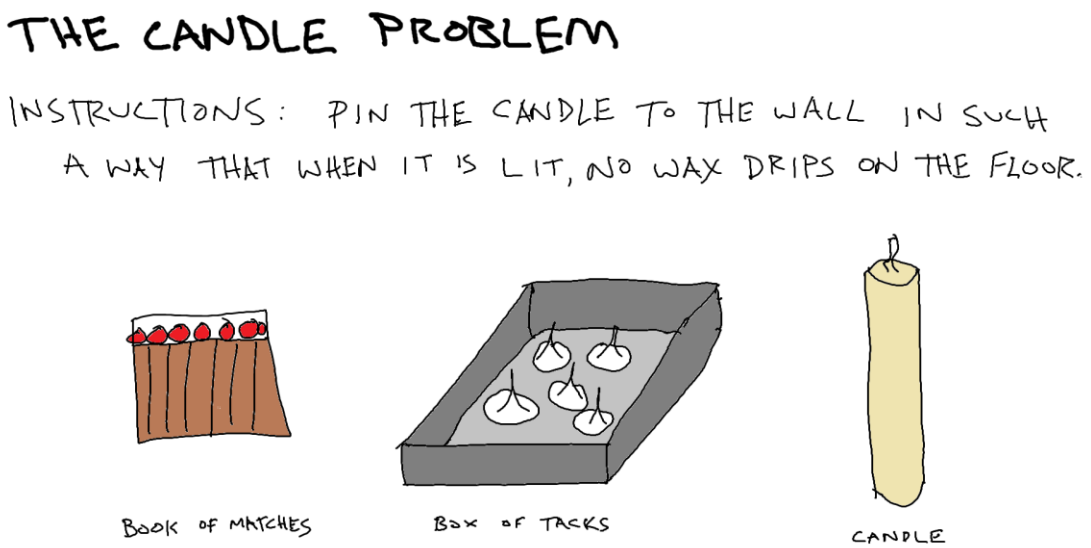
Lowe, D. J., & Reckers, P. M. (2012). An examination of the contribution of dispositional affect on ethical lapses. *Journal of Business Ethics*, *111*(2), 179-193.

Explicit Tests – Some examples

Problem Solving: *The candle problem (Duncker, 1945)*

Measures: complex problem solving

Exercise - Test yourself:



Duncker, K., & Lees, L. S. (1945). On problem-solving. *Psychological monographs*, *58*(5), i.

Explicit Tests – Some examples

Problem Solving: *The candle problem (Duncker, 1945)*

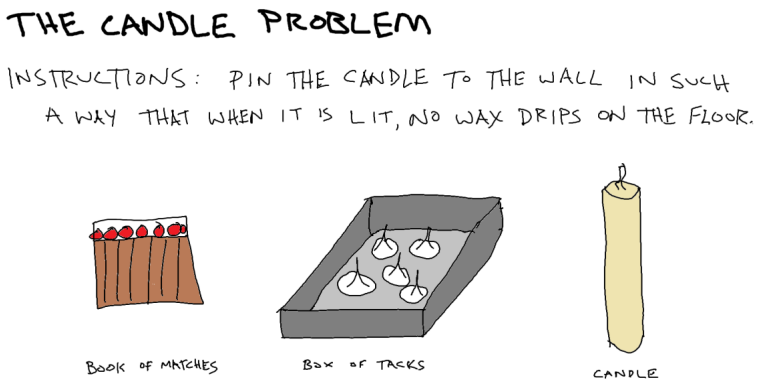
- Many people report an “AHA” experience when finding the solution of an insight problem

- Solution rate becomes higher when presented with the box and the tacks separately

→Key to solving this task: overcome **functional fixedness**

- Interestingly, paying people for performance decreases solution rates

Can you solve it?



Duncker, K., & Lees, L. S. (1945). On problem-solving. *Psychological monographs*, *58*(5), i.

Explicit Tests – Some examples

Creativity: *Alternate Uses Task (Guidford, 1967)*

Measures: divergent thinking

Explanation:
Examinees are asked to list as many possible uses for a common household item

Guilford, J. P. (1967). Creativity: Yesterday, today and tomorrow. *The Journal of Creative Behavior*, *1*(1), 3-14.

Exercise: Test yourself!

Instruction:
Please list as many uses as possible for…a shoe

What are the maximum number of unusual uses you can come up with?

→ You have 3 minutes!

Implicit Tests – Some examples

Personality: *Thematic Apperception Test (TAT)*

- uses a series of **provocative yet ambiguous pictures** about which the subject is asked to tell a story (the complete version of the test contains 32 picture cards)
- Measures: e.g. defense mechanisms, motives (achievement, power, or affiliation)
- Scoring and interpretation of the test should only be conducted by extensively trained coders

→ However, there are some new approaches:

- Felix Schönbrodt (LMU) developed and trained a machine learning algorithm to code implicit motives in freely narrated stories triggered by stories

Morgan, W. G. (2002). Origin and history of the earliest Thematic Apperception Test pictures. *Journal of personality assessment*, *79*(3), 422-445.; https://www.psychestudy.com/general/personality/thematic-apperception-test

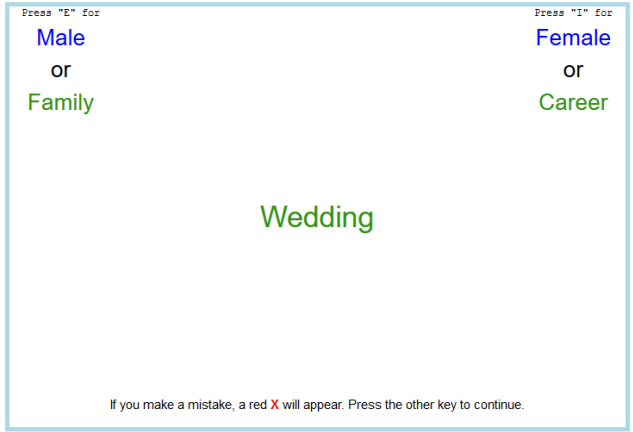
Implicit Tests – Some examples

Attitude: *Implicit Association Test (IAT; Greenwald et al., 1998)*

- measures the strength of associations between concepts (e.g., Female/Male and Career/Family)
- making a response is easier when closely related items share the same response key

Exercise: Try out the IAT

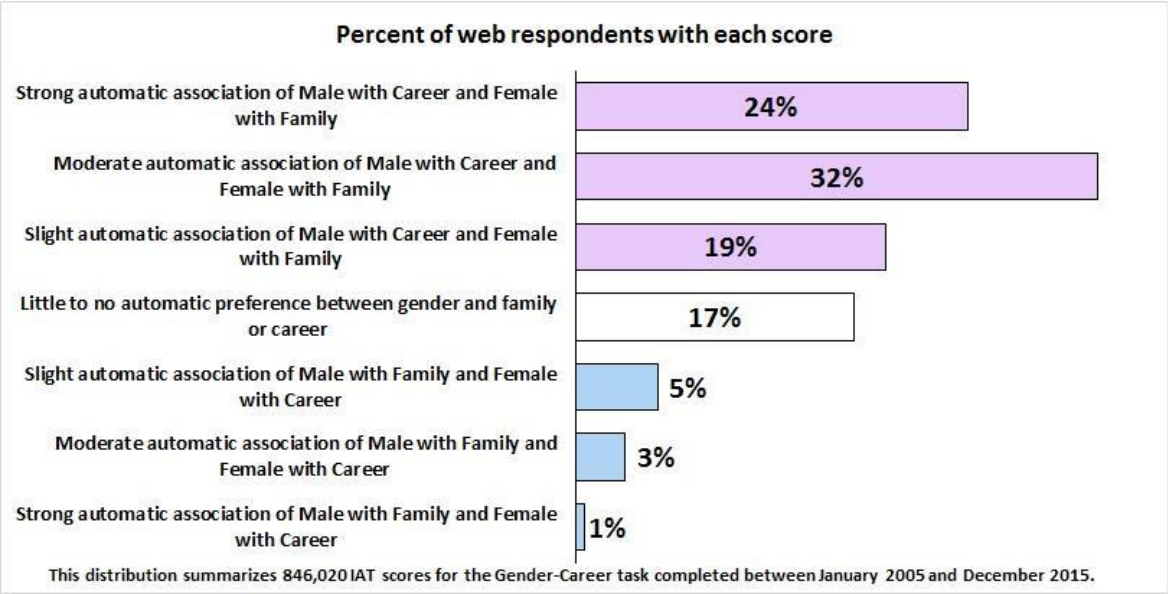
- Go to https://implicit.harvard.edu/implicit/takeatest.html
- "I wish to proceed"
  (you can skip all the questions on your background)
- Choose "Gender – Career" Task
- Conduct the test



Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: the implicit association test. *Journal of personality and social psychology*, *74*(6), 1464.

Implicit Tests – Some Test Examples

Attitude: *Implicit Association Test (IAT; Greenwald et al., 1998)*



Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: the implicit association test. *Journal of personality and social psychology*, *74*(6), 1464; https://implicit.harvard.edu/implicit/takeatest.html

Paper example: *Implicit Association Test*

Will you still hire me when I am over 50? The effects of implicit and explicit age stereotyping on resume evaluations

Sara Zaniboni[a], Malgorzata Kmicinska[b], Donald M. Truxillo[c,d], Kimberly Kahn[d], Maria Paola Paladino[e] and Franco Fraccaroli[e]

[a]Department of Psychology, University of Bologna, Cesena, FC, Italy; [b]McKinsey & Company, Wroclaw, Poland; [c]University of Limerick-Kemmy Business School, Limerick, Ireland; [d]Department of Psychology, Portland State University, Portland, OR, USA; [e]Department of Psychology and Cognitive Sciences, University of Trento, Rovereto, TN, Italy

ABSTRACT

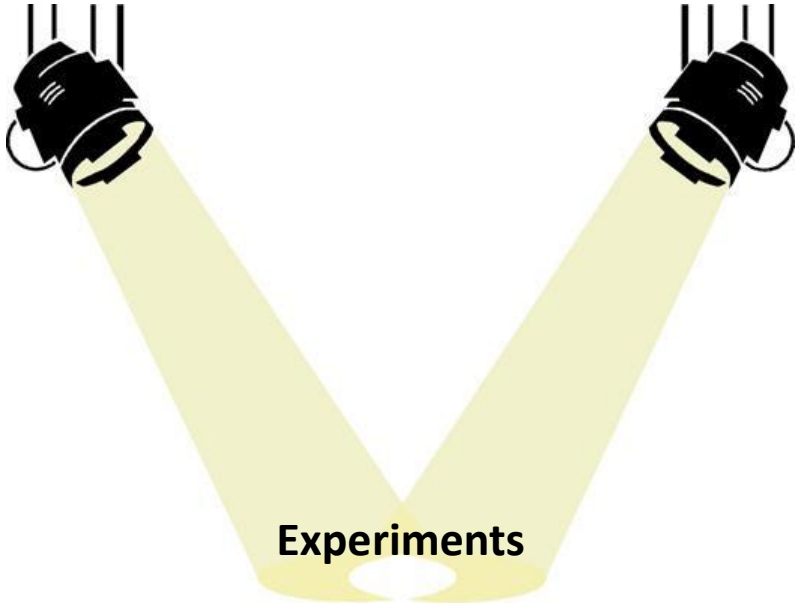
Multiple studies have found that older workers may be disadvantaged in their job search due to explicit age stereotypes. However, no published research has examined the effect of both explicit (conscious) and implicit (unconscious) negative age stereotypes against older workers on hiring decisions. The current study fills this gap by using an experimental design to simultaneously examine how both explicit and implicit age stereotypes affect the evaluation of resumes for older and younger job applicants. Participants completed measures of explicit age stereotypes via a questionnaire and implicit age stereotypes with an Implicit Association Test focused on older and younger working-age people. They then completed a resume screening task that included younger and older potential applicants. Results showed that participants' explicit age stereotypes positively influenced the evaluation of younger applicants' resumes but had no significant effect on the evaluation of older applicants' resumes. Conversely, implicit age stereotypes had a negative effect on the evaluation of older applicants' resumes but had no significant effect on the evaluation of younger applicants' resumes. The results suggest that both implicit and explicit age stereotypes may harm older job applicants' hireablity, but through different pathways.

ARTICLE HISTORY
Received 1 February 2017
Accepted 24 March 2019

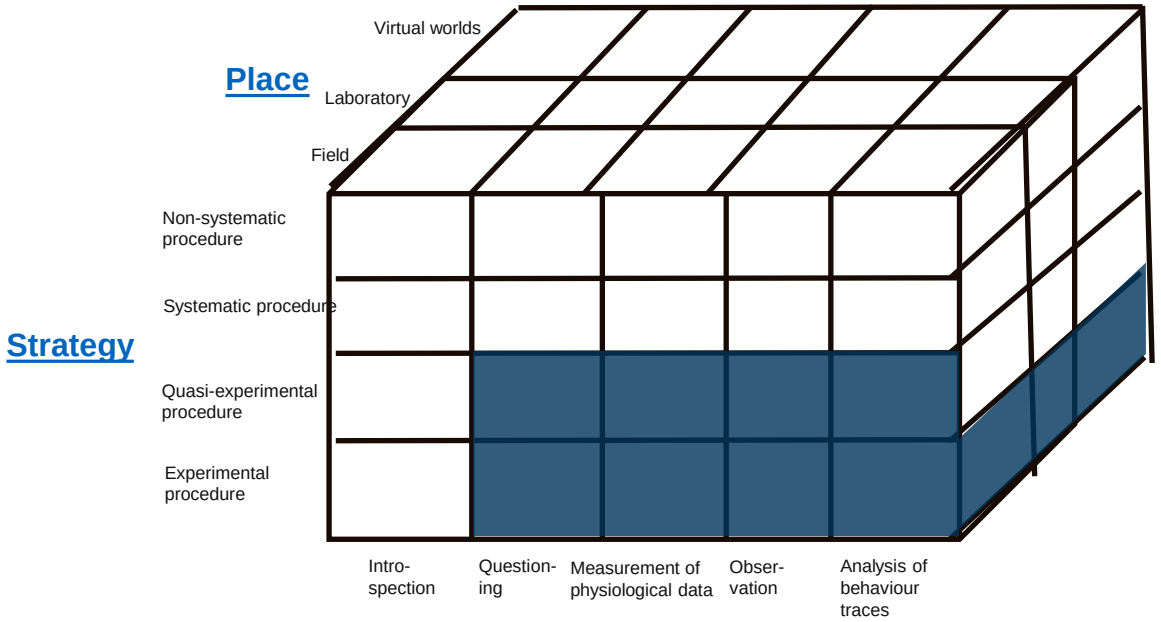
KEYWORDS
Ageism; hiring discrimination; age stereotypes; implicit attitudes; resume screening

Zaniboni, S., Kmicinska, M., Truxillo, D. M., Kahn, K., Paladino, M. P., & Fraccaroli, F. (2019). Will you still hire me when I am over 50? The effects of implicit and explicit age stereotyping on resume evaluations. *European Journal of Work and Organizational Psychology*, *28*(4), 453-467.

Spotlight on…



Experimental procedures

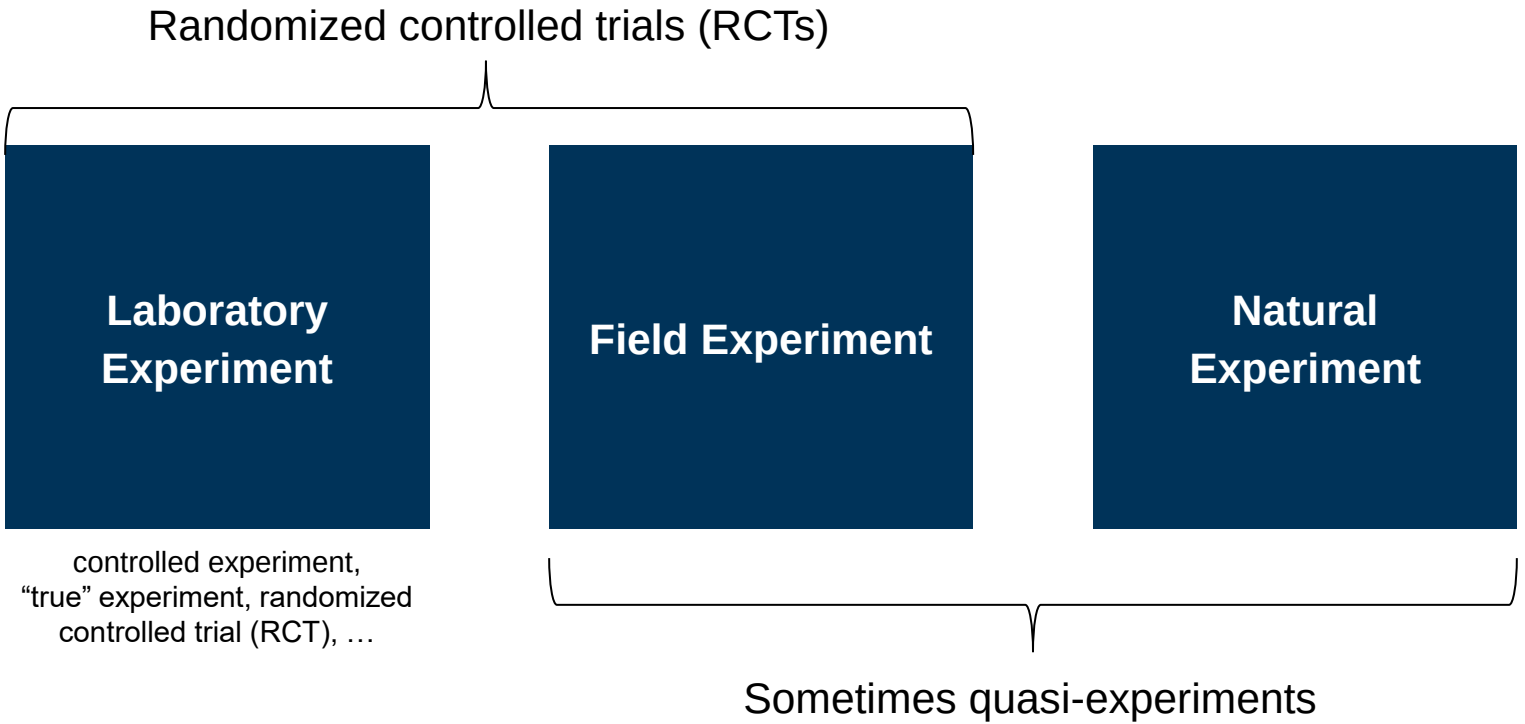


The spectrum of experiments

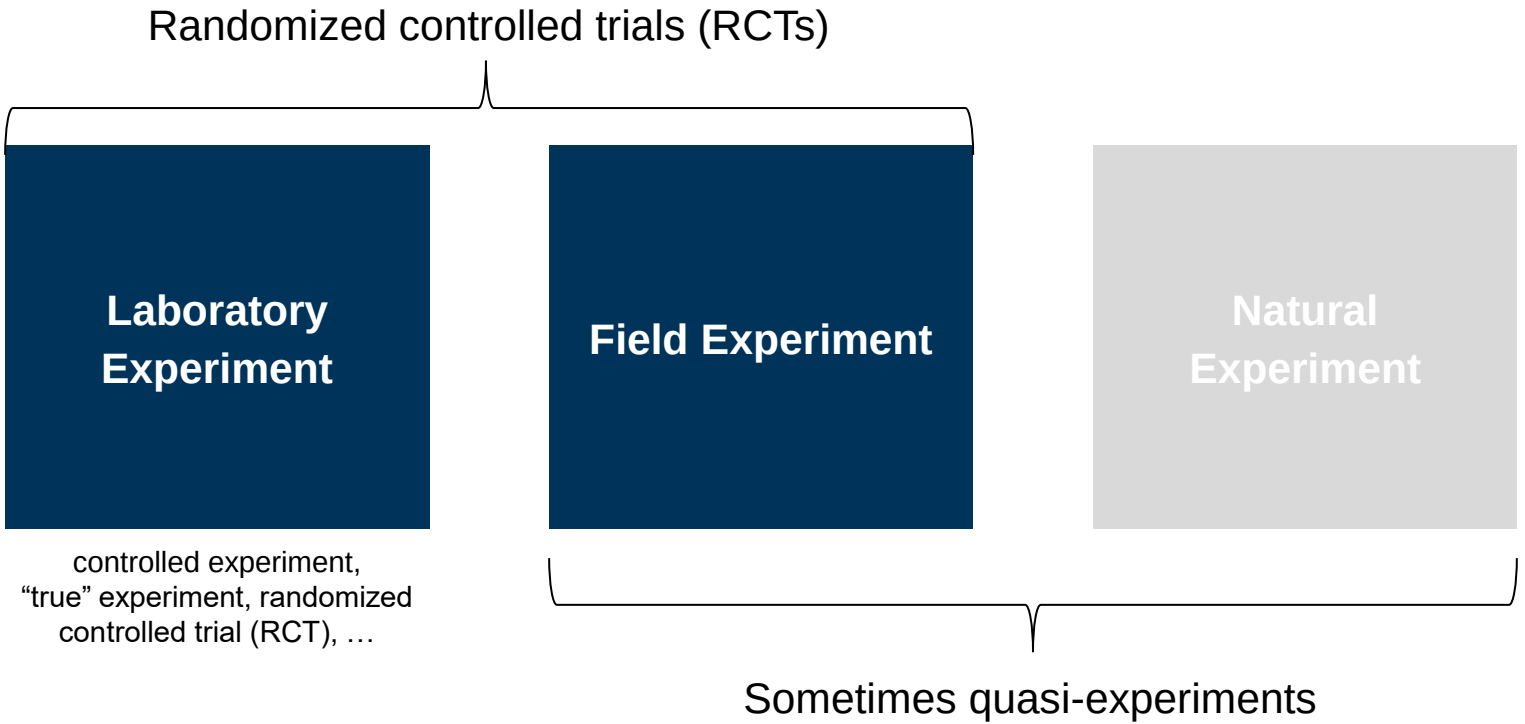
	Laboratory Experiment	Artefactual Field Experiment	Framed Field Experiment	Natural field experiment
Participants	Students	Professionals		
Location	Laboratory		Field	
Informed consent	Knowledge that experiment takes place			No knowledge
Example	e.g., experiment that test the effects of emotions on risk-taking	e.g., experiment with CEOs that tests the effects of emotions on risk-taking	e.g., experiment with CEOs that test the effects of emotions on risk-taking in the field	e.g., experiment that measures racism by sending people of different races but otherwise similar appearance to car dealers and then observe the prices

Source: based on List, 2011

The spectrum of experiments



Types of experiments



Experiments in a nutshell

- Systematic observation process in a **controlled setting**
- **Controlled manipulation (treatment conditions)** of the independent variable *(not in natural experiments)*
- **Random assignment** to treatment conditions *(sometimes not in field/natural experiments)*

Source: Huber (2005), Sarris & Reiß (2005)

Random Assignment

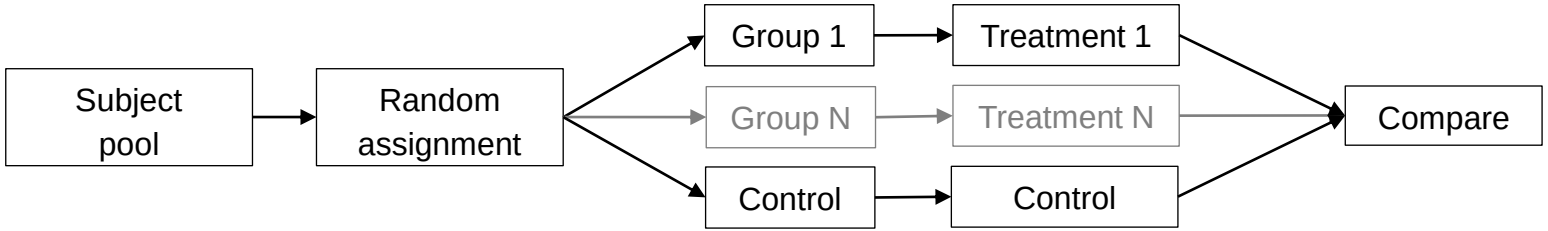
Random assignment ≠ Random sampling

- Units are **assigned to receive the treatment or an alternative condition by a random process** such as the toss of a coin or a table of random numbers
- If implemented correctly, random assignment creates **two or more groups of units that are probabilistically similar to each other on the average**
- Any outcome differences that are observed between those groups at the end of a study are likely to be due to treatment, not due to differences between those groups that already existed at the start of the study

Source: Dunn (2009), Shadish et al. (2002), Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002).

Experimental Design

Between subject design (Between group design)



Example 1: Two-level research design

Factor A	Level A1	A1
	Level A2	A2

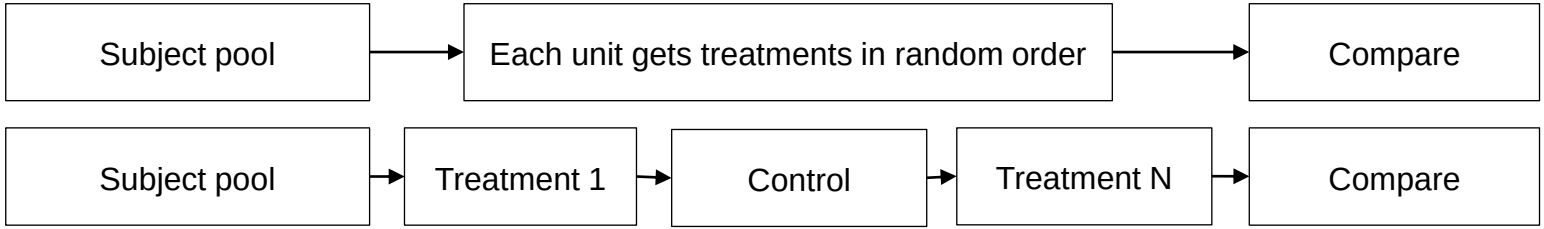
Example 2: 2 x 2 research design

		Factor A	
		Level A1	Level A2
Factor B	Level B1	A1B1	A2B1
	Level B2	A1B2	A2B2

Source: Dunn (2009)

Experimental Design

Within subject design (Within group design)



Example 1: Independent Variable with two Levels

Participant	Treatment Order
1	AB
2	BA

Example 2: Independent Variable with four Levels

Participant	Treatment Order
1	ABCD
2	ABDC
…	…
24	DCBA

Source: Dunn (2009)

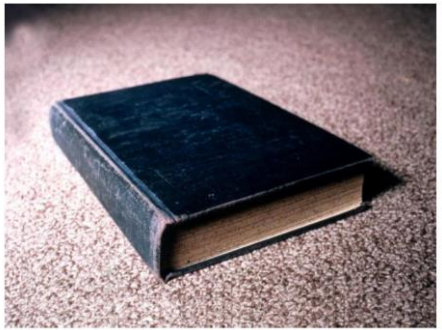
Controlled manipulation

Example: Manipulation of Emotions

- Pictures (e.g. Lang et al., 1997)
- Scenarios (e.g. Gross & D‘Ambrosio, 2004)
- Film clips (e.g. Hewig et al., 2005)
- Memories (e.g. Schaefer & Philippot, 2005)
- Speech (e.g. Brooks, 2013)

IMAP picture 8370-rafting1 (inducing excitement).

IMAP picture 7090-book (neutral).

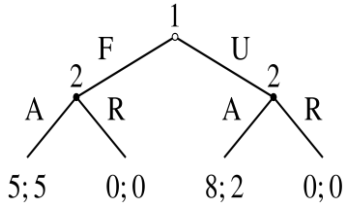


Experimental tasks

Tasks in Economic Research

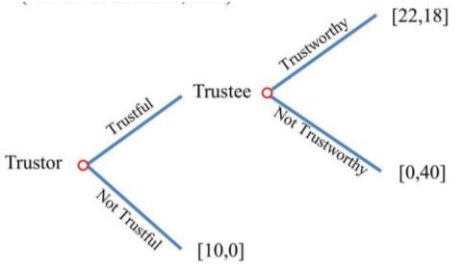
- Ultimatum game
- Dictator game
- Trust/investment game

Ultimatum game



Dictator game

Trust/Investment game

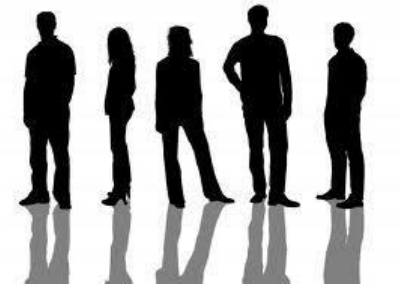


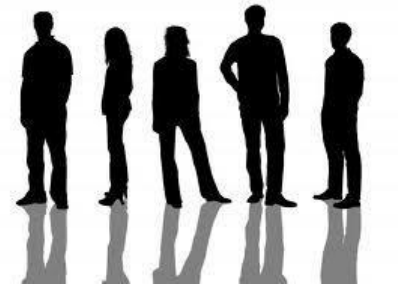
Tasks in Psychological Research

- Analytical tasks (e.g. sudoku)
- Creative tasks (e.g. drawing task)
- Decision tasks (e.g. scenarios/cases, computer games e.g. Minecraft)

Example 1: Main effects

Hypothesis: Students who drink coffee are more interested in survey research than students who drink tomato juice.

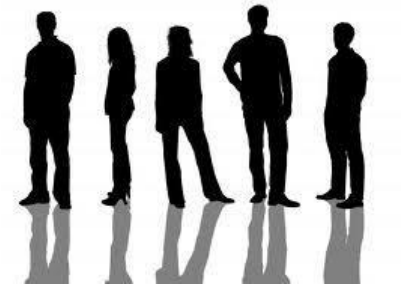


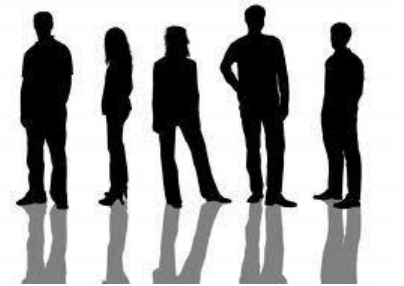


1. Sample
2. Independent Variable
3. Dependent Variable

Example 1: Main effects

Hypothesis: Students who drink coffee are more interested in survey research than students who drink tomato juice.

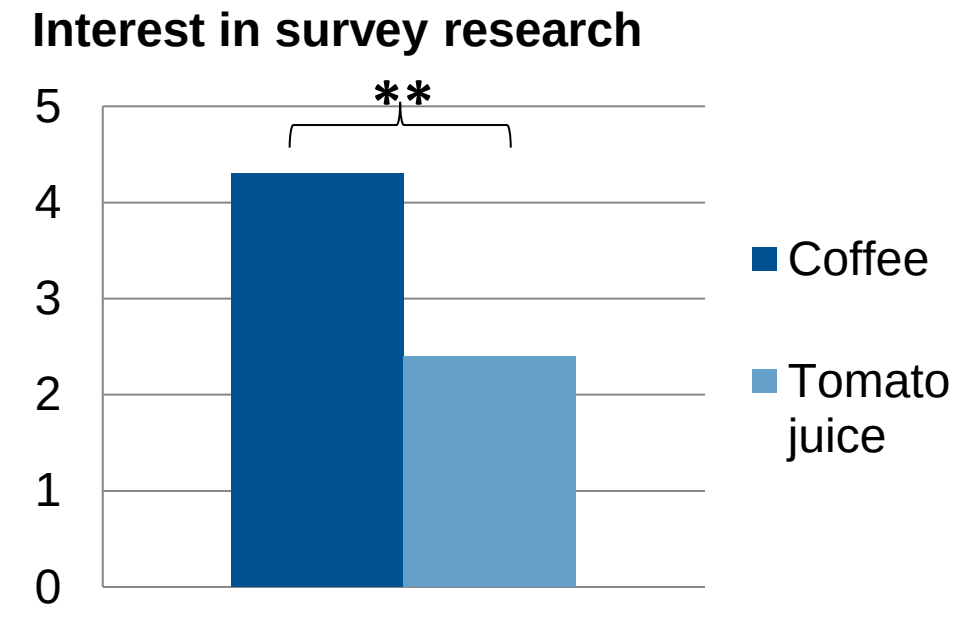




1. Sample
2. Independent Variable
3. Dependent Variable

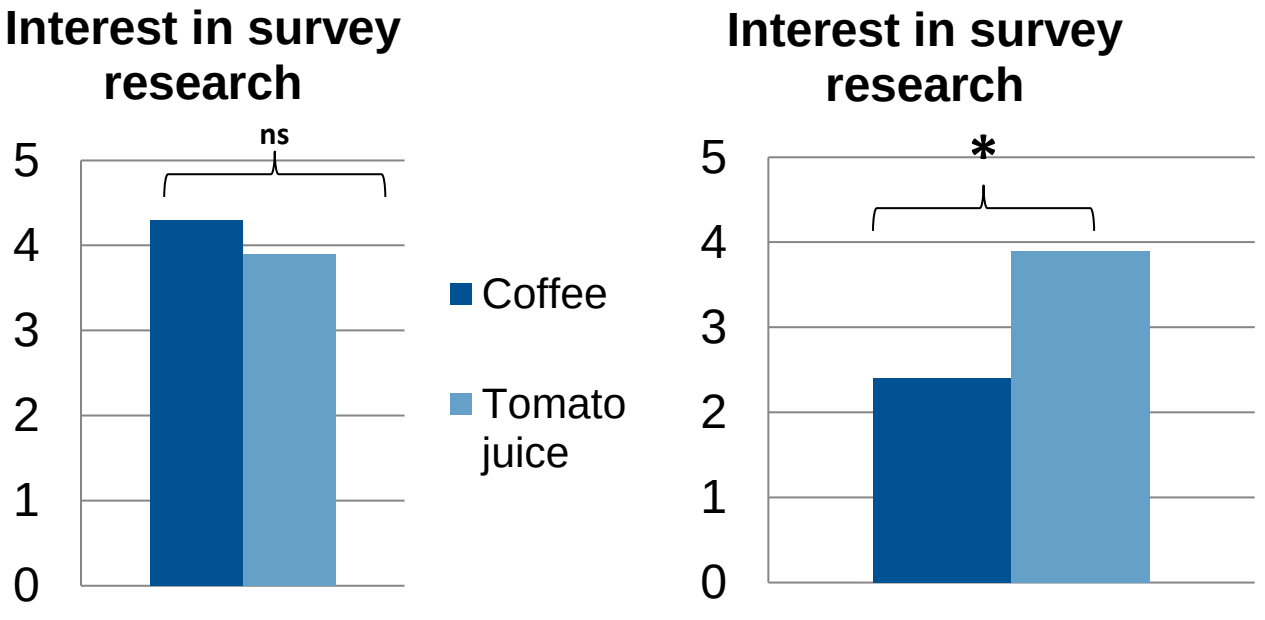
- your IV ”beverage“ has two levels (= “factors”; coffee, tomato juice)
- your DV ”interest in survey research“ is continuous

Possible results



Hypothesis supported

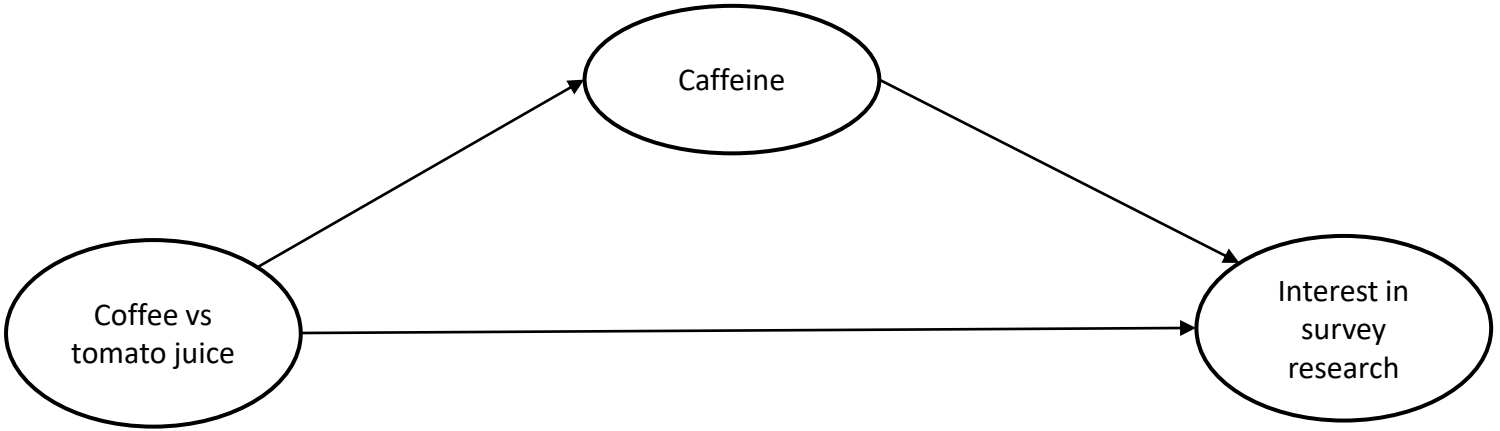
Possible results II



Hypothesis not confirmed

Example 2: Mediation

Hypothesis: The positive relationship between coffee and interest in survey research is mediated by caffeine.



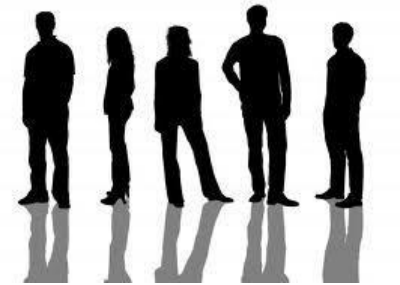
1. Independent Variable
2. Dependent Variable
3. Mediator

Example 3: Moderation

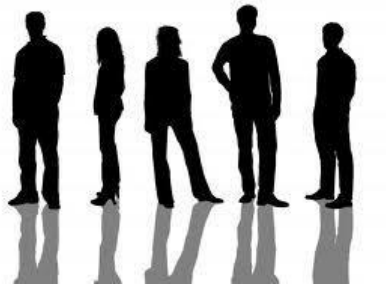
Hypotheses:

H1. Students who drink coffee are more interested in survey research than students who drink tomato juice.

H2. Eating a cookie moderates this relationship: Students who drink coffee are more interested in survey research when eating a cookie than when not eating a cookie, whereas students who drink tomato juice and eat a cookie are less interested in survey research than when not eating a cookie



1. Sample
2. Independent Variable
3. Dependent Variable

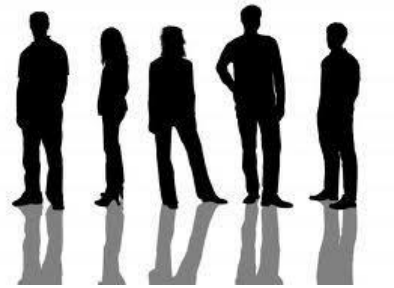


Example 3: Moderation

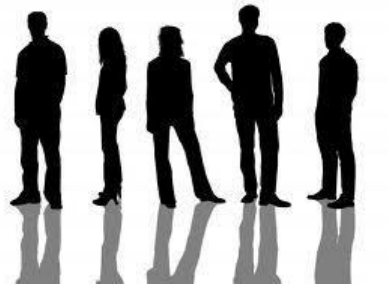
Two independent variables with 2 levels (2 x 2 design):

- Type of beverage (coffee/tomato juice)
- Cookie (yes/no)

Dependent variable „interest in survey research“ is continuous

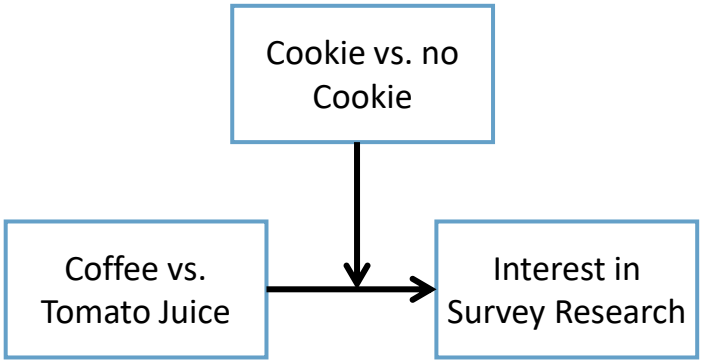


1. Sample
2. Independent Variable
3. Dependent Variable

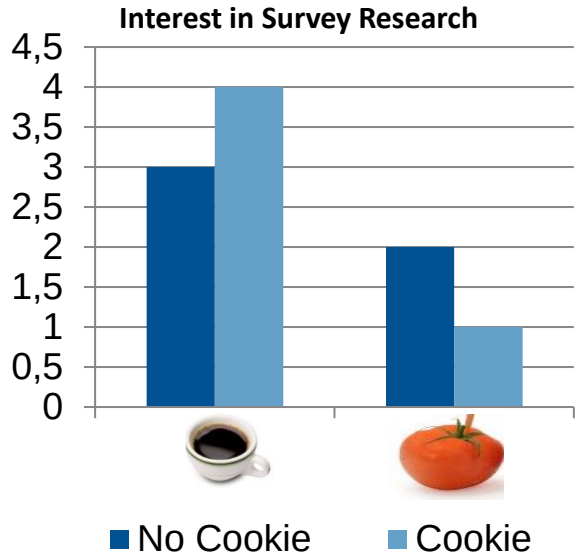


Research Model & Expected Results

Research Model

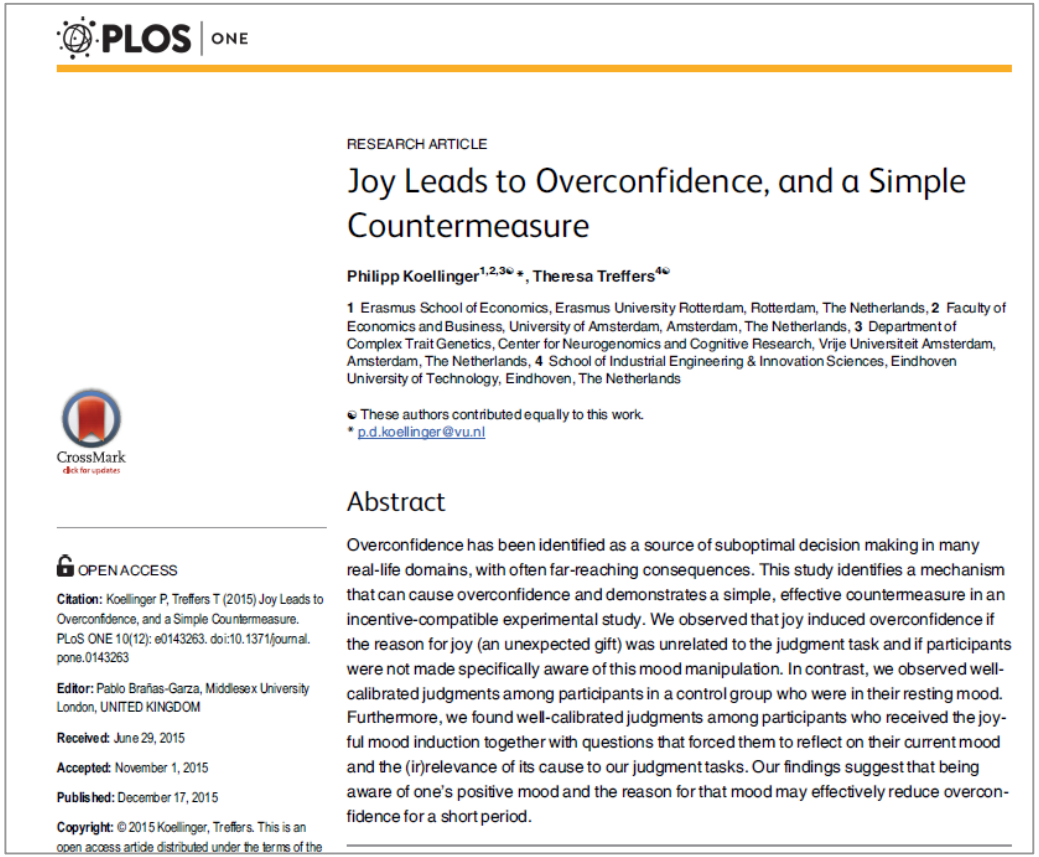


Expected Results



Students who drink coffee and eat a cookie are more interested in survey research than students who only drink coffee, whereas students who drink tomato juice and eat are cookie are less interested in survey research than when only drinking tomato juice. → H2 supported.

Paper example: *Lab experiment*



PLOS | ONE

RESEARCH ARTICLE

Joy Leads to Overconfidence, and a Simple Countermeasure

Philipp Koellinger[1,2,3☯]*, **Theresa Treffers**[4☯]

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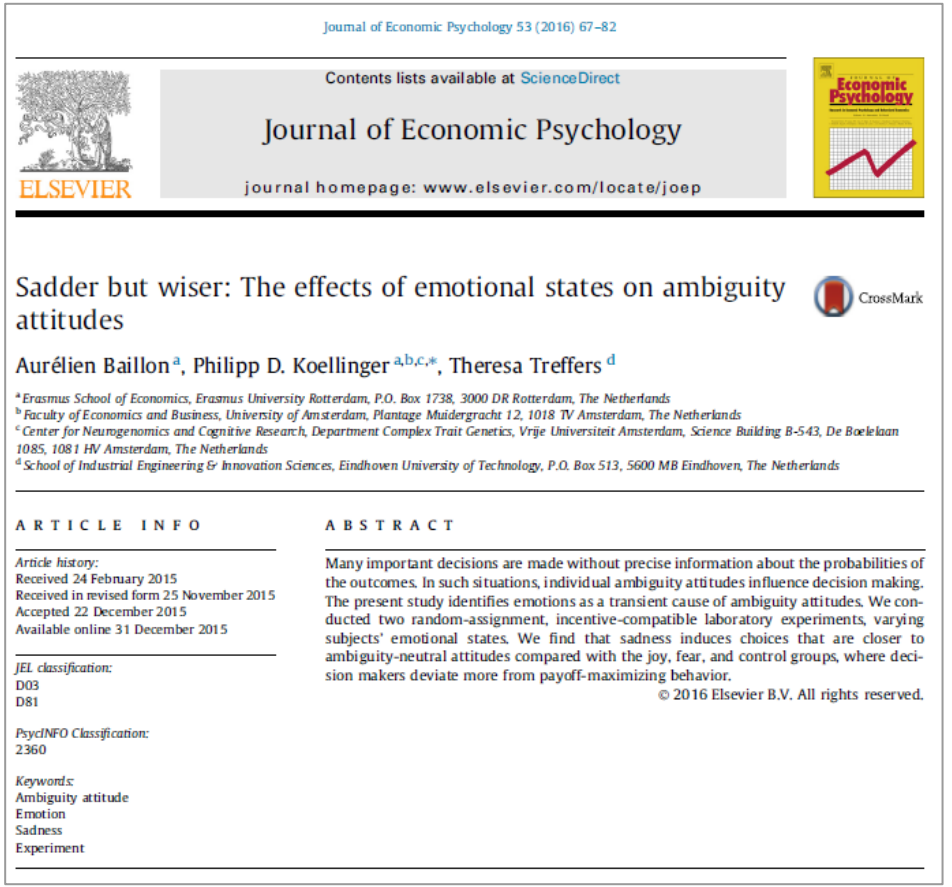
Abstract

Overconfidence has been identified as a source of suboptimal decision making in many real-life domains, with often far-reaching consequences. This study identifies a mechanism that can cause overconfidence and demonstrates a simple, effective countermeasure in an incentive-compatible experimental study. We observed that joy induced overconfidence if the reason for joy (an unexpected gift) was unrelated to the judgment task and if participants were not made specifically aware of this mood manipulation. In contrast, we observed well-calibrated judgments among participants in a control group who were in their resting mood. Furthermore, we found well-calibrated judgments among participants who received the joyful mood induction together with questions that forced them to reflect on their current mood and the (ir)relevance of its cause to our judgment tasks. Our findings suggest that being aware of one's positive mood and the reason for that mood may effectively reduce overconfidence for a short period.

Paper example: *Lab experiment*



Journal of Economic Psychology 53 (2016) 67–82

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Sadder but wiser: The effects of emotional states on ambiguity attitudes

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Emotion
Sadness
Experiment

ABSTRACT

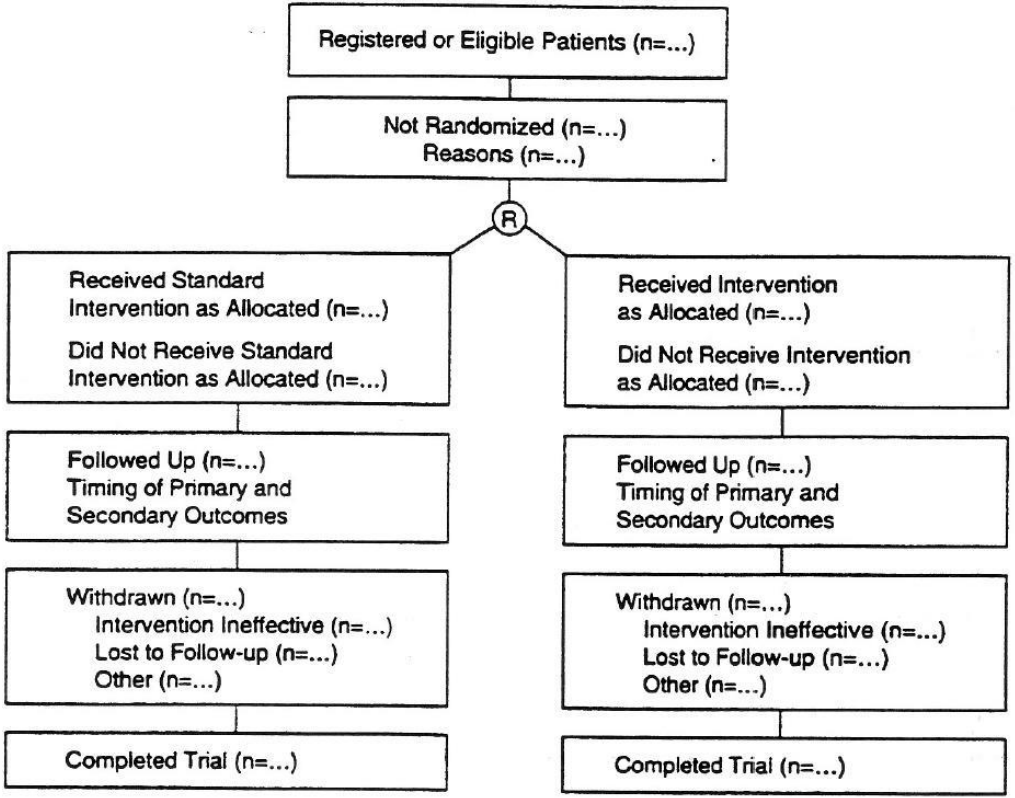
Many important decisions are made without precise information about the probabilities of the outcomes. In such situations, individual ambiguity attitudes influence decision making. The present study identifies emotions as a transient cause of ambiguity attitudes. We conducted two random-assignment, incentive-compatible laboratory experiments, varying subjects' emotional states. We find that sadness induces choices that are closer to ambiguity-neutral attitudes compared with the joy, fear, and control groups, where decision makers deviate more from payoff-maximizing behavior.

RCTs: CONSORT Guidelines

Heading	Subheading	Descriptor	Was It Reported?	On What Page No.?
Title		Identify the study as a randomized trial.[7]		
Abstract		Use a structured format.[8,9]		
Introduction		State prospectively defined hypothesis, clinical objectives, and planned subgroup or covariate analyses.[10]		
Methods				
	Protocol	Describe Planned study population, together with inclusion/exclusion criteria. Planned interventions and their timing. Primary and secondary outcome measure(s) and the minimum important difference(s), and indicate how the target sample size was projected.[2,11] Rationale and methods for statistical analyses, detailing main comparative analyses and whether they were completed on an intention-to-treat basis.[12,13] Prospectively defined stopping rules (if warranted).[14]		
	Assignment	Describe Unit of randomization (eg, individual, cluster, geographic).[15] Method used to generate the allocation schedule.[16] Method of allocation concealment and timing of assignment.[17] Method to separate the generator from the executor of assignment.[17,18]		
	Masking (Blinding)	Describe mechanism (eg, capsules, tablets); similarity of treatment characteristics (eg, appearance, taste); allocation schedule control (location of code during trial and when broken); and evidence for successful blinding among participants, person doing intervention, outcome assessors, and data analysts.[19,20]		
Results				
	Participant Flow and Follow-up	Provide a trial profile (Figure) summarizing participant flow, numbers and timing of randomization assignment, interventions, and measurements for each randomized group.[3,21]		
	Analysis	State estimated effect of intervention on primary and secondary outcome measures, including a point estimate and measure of precision (confidence interval).[22,23] State results in absolute numbers when feasible (eg, 10/20, not 50%). Present summary data and appropriate descriptive and inferential statistics in sufficient detail to permit alternative analyses and replication.[24] Describe prognostic variables by treatment group and any attempt to adjust for them.[25] Describe protocol deviations from the study as planned, together with the reasons.		
Comment		State specific interpretation of study findings, including sources of bias and imprecision (internal validity) and discussion of external validity, including appropriate quantitative measures when possible. State general interpretation of the data in light of the totality of the available evidence.		

Begg, C., Cho, M., Eastwood, S., Horton, R., Moher, D., Olkin, I., ... & Stroup, D. F. (1996). Improving the quality of reporting of randomized controlled trials: the CONSORT statement. The Journal of the American Medical Association (JAMA), *276*(8), 637-639.

RCTs: CONSORT Guidelines



Begg, C., Cho, M., Eastwood, S., Horton, R., Moher, D., Olkin, I., ... & Stroup, D. F. (1996). Improving the quality of reporting of randomized controlled trials: the CONSORT statement. The Journal of the American Medical Association (JAMA), *276*(8), 637-639.

RCTs in the field: Examples

Dear Parents,
To show our commitment to evidence-based practice, this year's fourth grade class will be randomly assigned to one of two groups.
The treatment group will receive a good education while the control group will receive a placebo. This study will provide value for generations to come.

freshspectrum.com

http://freshspectrum.com/wp-content/uploads/2014/03/Grade-4-RCT.png

RCTs: The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2019 - Esther Duflo, Abhijit Banerjee, and Michael Kremer

Abhijit Banerjee

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Esther Duflo

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Michael Kremer

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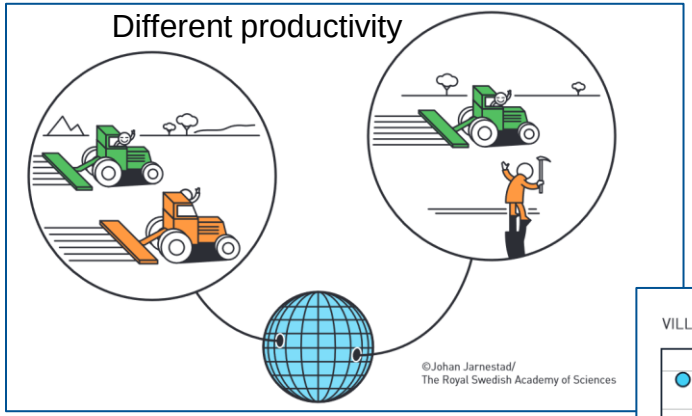
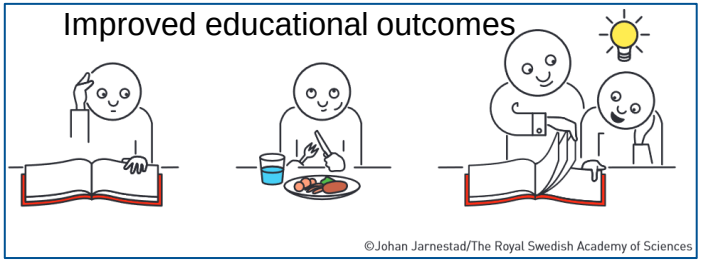
The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2019 was awarded jointly to three economists Abhijit Banerjee, Esther Duflo and Michael Kremer "for their experimental approach to alleviating global poverty."

They used RCTs to determine how to best lift people out of poverty and improve their health.

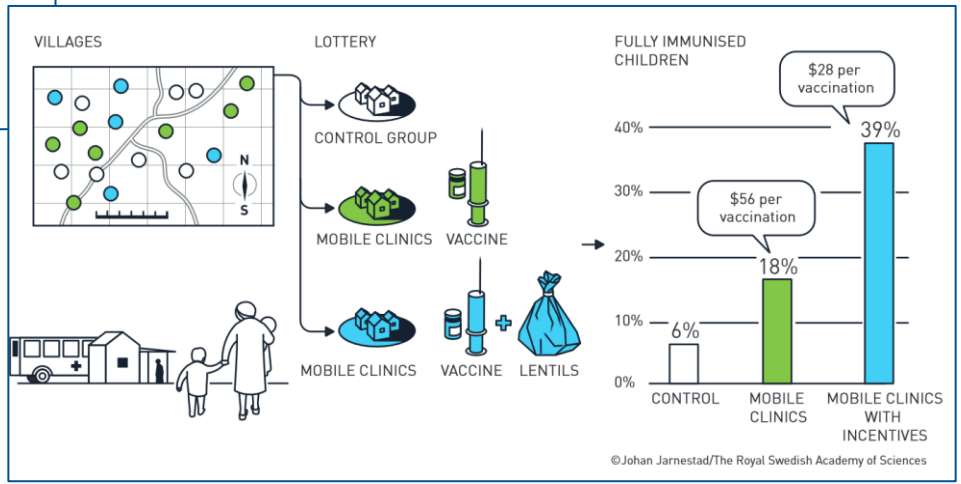
The Prize in Economic Sciences 2019. NobelPrize.org. Nobel Media AB 2020. Mon. 16 Mar 2020. https://www.nobelprize.org/prizes/economic-sciences/2019/summary/.
Callaway, E. (2019). 'Randomistas' who used controlled trials to fight poverty win economics Nobel. Nature, 14 October 2019. doi: 10.1038/d41586-019-03125-y. https://www.nature.com/articles/d41586-019-03125-y.

RCTs: The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2019 - Esther Duflo, Abhijit Banerjee, and





Vaccination rates



Press release: The Prize in Economic Sciences 2019. NobelPrize.org. Nobel Media AB 2020. Tue. 17 Mar 2020. https://www.nobelprize.org/prizes/economic-sciences/2019/press-release/ Attribute "© Johan Jarnestad/The Royal Swedish Academy of Sciences"

Paper example: *field experiment*

Economica LSE

Economica (2014)
doi:10.1111/ecca.12115

Self-employed But Looking: A Labour Market Experiment

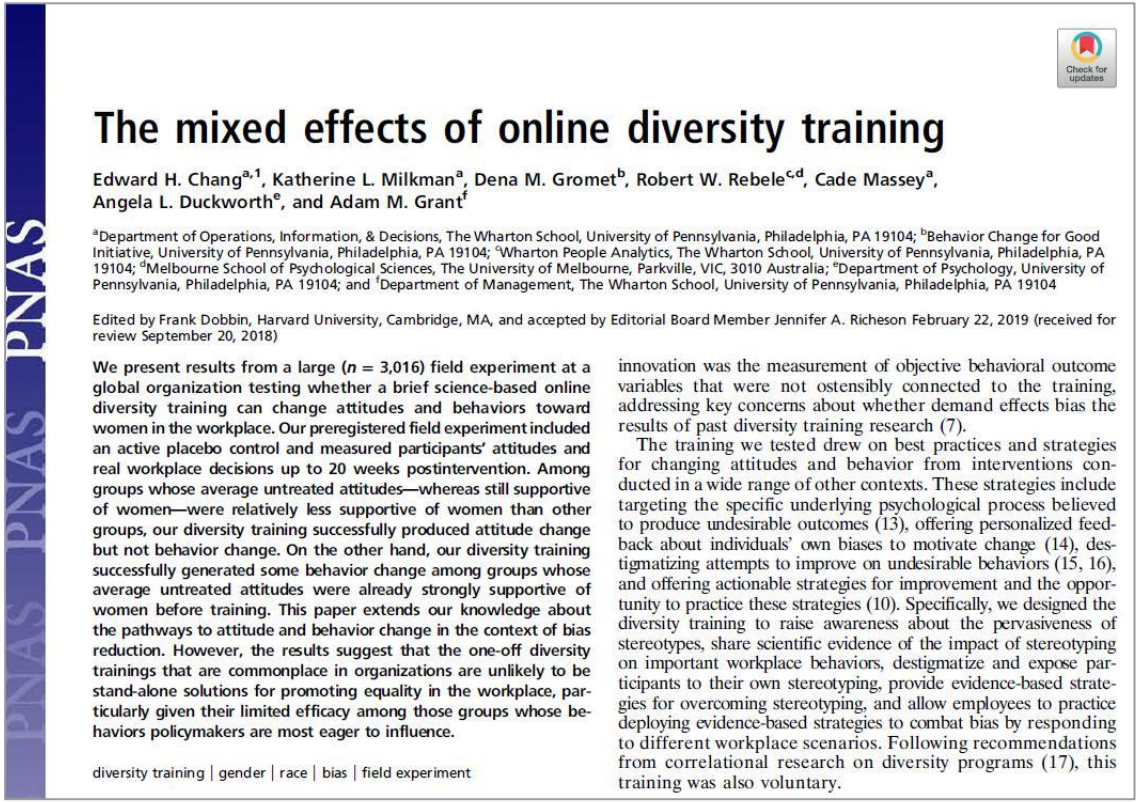
By PHILIPP D. KOELLINGER†, JULIJA N. MELL‡, IRENE POHL‡, CHRISTIAN ROESSLER†† and THERESA TREFFERS‡‡

†*Erasmus University Rotterdam and University of Amsterdam* ‡*Erasmus University Rotterdam* ††*California State University East Bay* ‡‡*Eindhoven University of Technology*

Final version received 8 October 2013.

We examine whether having previously been self-employed is a negative signal on the job market. In a UK field experiment where two applications of otherwise equally qualified individuals were sent out in response to the same vacancies in human resource management, we find that entrepreneurs systematically receive fewer responses than non-entrepreneurs. Empirical studies that treat market wages as the opportunity cost of remaining self-employed are therefore likely to overestimate alternative earnings to entrepreneurship.

Paper example: *field experiment*



PNAS PNAS PNAS

The mixed effects of online diversity training

Edward H. Chang[a,1], Katherine L. Milkman[a], Dena M. Gromet[b], Robert W. Rebele[c,d], Cade Massey[a], Angela L. Duckworth[e], and Adam M. Grant[f]

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Edited by Frank Dobbin, Harvard University, Cambridge, MA, and accepted by Editorial Board Member Jennifer A. Richeson February 22, 2019 (received for review September 20, 2018)

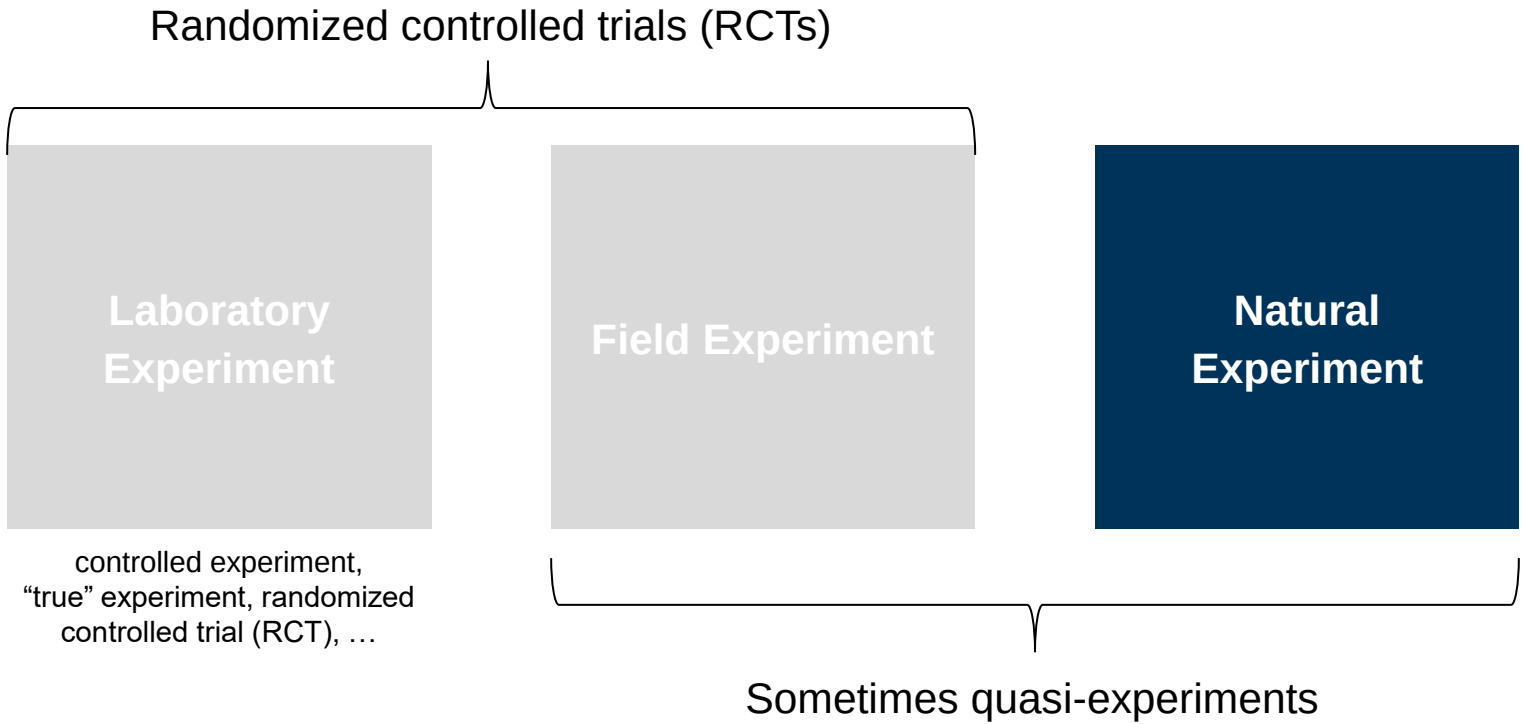
We present results from a large (n = 3,016) field experiment at a global organization testing whether a brief science-based online diversity training can change attitudes and behaviors toward women in the workplace. Our preregistered field experiment included an active placebo control and measured participants' attitudes and real workplace decisions up to 20 weeks postintervention. Among groups whose average untreated attitudes—whereas still supportive of women—were relatively less supportive of women than other groups, our diversity training successfully produced attitude change but not behavior change. On the other hand, our diversity training successfully generated some behavior change among groups whose average untreated attitudes were already strongly supportive of women before training. This paper extends our knowledge about the pathways to attitude and behavior change in the context of bias reduction. However, the results suggest that the one-off diversity trainings that are commonplace in organizations are unlikely to be stand-alone solutions for promoting equality in the workplace, particularly given their limited efficacy among those groups whose behaviors policymakers are most eager to influence.

diversity training | gender | race | bias | field experiment

innovation was the measurement of objective behavioral outcome variables that were not ostensibly connected to the training, addressing key concerns about whether demand effects bias the results of past diversity training research (7).

The training we tested drew on best practices and strategies for changing attitudes and behavior from interventions conducted in a wide range of other contexts. These strategies include targeting the specific underlying psychological process believed to produce undesirable outcomes (13), offering personalized feedback about individuals' own biases to motivate change (14), destigmatizing attempts to improve on undesirable behaviors (15, 16), and offering actionable strategies for improvement and the opportunity to practice these strategies (10). Specifically, we designed the diversity training to raise awareness about the pervasiveness of stereotypes, share scientific evidence of the impact of stereotyping on important workplace behaviors, destigmatize and expose participants to their own stereotyping, provide evidence-based strategies for overcoming stereotyping, and allow employees to practice deploying evidence-based strategies to combat bias by responding to different workplace scenarios. Following recommendations from correlational research on diversity programs (17), this training was also voluntary.

Types of experiments



Natural experiments

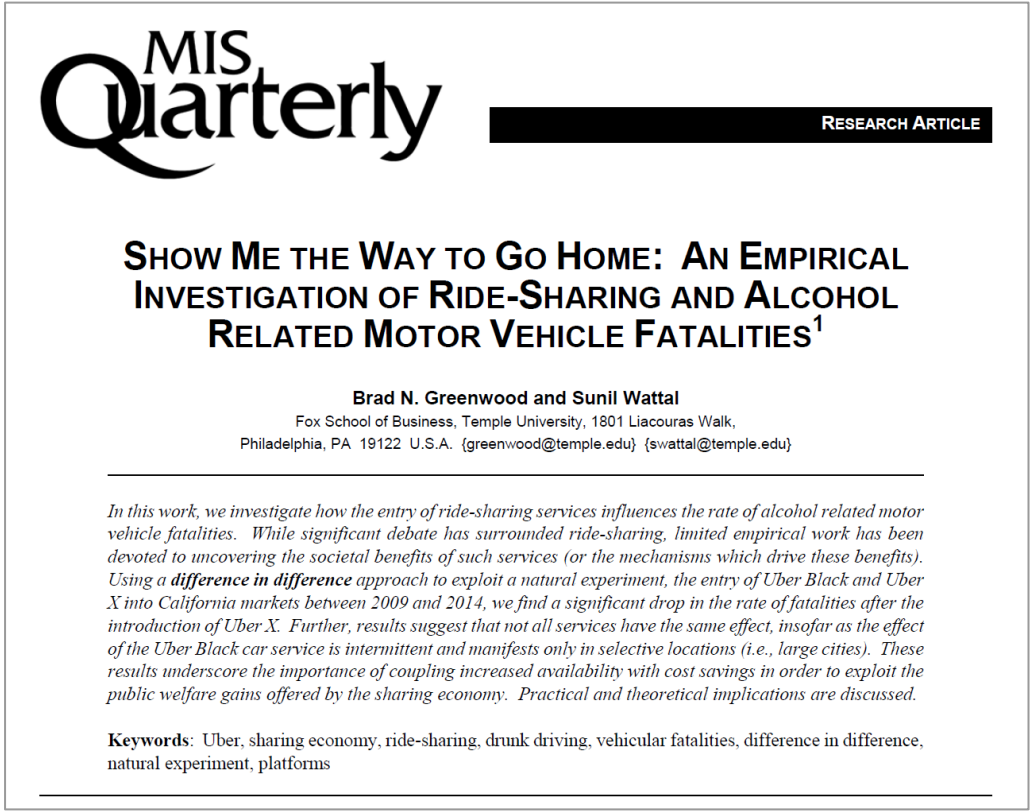
- Independent variable is not a planned intervention, but is changed naturally. Change is not controlled by the experimenter.
- Effect on outcome variable is measured.
- Assignment of subjects to groups as-if random, or as good as random

Why natural experiments?

In some contexts, manipulations are:

- Expensive
- Impractical
- Unethical

Paper example: *Natural field experiment*



MIS Quarterly

RESEARCH ARTICLE

SHOW ME THE WAY TO GO HOME: AN EMPIRICAL INVESTIGATION OF RIDE-SHARING AND ALCOHOL RELATED MOTOR VEHICLE FATALITIES[1]

Brad N. Greenwood and Sunil Wattal
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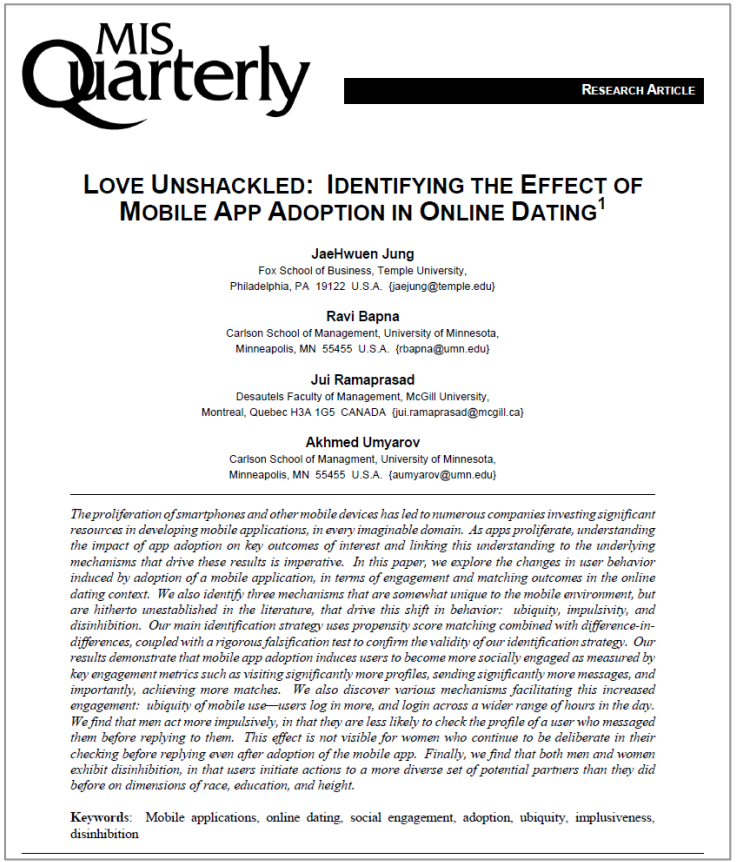
Philadelphia, PA 19122 U.S.A. {greenwood@temple.edu} {swattal@temple.edu}

In this work, we investigate how the entry of ride-sharing services influences the rate of alcohol related motor vehicle fatalities. While significant debate has surrounded ride-sharing, limited empirical work has been devoted to uncovering the societal benefits of such services (or the mechanisms which drive these benefits). Using a ***difference in difference*** *approach to exploit a natural experiment, the entry of Uber Black and Uber X into California markets between 2009 and 2014, we find a significant drop in the rate of fatalities after the introduction of Uber X. Further, results suggest that not all services have the same effect, insofar as the effect of the Uber Black car service is intermittent and manifests only in selective locations (i.e., large cities). These results underscore the importance of coupling increased availability with cost savings in order to exploit the public welfare gains offered by the sharing economy. Practical and theoretical implications are discussed.*

Keywords: Uber, sharing economy, ride-sharing, drunk driving, vehicular fatalities, difference in difference, natural experiment, platforms

Paper example: *Natural field experiment*



MIS Quarterly

RESEARCH ARTICLE

LOVE UNSHACKLED: IDENTIFYING THE EFFECT OF MOBILE APP ADOPTION IN ONLINE DATING[1]

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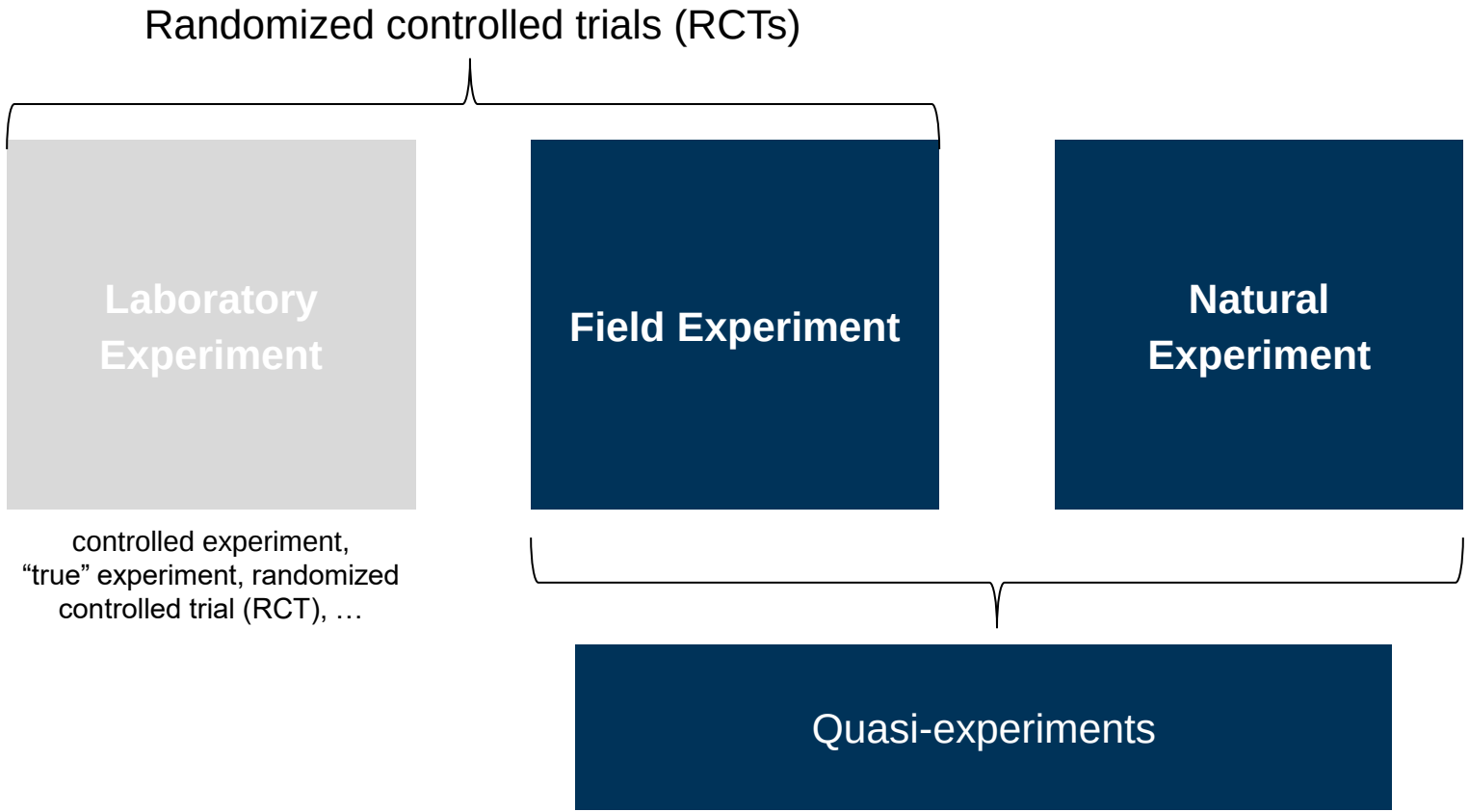
The proliferation of smartphones and other mobile devices has led to numerous companies investing significant resources in developing mobile applications, in every imaginable domain. As apps proliferate, understanding the impact of app adoption on key outcomes of interest and linking this understanding to the underlying mechanisms that drive these results is imperative. In this paper, we explore the changes in user behavior induced by adoption of a mobile application, in terms of engagement and matching outcomes in the online dating context. We also identify three mechanisms that are somewhat unique to the mobile environment, but are hitherto unestablished in the literature, that drive this shift in behavior: ubiquity, impulsivity, and disinhibition. Our main identification strategy uses propensity score matching combined with difference-in-differences, coupled with a rigorous falsification test to confirm the validity of our identification strategy. Our results demonstrate that mobile app adoption induces users to become more socially engaged as measured by key engagement metrics such as visiting significantly more profiles, sending significantly more messages, and importantly, achieving more matches. We also discover various mechanisms facilitating this increased engagement: ubiquity of mobile use—users log in more, and login across a wider range of hours in the day. We find that men act more impulsively, in that they are less likely to check the profile of a user who messaged them before replying to them. This effect is not visible for women who continue to be deliberate in their checking before replying even after adoption of the mobile app. Finally, we find that both men and women exhibit disinhibition, in that users initiate actions to a more diverse set of potential partners than they did before on dimensions of race, education, and height.

Keywords: Mobile applications, online dating, social engagement, adoption, ubiquity, implusiveness, disinhibition

Types of experiments



Quasi-Experiments

What are Quasi-Experiments? They…

- … take place in field setting
- … involve a change in a key independent variable of interest
- … relax <u>one or both</u> of the defining criteria of laboratory and field experiments:

NO	Random assignment to treatment conditions	**…BUT**	Assignment to intact or preexisting groups
	Controlled manipulation of the independent variable		Looking for natural occurring changes

<u>Objective:</u> strengthen causal inference while maintaining internal and external validity without interrupting “real life” through intrusive intervention (e.g. Campbell & Stanley, 1966)

Source: Grant and Wall (2009). The Neglected Science and Art of Quasi-Experimentation.

Paper example: *Quasi experiment*

A threat and a challenge at the same time? A quasi-experiment about the effects of ambivalence on innovative work behavior during crisis

(working paper)

Ann-Carolin Ritter, Theresa Treffers, Batia Wiesenfeld

ABSTRACT

An economic crisis can cause a firm's demise. Some firms, however, thrive through crisis because their employees engage in innovative work behaviors, but research has not yet provided enough insights into innovative work behavior in crisis. In this study, we explore employees' innovative work behavior when they feel challenged and threatened during a crisis. We assume that this ambivalence is differently experienced by employees depending on their individual work situation and over the course of a crisis. To explore this empirical puzzle, we set up a quasi-experiment with 217 employees by using the governmental classification that declared critical and non-critical workers during the COVID-19 crisis. We measured the extent to which these two groups of workers experienced their work situation during crisis as threat and challenge, i.e., ambivalence, and its effects on innovative work behavior at the beginning and at the end of the first lock-down. Our findings show that high ambivalence has both positive and negative effects on innovative work behavior depending on employees' work situation and that these effects reverse over time. Our study contributes to research on innovative work behavior in crises and the ambivalence literature.

Keywords: Innovative Work Behavior, Crisis, Challenge, Threat, Ambivalence, COVID-19 pandemic

Paper example: *Quasi experiment*

PERSONNEL PSYCHOLOGY
2002, 55

RECOGNIZING GOOD ATTENDANCE: A LONGITUDINAL, QUASI-EXPERIMENTAL FIELD STUDY

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The R.B. Pamplin College of Business
Virginia Polytechnic Institute and State University

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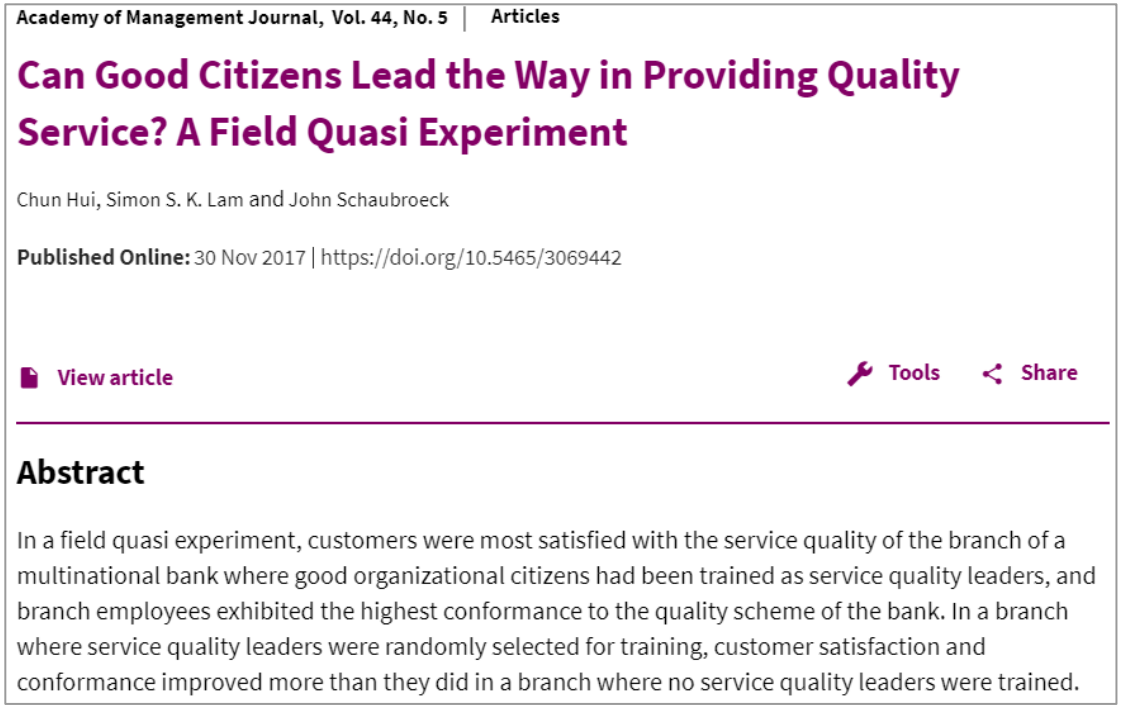
Institute of Human Resources and Industrial Relations
Loyola University Chicago

GAIL H. McKEE
Department of Business Administration and Economics
Roanoke College

Three motivational theories (need, goal, and reinforcement) suggest that recognition programs should increase employee attendance. A 1-year, quasi-experimental field study of absenteeism was conducted at 4 manufacturing plants with a total 1,100 employees. The study compared a public recognition program for improving work attendance with 3 types of controls. The personal recognition treatment showed (a) significant decreases ranging from 29% to 52% for each quarter's baseline assessment, and (b) significant decreases when the control groups showed no decrease. Employees had favorable perceptions of the public recognition program.

Paper example: *Quasi experiment*



Academy of Management Journal, Vol. 44, No. 5 | Articles

Can Good Citizens Lead the Way in Providing Quality Service? A Field Quasi Experiment

Chun Hui, Simon S. K. Lam and John Schaubroeck

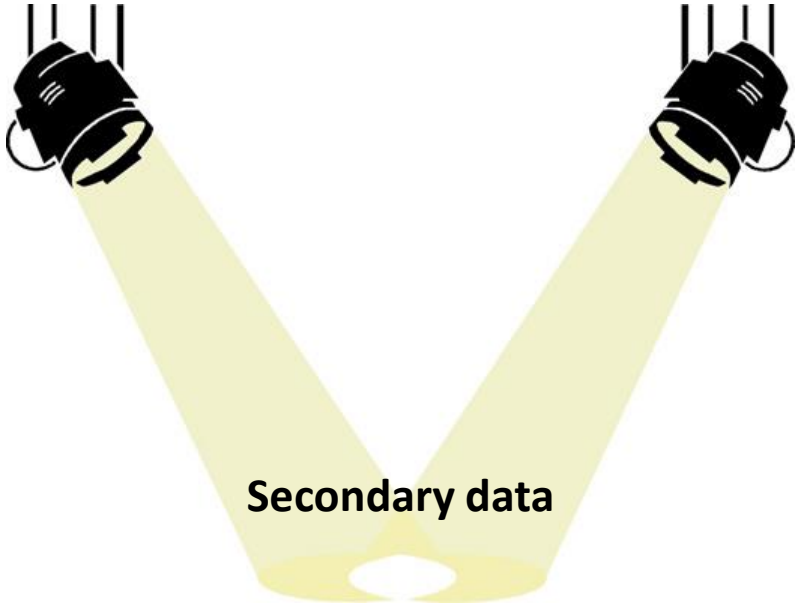
Published Online: 30 Nov 2017 | https://doi.org/10.5465/3069442

View article Tools Share

Abstract

In a field quasi experiment, customers were most satisfied with the service quality of the branch of a multinational bank where good organizational citizens had been trained as service quality leaders, and branch employees exhibited the highest conformance to the quality scheme of the bank. In a branch where service quality leaders were randomly selected for training, customer satisfaction and conformance improved more than they did in a branch where no service quality leaders were trained.

Spotlight on…



Types of Data (I)

Primary	*Original data collected for a specific research goal.*
“Mixed” Approaches	*creation of original quantitative data from secondary sources*
Secondary	*Data originally collected for a different purpose and reused for another research question.*

Hox, J. J., & Boeije, H. R. (2005). Data collection, primary versus secondary.
Mixed Approaches: Adapted from Fabian Gaessler, Lecture on Empirical Research Methods

Types of Data (II)

Qualitative	*Data involving understandings of the complexity, detail, and context of the research subject, often consisting of texts, such as interview transcripts and field notes, or audiovisual material.*
Quantitative	*Data that can be described numerically in terms of objects, variables, and their values.*

Internal	Company-internal data *(e.g.* controlling, customer service, finance*)*
External	published data (e.g. public or commercial data sets)

Metadata	*The description of a data file, usually in the form of a codebook.*

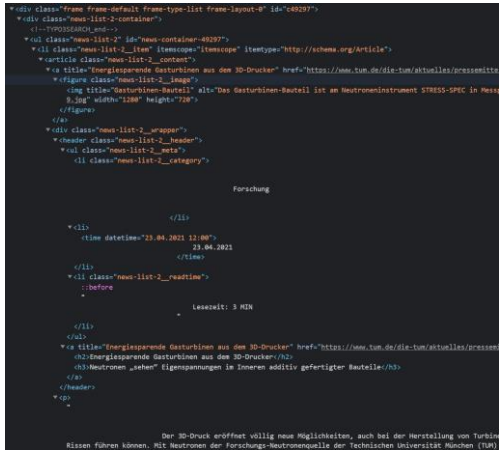
Hox, J. J., & Boeije, H. R. (2005). Data collection, primary versus secondary.

Types of Data (III)

Structured Data

uuid	name_org	type_org	permalink_org
b8eee9cb-3fb9-d6eb-181f-3366e0b8fe6e	apomio	organization	apomio
75ad4067-45a7-25e6-0978-48f6e394ad98	KeyNeurotek Pharmaceuticals	organization	keyneurotek-pharmaceuticals
a8931ddd-2903-fe5b-10b7-09c5b11d412d	c-LEcta	organization	c-lecta
deefdd8a-5c97-215e-2c08-3f4327af706f	intelligent fluids GmbH	organization	bubbles-and-beyond
de539431-f104-7aeb-b9ef-ca88746b321	InterMed Discovery	organization	intermed-discovery
9121408c-c5f1-67a6-ae22-212307b6f48b	pluriSelect	organization	pluriselect
9e06f980-9ecf-d8b6-e1ff-6e597206b6f6	Microstim	organization	microstim
5d2160a5-cbe3-d03a-fba1-536533b81e1e	Sovicell GmbH	organization	sovicell
eee841d0-e8a4-e12f-31f9-6dfb9b770daa	Leica Microsystems	organization	leica-microsystems
925cde12-4862-be40-9c84-9f361057c5a7	DIREVO Industrial Biotechnology	organization	direvo-biotech
a7f14220-a470-970a-bcdd-0d0e2f6d80c6	Protagen	organization	protagen
3ee19a2a-0d36-de96-676a-c9b8ce4c75aa	Amaxa Biosystems	organization	amaxa-biosystems
10803590-185a-bee6-f4ab-905a775d5874	Vivoryon Therapeutics	organization	probiodrug
437d5194-a09c-824e-4c1a-d83125c2ffb5	Activaero	organization	activaero
f6555f7f-9f29-315f-2b74-ecf217c8f63e	ELARA Pharmaceuticals	organization	elara-pharmaceuticals
cbc5e3d3-d8b2-b751-abc7-3405b3ec414a	Curetis	organization	curetis
d83bc970-4cad-aa4d-d5da-f9d32acf5f2d	Cytocentrics	organization	cytocentrics
0d3a2da3-ec78-f0c3-b601-3dd13ff511d7	TNI medical	organization	tni-medical
0847a454-9e2a-0e29-9e1a-03a1804eb2d7	EBS Technologies	organization	ebs-technologies
93c18bad-7efc-f16a-fc7c-1d0e6355b313	Amedrix	organization	amedrix
ca9021c6-2113-a2b8-7244-e72b92a183b8	MTM Laboratories	organization	mtm-laboratories
294a7e20-93d9-21f1-71b6-89ea4f617d77	CEVEC Pharmaceuticals	organization	cevec-pharmaceuticals
2a5804b6-edd4-d781-5157-b78faf0dc2c2	immatics biotechnologies	organization	immatics-biotechnologies
789d0a78-6320-66b5-a3bc-01f1ca35fb69	Caprotec Bioanalytics	organization	caprotec-bioanalytics
93578f7d-90e0-ba1e-5756-a37819ba896f	Sloning BioTechnology	organization	sloning-biotechnology
707fb775-d9b8-6d14-84dc-aabc613668d7	Proteros	organization	proteros
4f1452a0-84f9-2d55-ec94-1163ed2b10a1	evocatal	organization	evocatal
e3b8a018-3c69-da7a-97ec-5971313dfe07	Diaferon	organization	diaferon
d2ade018-3bd9-ce3c-e036-a12d8789ad7a	Subitec	organization	subitec
f6972826-a27b-3cad-6975-099952dd0945	BioTeSys	organization	biotesys
0249643f-15eb-02a5-3b6c-3822b16d36e3	Agennix	organization	agennix
e7577575-25a5-ca13-4670-cfb69cfcb074	Isarna Therapeutics	organization	isarna-therapeutics-gmbh
dd139f96-52cc-112a-fdb4-aae2d1a08a2a	CureVac	organization	curevac
5ee3b905-1091-99a2-53f0-729403152 2c6	SIR5-Lab	organization	sirs-lab
488ae8cb-f323-4aba-aed8-9cf8e5cb9480	Cellca	organization	cellca
cf55dc43-e415-9f8cc-ca71-f56a245ba5c6	AiCuris	organization	aicuris
fa51a58c-e21f-7d81-d3f1-9b1ff09d552e	greenovation Biotech	organization	greenovation-biotech

Semi-structured Data



Unstructured Data

"Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum."

Primary vs. Secondary Data

Primary	*Original data collected for a specific research goal.*
Advantages:	*Very specific* *Particularly suited for answering a given research question*
Disadvantages:	*Collection requires resources (time = money)*

Secondary	*Data originally collected for a different purpose and reused for another research.*
Advantages:	*Readily available => we can immediately start with the analysis* *Can be inexpensive (but also very expensive)*
Disadvantages:	*Data might not exactly fit the research problem* *Data might be of bad quality* *Data might be old* *Competitors have access to the same data*

Adapted from Fabian Gaessler, Lecture on Empirical Research Methods

Source: https://imgflip.com/i/3jsitx

Steps to Conduct a Successful Secondary Data Analysis

Step 1: Define your research topic (and question)

- Start with a thorough literature review
- Ensure that the research has relevance and is based on a sound a priori reasoning.
- A good question is what makes a study good, not a large sample size.
- Be flexible to adapt your question to the strengths and limitations of the potential datasets

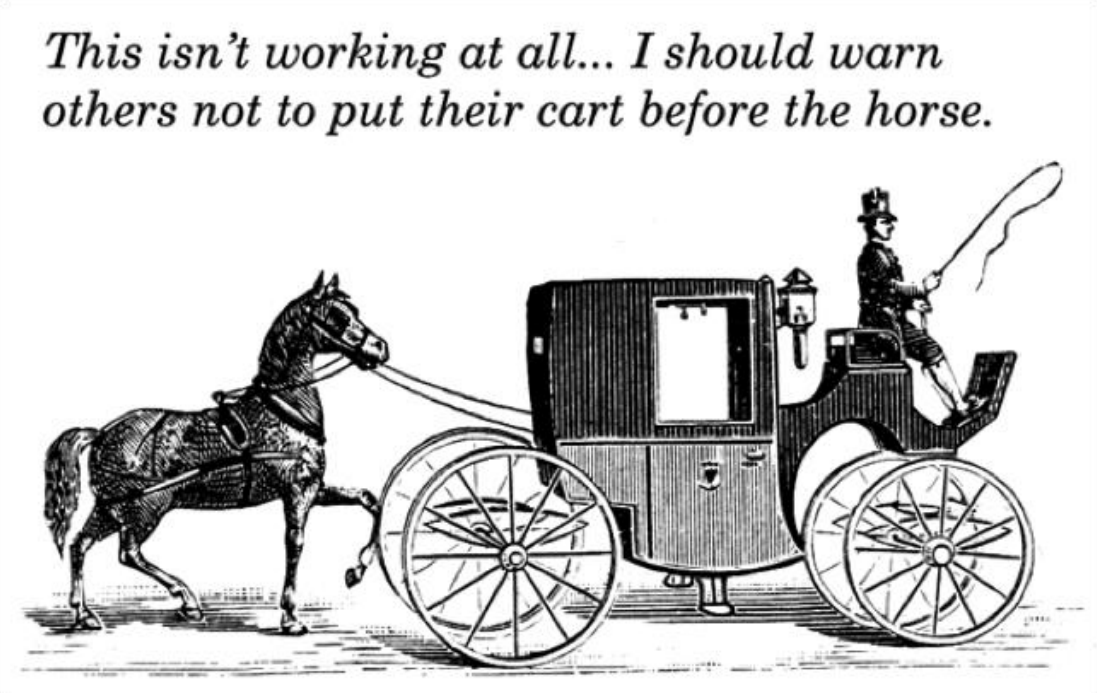
Step 2: Select a Dataset

Step 3: Get to know your dataset

Step 4: Structure your analysis and presentation in a way that is […] meaningful

Smith, A. K., Ayanian, J. Z., Covinsky, K. E., Landon, B. E., Mccarthy, E. P., Wee, C. C., & Steinman, M. A.. (2011). Conducting High-Value Secondary Dataset Analysis: An Introductory Guide and Resources. Journal of General Internal Medicine, 26(8), 920–929. https://doi.org/10.1007/s11606-010-1621-5

Know your Data before Formulating a Research Question



https://lessonsfromthegoalpost.com/2019/06/29/cart-before-the-horse/

Steps to Conduct a Successful Secondary Data Analysis

Step 1: Define your research topic and question

Step 2: Select a Dataset

- To increase the novelty of your work, consider selecting a dataset that has not been widely used in your field or link datasets together to gain a fresh perspective.
- Factor in dataset cost and time to acquire the actual dataset
- Consider Selecting a dataset your mentor has used previously

Step 3: Get to know your dataset

Step 4: Structure your analysis and presentation in a way that is […] meaningful

Smith, A. K., Ayanian, J. Z., Covinsky, K. E., Landon, B. E., Mccarthy, E. P., Wee, C. C., & Steinman, M. A.. (2011). Conducting High-Value Secondary Dataset Analysis: An Introductory Guide and Resources. Journal of General Internal Medicine, 26(8), 920–929. https://doi.org/10.1007/s11606-010-1621-5

Steps to Conduct a Successful Secondary Data Analysis

Step 1: Define your research topic and question

Step 2: Select a Dataset

Step 3: Get to know your dataset

- Learn the answers to the following questions:
  - Why does the database exist?
  - Who reports the data?
  - What are the incentives for accurate reporting?
  - How are the data audited, if at all?
  - Can you link your dataset to other large datasets?
- Read everything you can about the database
- Check to see if your measures have been validated against other sources
- Get a close feel for the data by analyzing it yourself or closely reviewing outputs if someone else is doing the programming

Step 4: Structure your analysis and presentation in a way that is […] meaningful

Smith, A. K., Ayanian, J. Z., Covinsky, K. E., Landon, B. E., Mccarthy, E. P., Wee, C. C., & Steinman, M. A.. (2011). Conducting High-Value Secondary Dataset Analysis: An Introductory Guide and Resources. Journal of General Internal Medicine, 26(8), 920–929. https://doi.org/10.1007/s11606-010-1621-5

Steps to Conduct a Successful Secondary Data Analysis

Step 1: Define your research topic and question

Step 2: Select a Dataset

Step 3: Get to know your dataset

Step 4: Structure your analysis and presentation in a way that is […] meaningful

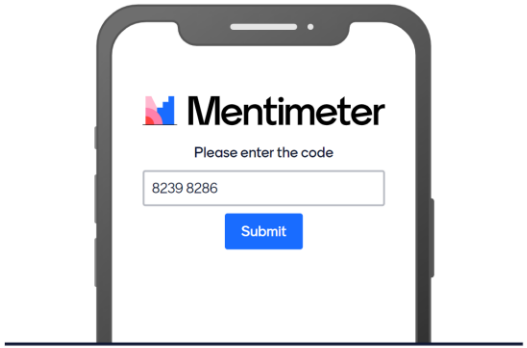
- Think carefully about the […] implications of your findings
- Be cautious when interpreting statistical significance (i.e., p-values). Large sample sizes can yield associations that are highly statistically significant but not clinically meaningful
- Think carefully about how you portray the data. A nice figure sometimes tells the story better than rows of data

Smith, A. K., Ayanian, J. Z., Covinsky, K. E., Landon, B. E., Mccarthy, E. P., Wee, C. C., & Steinman, M. A.. (2011). Conducting High-Value Secondary Dataset Analysis: An Introductory Guide and Resources. Journal of General Internal Medicine, 26(8), 920–929. https://doi.org/10.1007/s11606-010-1621-5

Secondary Data Sources - Examples

Go to

www.menti.com



Enter the code

8239 8286

Or use QR code

Current use of secondary data in management research

- Currently, only a minority of articles from the area of management research uses secondary data (of both traditional and new sources)
- Example: less than 10% of articles in high-impact social science journals use secondary data in the leadership domain (Antonakis et al. 2014)

Can you think of any reasons for this situation?

Antonakis, J., Bastardoz, N., Liu, Y., & Schriesheim, C. A. (2014). What makes articles highly cited?. *The Leadership Quarterly*, *25*(1), 152-179.
Barnes, C. M., Dang, C. T., Leavitt, K., Guarana, C. L., & Uhlmann, E. L. (2015). Archival data in micro-organizational research: A toolkit for moving to a broader set of topics. *Journal of Management*, *44*(4), 1453-1478.

Reasons, why secondary data is not so broadly used

- The **potential limitations (construct validity and omitted psychological mechanisms)** outweigh the benefits for studying individual and group behavior
- Dogma about the **appropriateness** of using secondary data to conduct micro-organizational research
- The **real or perceived irrelevance of secondary data** to local settings
- **Lack of awareness** about the vast amounts of archival data that are now available (especially with respect to new data sources and types such as Big Data)
- The **real or perceived inability to conduct archival research / access and analyze archival data** (e.g., for working with Big Data)
- **Missing recognition of the unique strengths** of archival research

Barnes, C. M., Dang, C. T., Leavitt, K., Guarana, C. L., & Uhlmann, E. L. (2015). Archival data in micro-organizational research: A toolkit for moving to a broader set of topics. *Journal of Management*, *44*(4), 1453-1478.
Ketchen Jr, D. J., Ireland, R. D., & Baker, L. T. (2013). The use of archival proxies in strategic management studies: castles made of sand?. *Organizational Research Methods*, *16*(1), 32-42.

Strengths of secondary data research

- Uncovering unexpected manifestations in the real world
- Measurement of socially sensitive phenomena
- Research reproducibility
- Statistical power
- Deriving population parameter estimates
- Examining effects across time
- Differences in relationships across sociopolitical contexts
- Theory extension and testing at higher levels of analysis

Barnes, C. M., Dang, C. T., Leavitt, K., Guarana, C. L., & Uhlmann, E. L. (2015). Archival data in micro-organizational research: A toolkit for moving to a broader set of topics. *Journal of Management*, *44*(4), 1453-1478.

Challenges of secondary data research

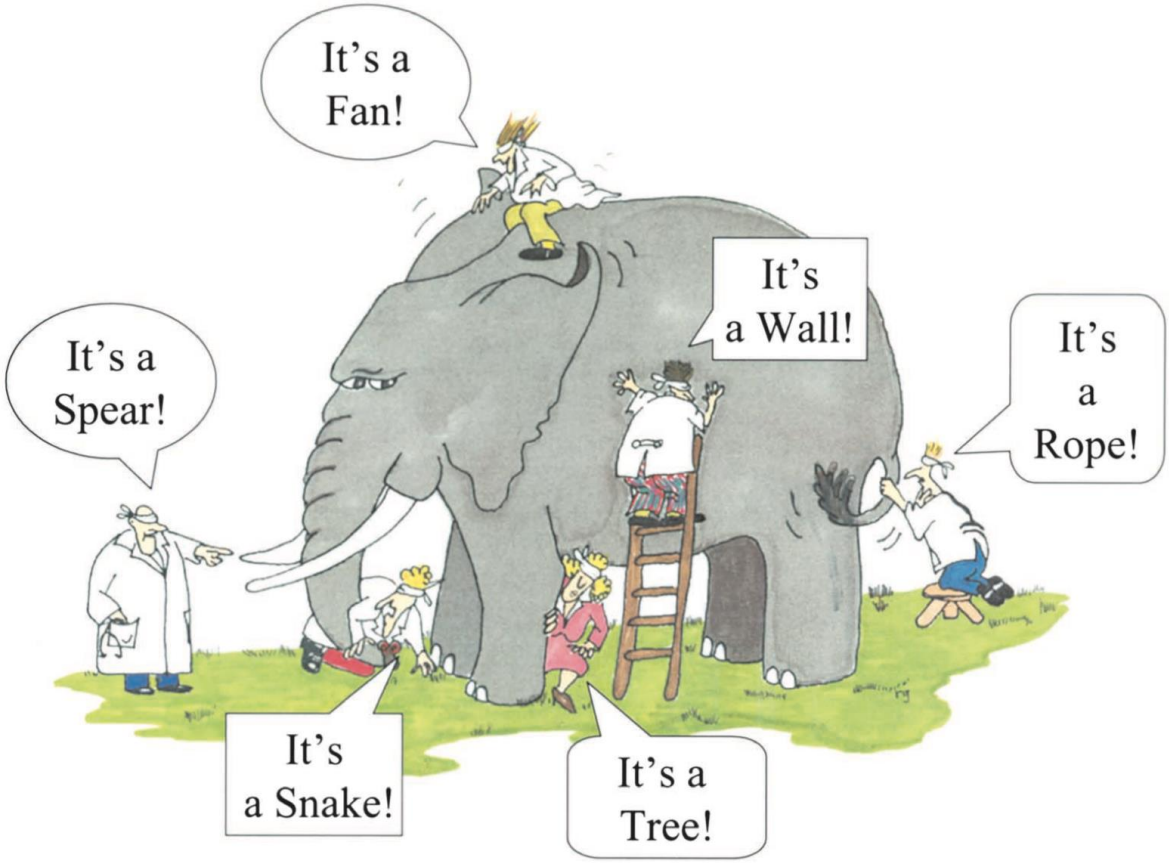
- Selecting the research question
- Construct validity (often single item measures)
- Causality
- Issues in the consistency and completeness of coverage of databases such as concerning sectoral compositions, temporal patters, geographic patterns, …
- Data access (e.g., permission of company)
- Potential errors in the data possible
- Risk of biased samples due to voluntary information of users (e.g., employer reviewers self-select)

Barnes, C. M., Dang, C. T., Leavitt, K., Guarana, C. L., & Uhlmann, E. L. (2015). Archival data in micro-organizational research: A toolkit for moving to a broader set of topics. *Journal of Management*, *44*(4), 1453-1478.
Wenzel, R., & Van Quaquebeke, N. (2018). The double-edged sword of big data in organizational and management research: A review of opportunities and risks. *Organizational Research Methods*, *21*(3), 548-591.
Zhou, L., Wang, M., & Zhang, Z. (2019). Intensive longitudinal data analyses with dynamic structural equation modeling. *Organizational Research Methods*, 1094428119833164.

Mitigating these challenges

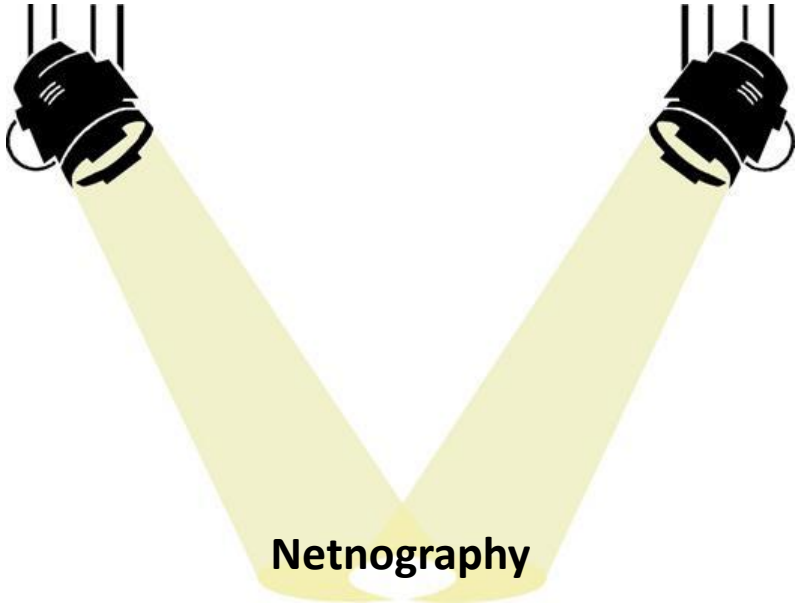
- Select the right archival database (databases, structured from data obtained at multiple time points, with a clear indication of which events preceded which; databases that entail data on the necessary control variables)
- Carefully select variables
- Combine multiple studies (e.g., conduct a complementary study such as an experiment)
- Combine different databases in one paper
- …

Barnes, C. M., Dang, C. T., Leavitt, K., Guarana, C. L., & Uhlmann, E. L. (2015). Archival data in micro-organizational research: A toolkit for moving to a broader set of topics. *Journal of Management*, *44*(4), 1453-1478.
Wenzel, R., & Van Quaquebeke, N. (2018). The double-edged sword of big data in organizational and management research: A review of opportunities and risks. *Organizational Research Methods*, *21*(3), 548-591.
Zhou, L., Wang, M., & Zhang, Z. (2019). Intensive longitudinal data analyses with dynamic structural equation modeling. *Organizational Research Methods*, 1094428119833164.



G. Renee Guzlas in Himmelfarb, Stenvinkel, Ikizler, & Hakim (2002)

Spotlight on…



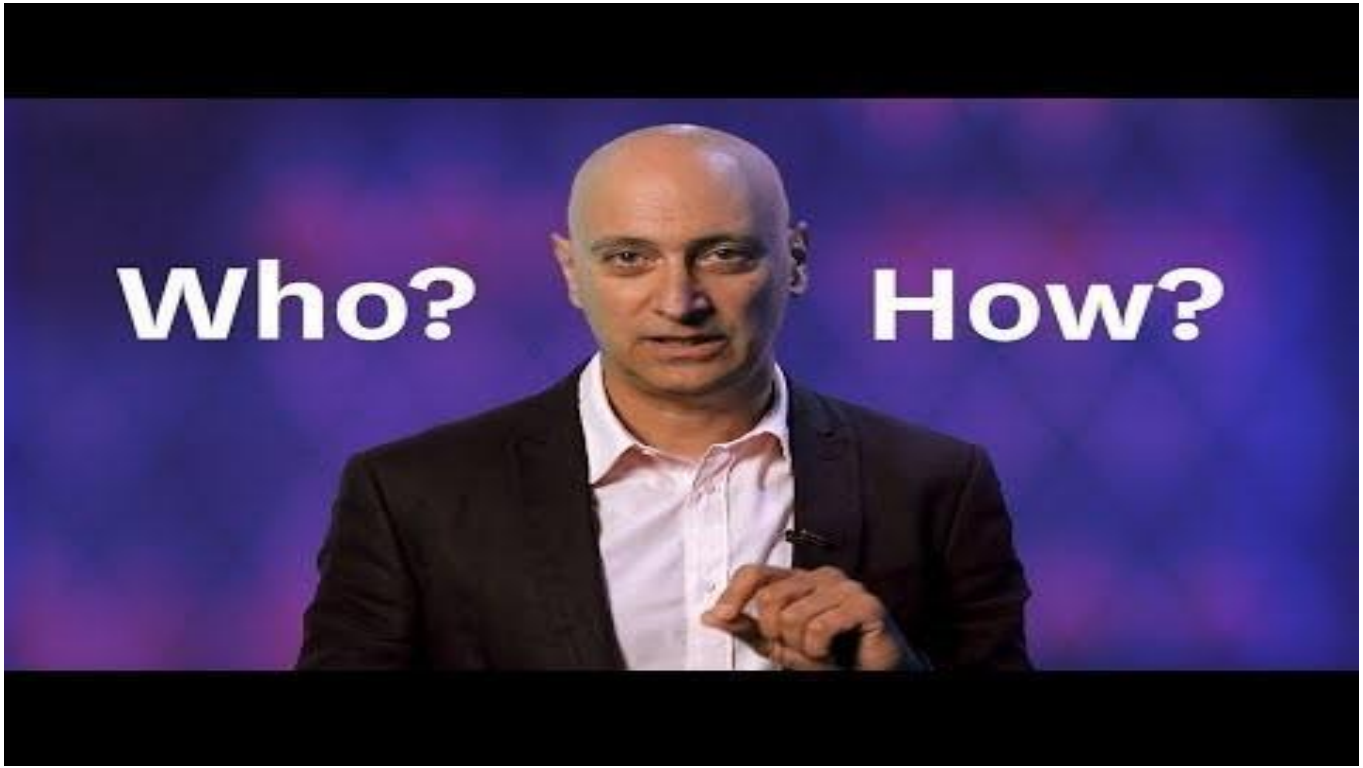
Netnography

- **Definition** of netnography:
  - made up of inter*net* and eth*nography*
  - is an approach to analyze online communities systematically
  - adapts ethnographic research techniques such as observation to study cultures and communities that are emerging through computer-mediated communication

- **Forms** of netnography:
  - Participant-observation netnography (researchers participate in the online community)
  - Nonparticipant-observation netnography (researchers lurk and unobtrusively observe community behaviors)

Belz, F. M., & Baumbach, W. (2010). Netnography as a method of lead user identification. *Creativity and Innovation Management*, *19*(3), 304-313. Park, E., Im, G., Storey, V. C., & Baskerville, R. L. (2019). Never, Never Together Again: How Postpurchase Affect Drives Consumer Outcomes Within the Context of Online Consumer Support Communities. *Journal of the Association for Information Systems*, *20*(1), 58-104.

Netnography



https://www.youtube.com/watch?v=F8axfYomJn4

Paper example: *Netnography*

A Longitudinal Iterative Convergent Approach to Netnography

Full Paper

Valeria Sadovykh
PricewaterhouseCoopers and University of Auckland
valeria.a.sadovykh@sg.pwc.com

David Sundaram
University of Auckland
d.sundaram@auckland.ac.nz

Abstract

Netnography is a new approach that uses ethnographic principles to provide rich insights into human society. It combines archival and online communications, participation and observation, with new forms of digital and network data collection, analysis and research representation. While the use of Netnography is gaining momentum there are a few weaknesses that pose a limitation to its wide spread use. The limitations are in terms of single cycle studies lacking the power to unearth deep insights, to adequately understand a rapidly evolving field, and issues of generalizability and validity. Hence for the generalizability, validity, and usefulness of the method, we suggest three mechanisms to extend and enhance the Netnographic approach namely: longitudinal, iterations, and convergence. We adapted and extended the traditional Netnographic approach with a few more steps that fulfil the requirements and address the weaknesses. We have applied this approach to a longitudinal multi-year multi-iteration study.

Sadovykh, V., & Sundaram, D. (2017). A longitudinal iterative convergent approach to Netnography. *Proceedings of the twenty-third Americas Conference on Information Systems, Boston.*

Netnography (4/4)

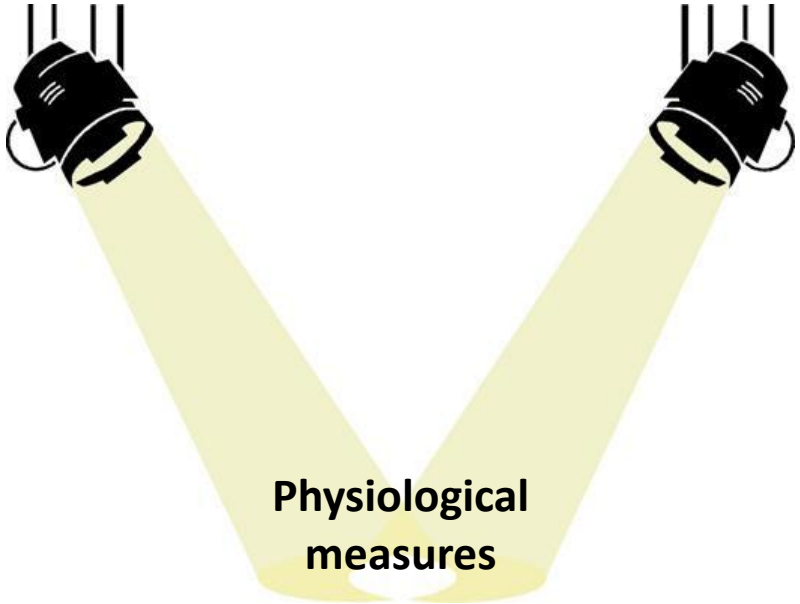
Belz, F. M., & Baumbach, W. (2010). Netnography as a method of lead user identification. *Creativity and Innovation Management*, *19*(3), 304-313.

Berthod, O., Grothe-Hammer, M., & Sydow, J. (2017). Network ethnography: A mixed-method approach for the study of practices in interorganizational settings. *Organizational Research Methods*, *20*(2), 299-323.

Mathwick, C., Wiertz, C., & De Ruyter, K. (2008). Social capital production in a virtual P3 community. *Journal of consumer research*, *34*(6), 832-849.

Park, E., Im, G., Storey, V. C., & Baskerville, R. L. (2019). Never, Never Together Again: How Postpurchase Affect Drives Consumer Outcomes Within the Context of Online Consumer Support Communities. *Journal of the Association for Information Systems*, *20*(1), 58-104.

Spotlight on…



Which physiological measures do you know?

Overview of possible measures and physiological markers

- Cardiovascular activity
- Neuroendocrine activity
- Electrodermal activity

Akinola, M. (2010). Measuring the pulse of an organization: Integrating physiological measures into the organizational scholar's toolbox. *Research in Organizational Behavior*, *30*, 203-223.

Autonomic nervous system (ANS) activity

Table 1
Indicators of ANS activity.

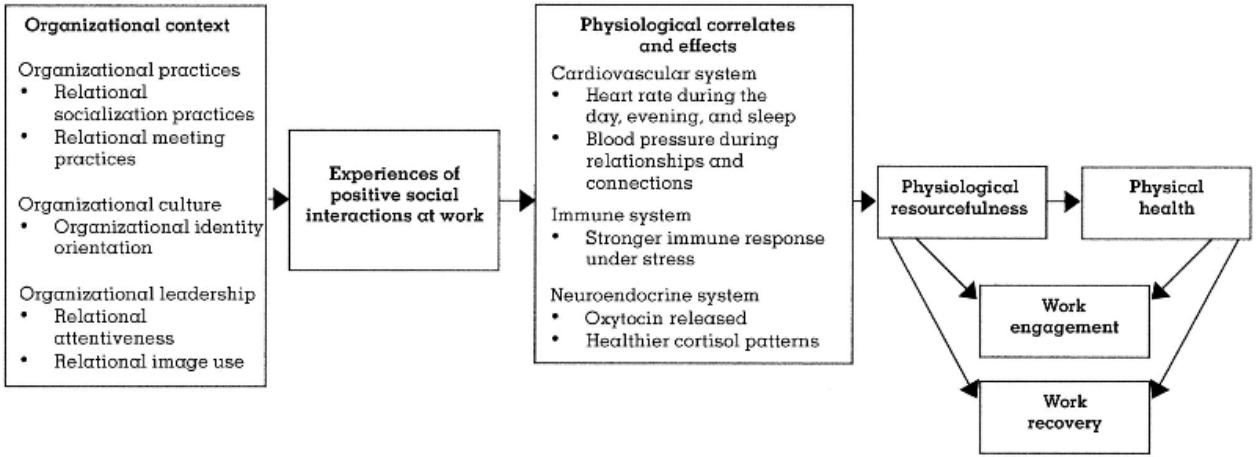
Categories of ANS activity	Brief description	What can be learned from examining this ANS activity	Key measures examined in psychophysiological research
Cardiovascular	Consists of the heart and pathways through which oxygenated blood is delivered to the periphery and deoxygenated blood is returned to the heart.	Affective states Motivation Attention Vulnerabilities in physical and mental illness	Systolic and diastolic blood pressure Heart rate Cardiac efficiency (e.g., cardiac output, ventricle contractility, total peripheral resistance) Respiration
Neuroendocrine	Focuses on the interactions between the nervous system and the hormones of the endocrine system.	Dispositional traits Behavioral tendencies Vulnerabilities in physical and mental illness The quality of social relationships	Cortisol Testosterone Dehydroepiandrosterone (DHEA) Oxytocin
Electrodermal	Examines responses in the eccrine sweat glands, widely distributed in the hands and feet.	Arousal Attention Intensity of emotion	Skin conductance response Skin conductance level

Akinola, M. (2010). Measuring the pulse of an organization: Integrating physiological measures into the organizational scholar's toolbox. *Research in Organizational Behavior*, *30*, 203-223.

The value of psychophysiology in organizational research

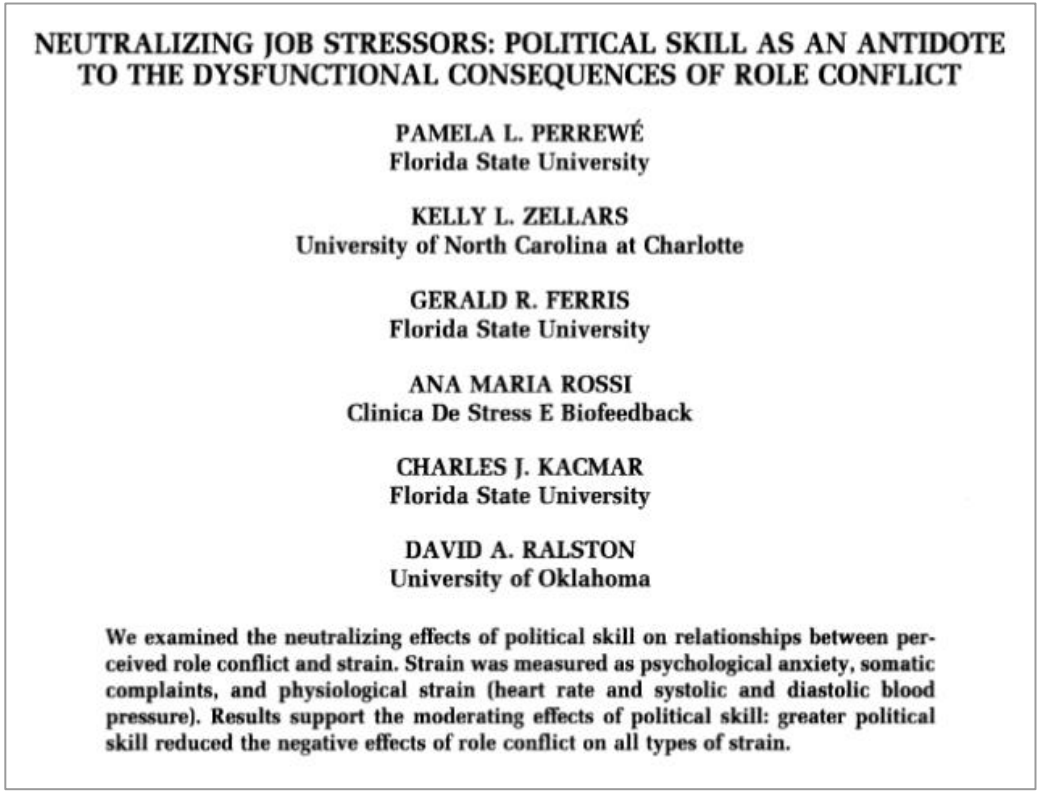
- Immune from self-report biases
- Receding conscious awareness and predicting behavior
- Offer a new set of dispositional characteristics

FIGURE 1
The Physiology of Positive Social Interactions at Work



Heaphy, E. D., & Dutton, J. E. (2008). Positive social interactions and the human body at work: Linking organizations and physiology. *Academy of Management Review*, *33*(1), 137-162.

Paper example: *Cardiovascular activity*



NEUTRALIZING JOB STRESSORS: POLITICAL SKILL AS AN ANTIDOTE TO THE DYSFUNCTIONAL CONSEQUENCES OF ROLE CONFLICT

PAMELA L. PERREWÉ
Florida State University

KELLY L. ZELLARS
University of North Carolina at Charlotte

GERALD R. FERRIS
Florida State University

ANA MARIA ROSSI
Clinica De Stress E Biofeedback

CHARLES J. KACMAR
Florida State University

DAVID A. RALSTON
University of Oklahoma

We examined the neutralizing effects of political skill on relationships between perceived role conflict and strain. Strain was measured as psychological anxiety, somatic complaints, and physiological strain (heart rate and systolic and diastolic blood pressure). Results support the moderating effects of political skill: greater political skill reduced the negative effects of role conflict on all types of strain.

Perrewé, P. L., Zellars, K. L., Ferris, G. R., Rossi, A. M., Kacmar, C. J., & Ralston, D. A. (2004). Neutralizing job stressors: Political skill as an antidote to the dysfunctional consequences of role conflict. Academy of Management Journal, 47(1), 141-152.

Exercise: Measure your heart beat with your smart phone (during/after listening to two different types of music)

WORKING TO THE BEAT: A SELF-REGULATORY FRAMEWORK LINKING MUSIC CHARACTERISTICS TO JOB PERFORMANCE

Let's try differences in **tempo:**

- First, listen to Chopin's "Nocturne in D-flat major" (Slow tempo: *lento sostenuto*)
- Second, listen to Beethoven's "Moonlight" sonata (Fast tempo: *presto agitato*)

You can find both pieces via:
http://www.workingtothebeat.com/page_3.html

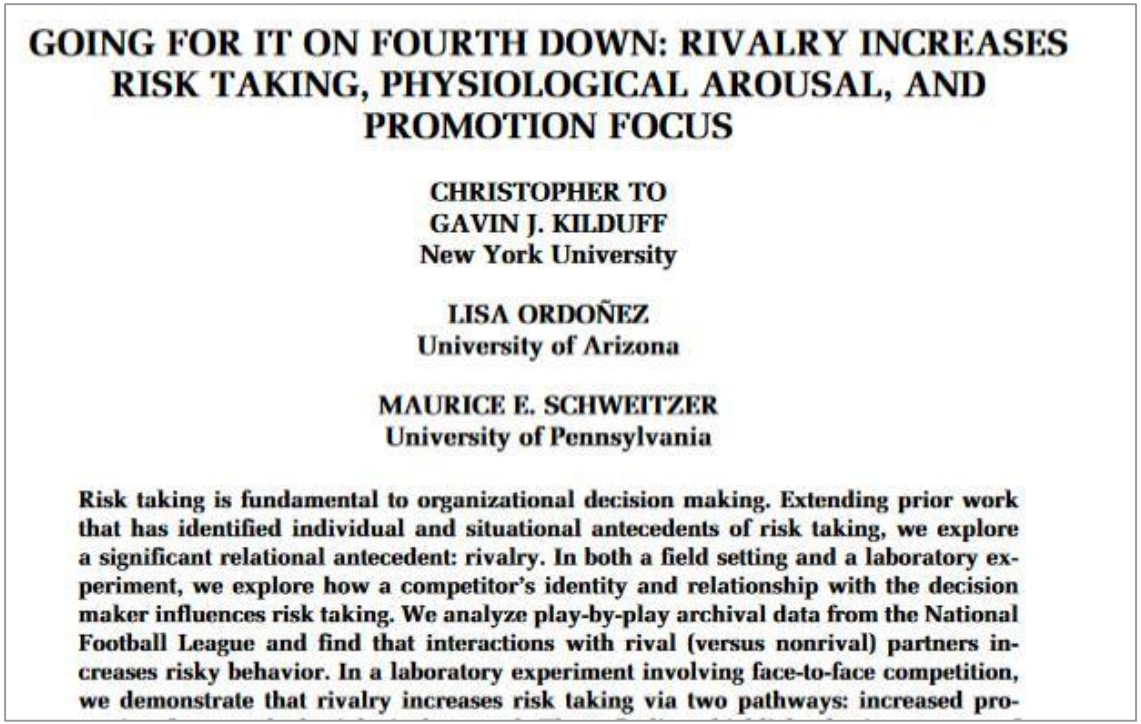
→ What do you measure? Was there a difference?

https://gadgetstouse.com/blog/2014/05/25/are-smartphone-heart-rate-senors-accurate/

Skin Conductance & Heart rate: How to set up a study

https://www.youtube.com/watch?v=rjyiIZA8teY

Paper example: *Electrodermal activity*



GOING FOR IT ON FOURTH DOWN: RIVALRY INCREASES RISK TAKING, PHYSIOLOGICAL AROUSAL, AND PROMOTION FOCUS

CHRISTOPHER TO
GAVIN J. KILDUFF
New York University

LISA ORDOÑEZ
University of Arizona

MAURICE E. SCHWEITZER
University of Pennsylvania

Risk taking is fundamental to organizational decision making. Extending prior work that has identified individual and situational antecedents of risk taking, we explore a significant relational antecedent: rivalry. In both a field setting and a laboratory experiment, we explore how a competitor's identity and relationship with the decision maker influences risk taking. We analyze play-by-play archival data from the National Football League and find that interactions with rival (versus nonrival) partners increases risky behavior. In a laboratory experiment involving face-to-face competition, we demonstrate that rivalry increases risk taking via two pathways: increased pro-

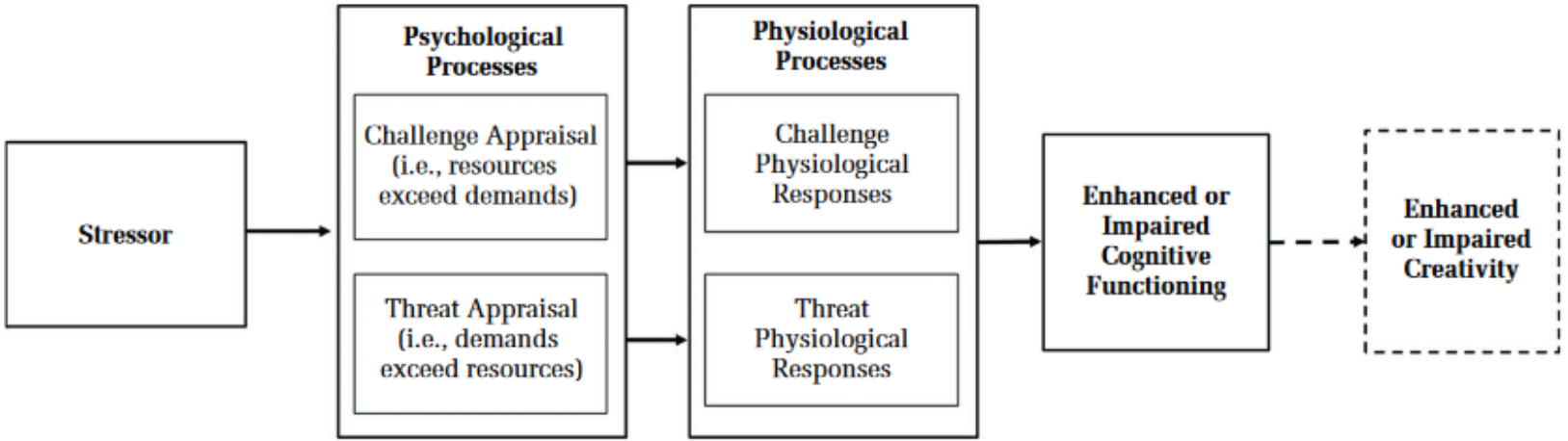
To, C., Kilduff, G. J., Ordoñez, L., & Schweitzer, M. E. (2018). Going for it on fourth down: Rivalry increases risk taking, physiological arousal, and promotion focus. *Academy of Management Journal*, *61*(4), 1281-1306.

Food for thoughts: Brain Activity Revealed Through Your Skin: Stress, Sleep, & Seizures (Rosalind Picard at TEDxNatick)

https://www.youtube.com/watch?v=-KupdgJERng

Paper example: *Neuroendocrine activity*

FIGURE 2
The Biopsychosocial Model of Challenge and Threat and Implications for Creativity



Akinola, M., Kapadia, C., Lu, J. G., & Mason, M. F. (2019). Incorporating physiology into creativity research and practice: The effects of bodily stress responses on creativity in organizations. *Academy of Management Perspectives*, *33*(2), 163-184.

Paper example: *Neuroendocrine activity*

Endogenous steroids and financial risk taking on a London trading floor

J. M. Coates*†‡ and J. Herbert*‡§

*Department of Physiology, Development and Neuroscience, University of Cambridge, Cambridge CB2 3DY, United Kingdom; †Judge Business School, University of Cambridge, Cambridge CB2 1AG, United Kingdom; and §Cambridge Center for Brain Repair, University of Cambridge, Cambridge CB2 0PY, United Kingdom

Edited by Bruce S. McEwen, The Rockefeller University, New York, NY, and approved November 6, 2007 (received for review May 1, 2007)

Little is known about the role of the endocrine system in financial risk taking. Here, we report the findings of a study in which we sampled, under real working conditions, endogenous steroids from a group of male traders in the City of London. We found that a trader's morning testosterone level predicts his day's profitability. We also found that a trader's cortisol rises with both the variance of his trading results and the volatility of the market. Our results suggest that higher testosterone may contribute to economic return, whereas cortisol is increased by risk. Our results

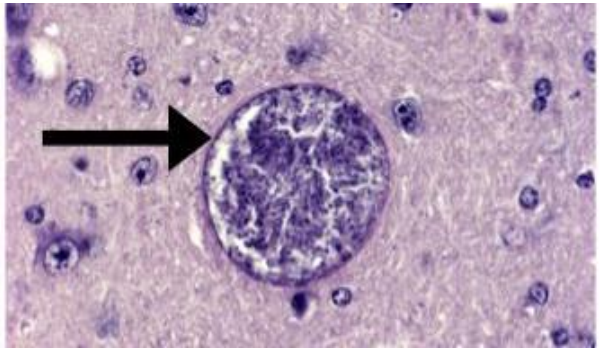
tion of the traders. The traders, in the normal course of a working day, sit in front of a bank of computer screens displaying live prices of currency, commodity, bond, and stock index futures (Fig. 1). Their trading stations also include live news-feeds, a risk-management system, and an intercom, over which a resident economist gives a commentary on the economic statistics being released around the globe. Traders on our floor could trade a wide range of assets, but most had been assigned or had chosen one or two, and all had their largest exposure to the German

Coates, J. M., & Herbert, J. (2008). Endogenous steroids and financial risk taking on a London trading floor. *Proceedings of the national academy of sciences*, *105*(16), 6167-6172.

Excursus 1: Another interesting field of study

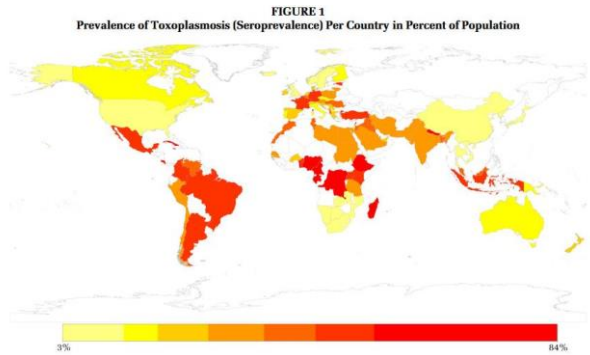
Toxoplasma gondii

- neuro-parasite prevalent in about a third of the world's population
- affects the neural and hormonal systems directly
- manipulates perception, cognition, and behavior of humans, and changes personality characteristics



Proposition:

Mind-affecting parasite paradigm offers many research opportunities for management sciences, especially for organizational psychology and neuroscience!



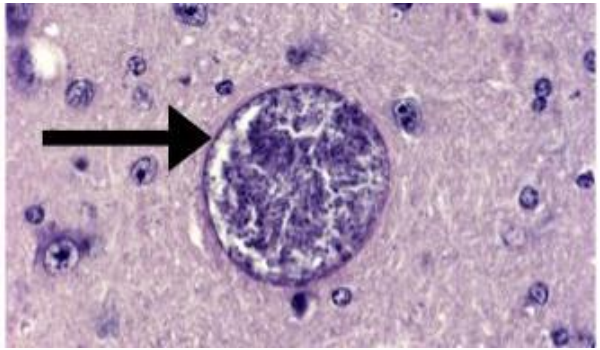
Houdek, P. (2017). Puppet master: possible influence of the parasite Toxoplasma gondii on managers and employees. *Academy of Management Perspectives*, *31*(1), 63-81.

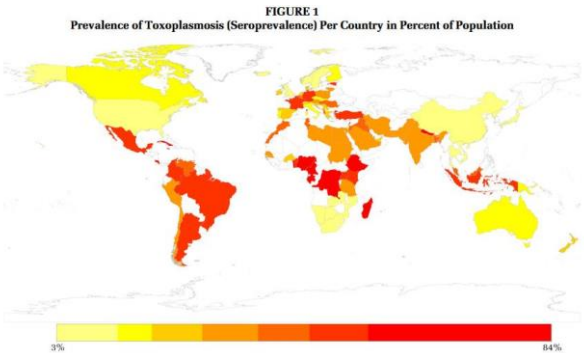
Excursus 1: Another interesting field of study

Effects of the infection in humans:
- Increases recklessness / novelty seeking
- Increased extraversion, reduced concienciousness
- Reduced job satisfaction
- impaired basic cognitive functions, e.g. reaction times, working memory, attention

Possible impacts on:
- skills and careers of employees and managers
- organizational dynamics
- intercultural management
- gender work roles
- …

Toxoplasma-positive individual seem to differs systematically from non-infected population





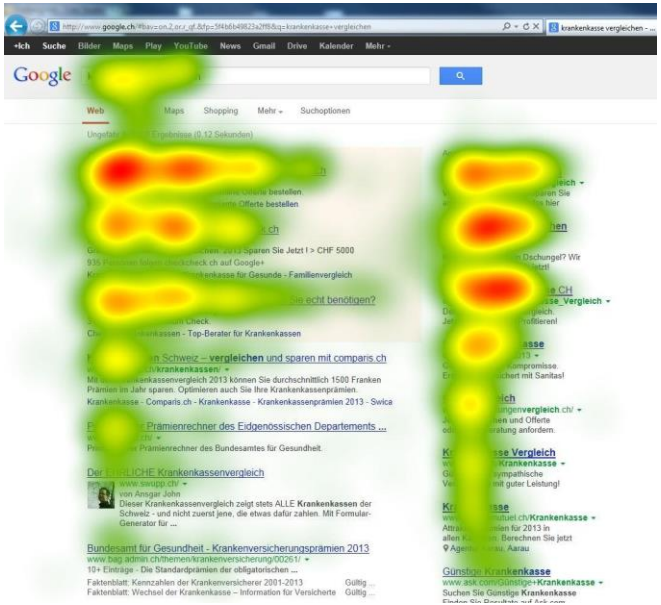
Houdek, P. (2017). Puppet master: possible influence of the parasite Toxoplasma gondii on managers and employees. *Academy of Management Perspectives*, *31*(1), 63-81.

Excursus 2: Eye-Tracking

Description: focuses on the recording the movements of a participant's eyes during behavioral processes

What can be learned from examining this activity?

- Attention, level of processing
- Mental states
- Cognitive load
- Emotional arousal



Key measures:

- Position and number of a fixations
- Total dwell time
- Saccadic amplitude
- Pupil diameter
- Blink rate

Meißner, M., & Oll, J. (2019). The promise of eye-tracking methodology in organizational research: A taxonomy, review, and future avenues. *Organizational Research Methods*, *22*(2), 590-617.; https://eyetracking.ch/google-eye-tracking-heatmap/

Excursus 2: Eye-Tracking

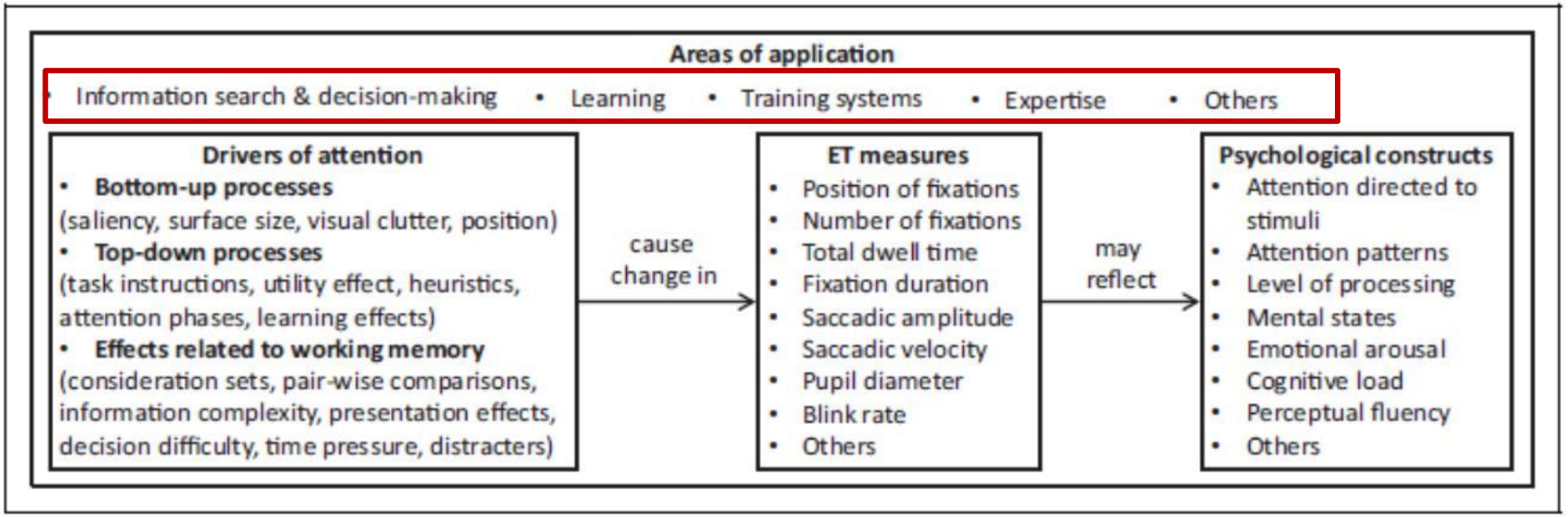
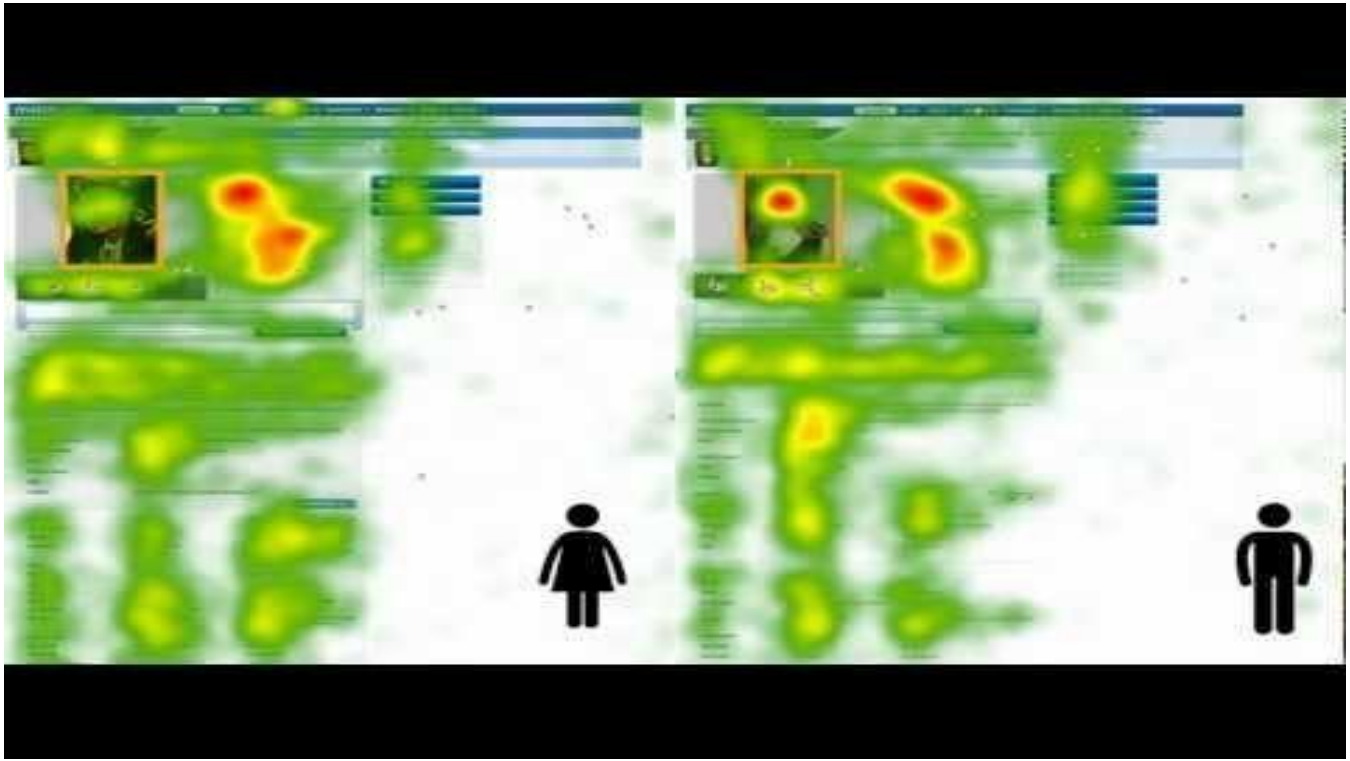


Figure 1. A Taxonomy for Eye Tracking Research.

Meißner, M., & Oll, J. (2019). The promise of eye-tracking methodology in organizational research: A taxonomy, review, and future avenues. *Organizational Research Methods*, *22*(2), 590-617.

Tobii and Answerlab: Field-based eye tracking study



https://www.youtube.com/watch?v=WqD2pXqT0Z0

Organizational Research Topic that could benefit from Psychophysiological Measures

- Affect in organizations
- Trust
- Power, dominance, and competitive situations
- Conflict and negotiations
- Diversity in organizations
- Health implications & Work recovery
- Engagement
- Organizational Practices
- Organizational Culture
- Organizational Leadership

Akinola, M. (2010). Measuring the pulse of an organization: Integrating physiological measures into the organizational scholar's toolbox. *Research in Organizational Behavior*, *30*, 203-223.; Heaphy, E. D., & Dutton, J. E. (2008). Positive social interactions and the human body at work: Linking organizations and physiology. *Academy of Management Review*, *33*(1), 137-162.

Further readings

Physiological measures

- Ganster, D. C., Crain, T. L., & Brossoit, R. M. (2018). Physiological measurement in the organizational sciences: A review and recommendations for future use. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*, 267-293.
- Heaphy, E. D., & Dutton, J. E. (2008). Positive social interactions and the human body at work: Linking organizations and physiology. *Academy of Management Review*, *33*(1), 137-162.

Further physiological measures

- **Video:** https://www.youtube.com/watch?v=4maks2ls0TU

Heart rate

- Massaro, S., & Pecchia, L. (2019). Heart rate variability (HRV) analysis: A methodology for organizational neuroscience. *Organizational Research Methods*, *22*(1), 354-393.

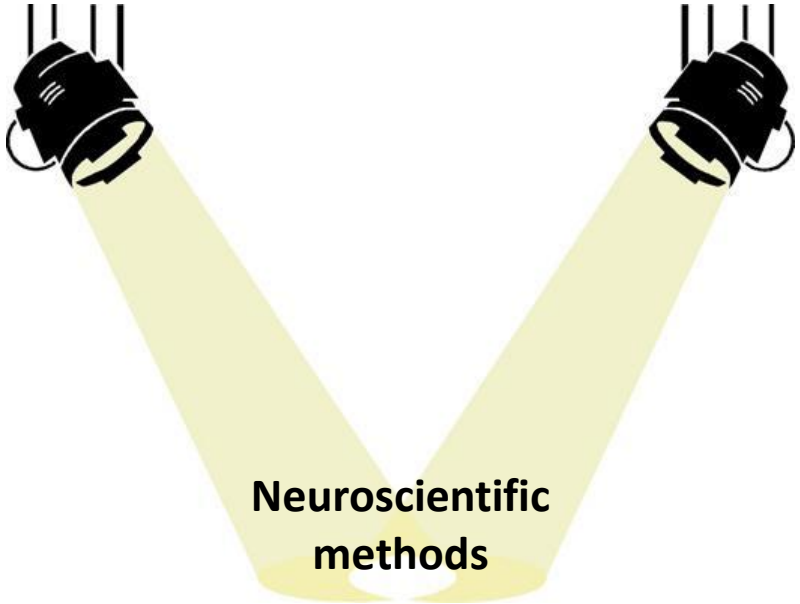
Skin conductance response

- Christopoulos, G. I., Uy, M. A., & Yap, W. J. (2019). The body and the brain: measuring skin conductance responses to understand the emotional experience. *Organizational Research Methods*, *22*(1), 394-420.

Eye-Tracking

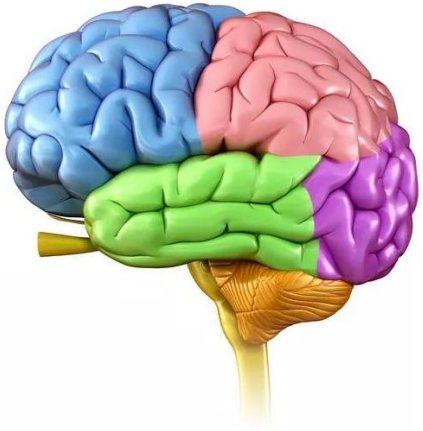
- Meißner, M., & Oll, J. (2019). The promise of eye-tracking methodology in organizational research: A taxonomy, review, and future avenues. *Organizational Research Methods*, *22*(2), 590-617.

Spotlight on…



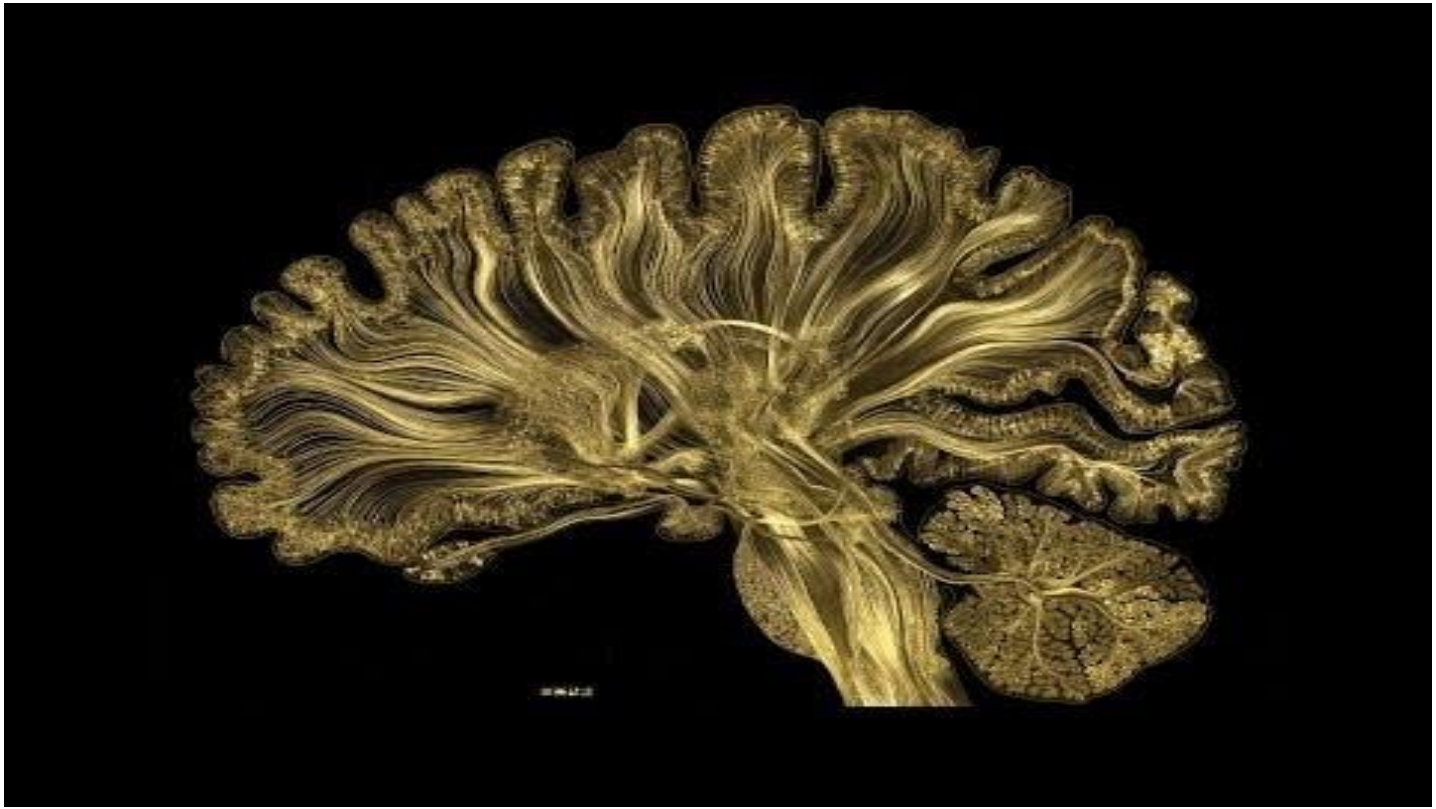
Fun Facts about your brain

1. Weighs three pounds, has a texture like firm jelly, is made up of 75 percent water.
2. Every time your heart beats, your arteries carry 20 to 25 percent of your blood to the brain.
3. Every time you recall a memory or have a new thought, you create a connection in the brain.
4. There are 100 billion neurons, but they make up only 10 percent of the brain.
5. Your brain is hungry.
6. There are 100,000 miles of blood vessels in the brain.
7. The brain is never at rest.
8. Challenging your brain prevents dementia.
9. The average number of thoughts per person per day is 70,000.
10. Brain processes information at up to 431 KM/H.



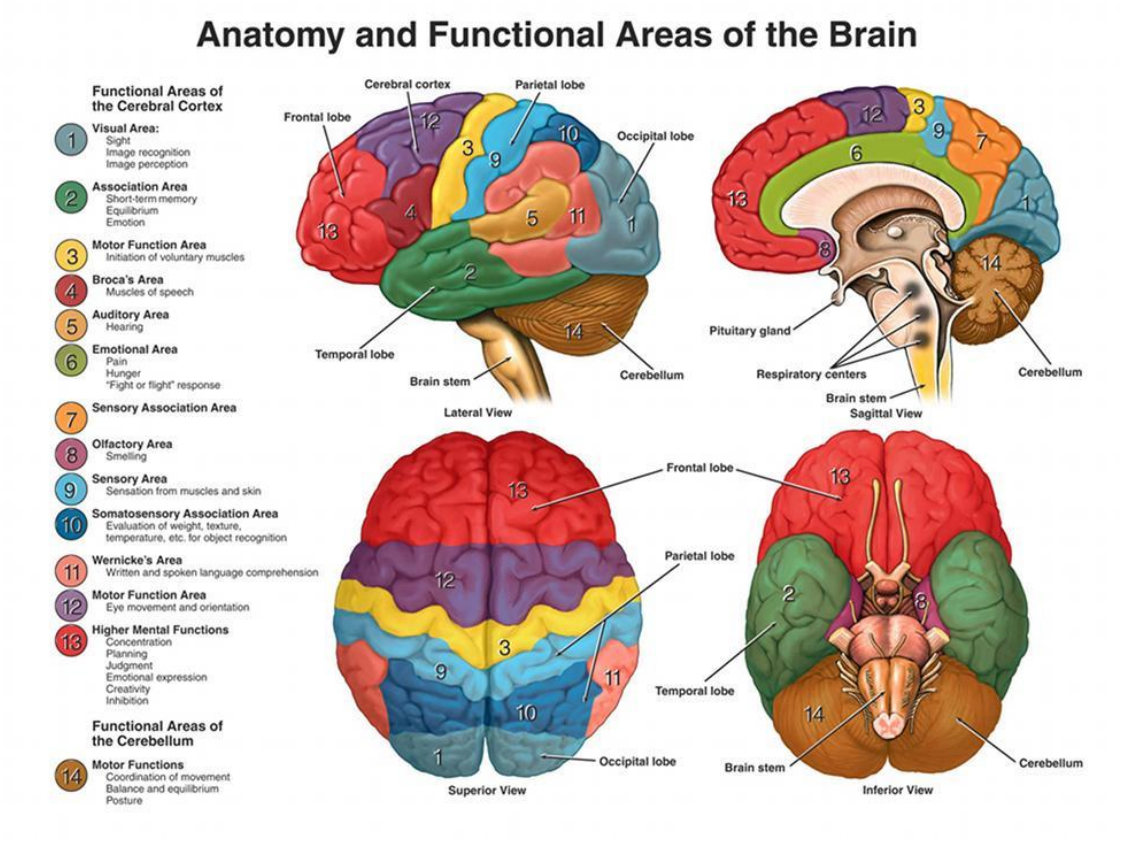
https://www.verywellmind.com/the-anatomy-of-the-brain-2794895

Rough anatomical overview



http://www.gregadunn.com/self-reflected/; https://www.youtube.com/watch?v=V5F7snIJ-is

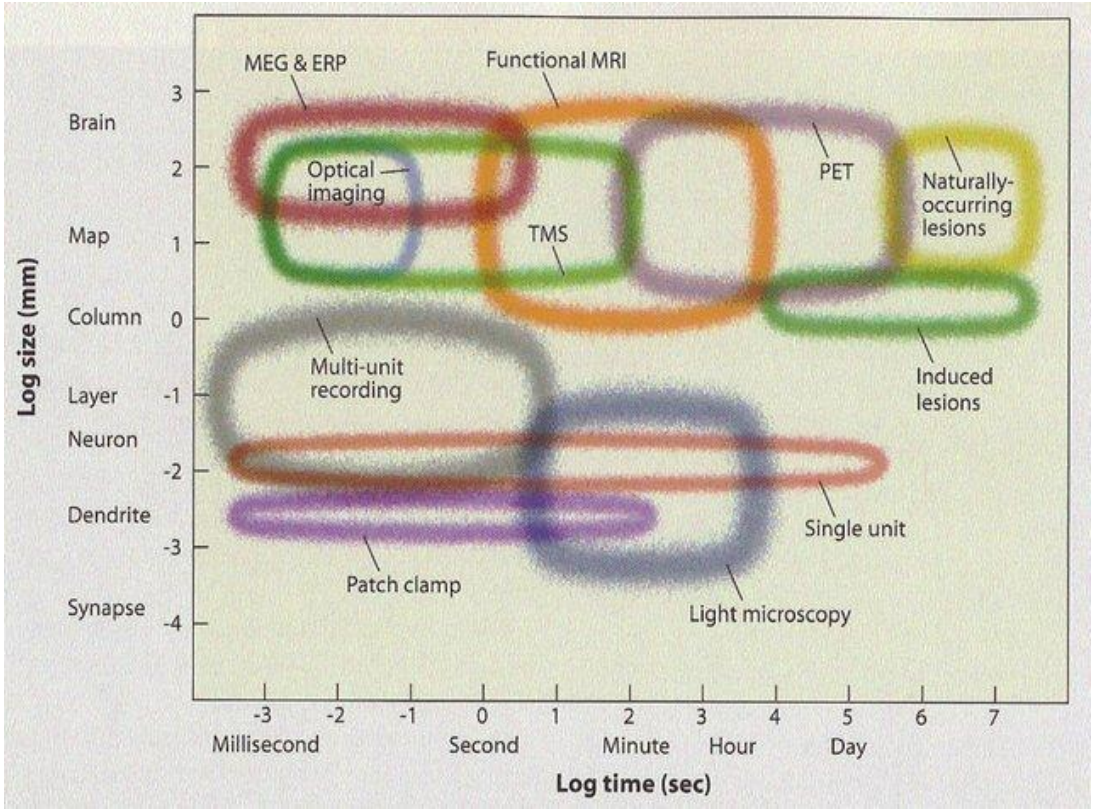
Rough anatomical overview



http://a.advancedbrain.com/news/brain_areas.jsp

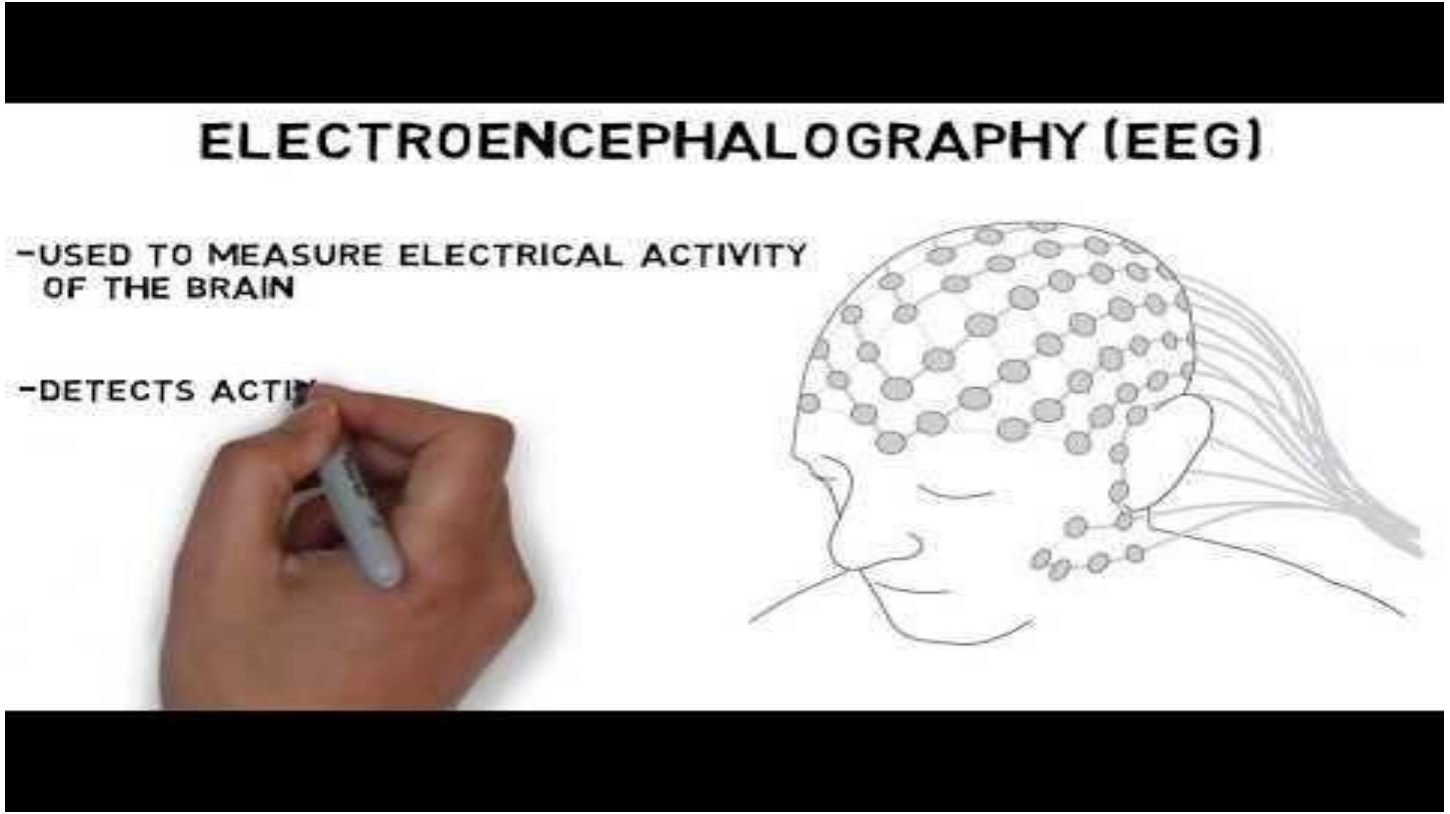
Which neuroscientific measures do you know?

Overview over methods



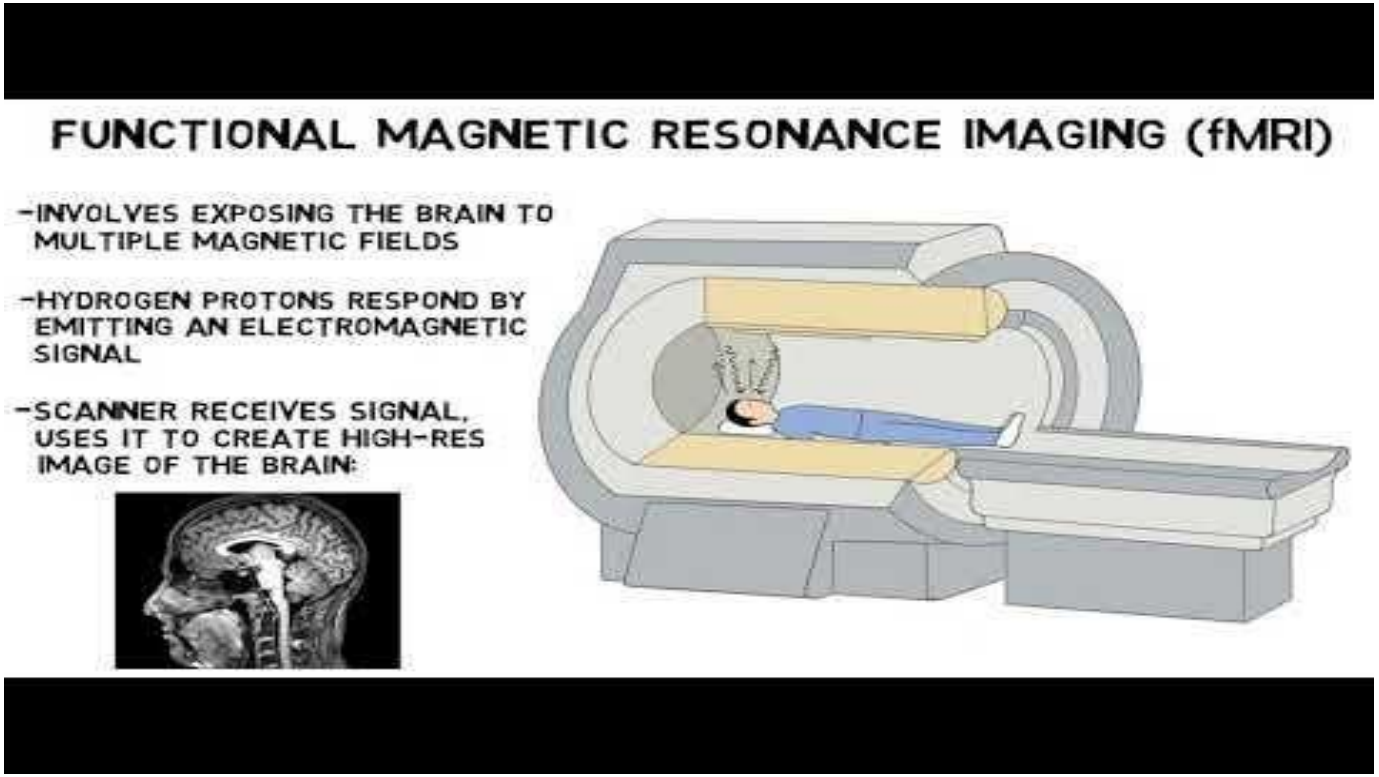
Lane, R. D., Waldstein, S. R., Chesney, M. A., Jennings, J. R., Lovallo, W. R., Kozel, P. J., ... & Cameron, O. G. (2009). The rebirth of neuroscience in psychosomatic medicine, Part I: historical context, methods, and relevant basic science. *Psychosomatic medicine*, *71*(2), 117-134.

2-Minute Neuroscience: Electroencephalography (EEG)



https://www.youtube.com/watch?v=tZcKT4l_JZk

2 -Minute Neuroscience: Functional Magnetic Resonance Imaging (fMRI)



https://www.youtube.com/watch?v=rJjHjnzmvDI

The Added Value of Neuroscience Methods in Organizational Research

a) a better **understanding** of the ontological basis of constructs of interest

b) creating more precise or enhanced **measurement**, and
   - e.g. assessments of the brain (i.e., through scanning or sensing technologies) cannot lie, fake, or be prone to the myriad of biases/errors

c) enhancing the **ability to predict** important organizational phenomena

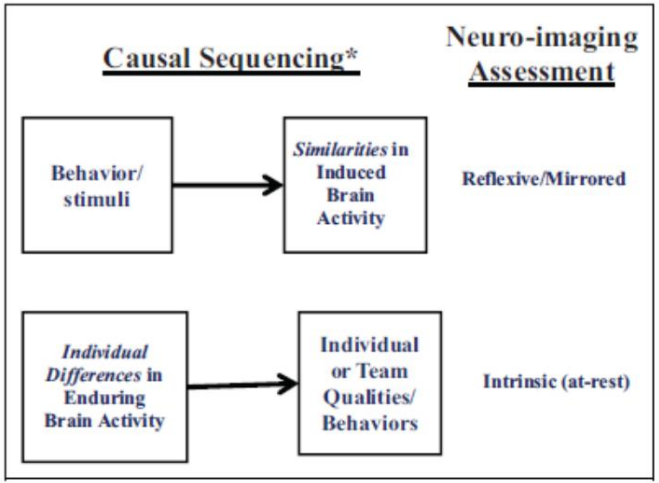


Figure 2. Alternative causal sequencing of brain activity in relation to behavior.

Waldman, D. A., Wang, D., & Fenters, V. (2019). The added value of neuroscience methods in organizational research. *Organizational Research Methods*, *22*(1), 223-249.

Paper example: *Electroencephalography (EEG)*

Contents lists available at SciVerse ScienceDirect

The Leadership Quarterly

journal homepage: www.elsevier.com/locate/leaqua

Differentiating transformational and non-transformational leaders on the basis of neurological imaging

Pierre A. Balthazard [a,*], David A. Waldman [a], Robert W. Thatcher [b], Sean T. Hannah [c]

[a] W. P. Carey School of Business, Arizona State University, USA
[b] EEG and Neuroimaging Laboratory, Applied Neuroscience Research Institute, USA
[c] Center for the Army Profession and Ethic, West Point - United States Military Academy, USA

ARTICLE INFO

Available online 22 September 2011

Keywords:
Transformational leadership

ABSTRACT

The purpose of this study was to evaluate the viability of using neurological imaging to classify transformational leaders, versus non-transformational leaders, as identified through existing psychometric methods. Specifically, power spectral analysis measures based on electroencephalograms (EEG) were used to develop and validate a discriminant function that can classify

Balthazard, P. A., Waldman, D. A., Thatcher, R. W., & Hannah, S. T. (2012). Differentiating transformational and non-transformational leaders on the basis of neurological imaging. *The Leadership Quarterly*, *23*(2), 244-258.

Paper example: functional Magnetic Resonance Imaging (fMRI)

Journal of Business Venturing 34 (2019) 368–388

Contents lists available at ScienceDirect

Journal of Business Venturing

journal homepage: www.elsevier.com/locate/jbusvent

Why and how do founding entrepreneurs bond with their ventures? Neural correlates of entrepreneurial and parental bonding☆

Tom Lahti[a,*], Marja-Liisa Halko[b,c,d], Necmi Karagozoglu[e], Joakim Wincent[f,g,h]

[a] Department of Management and Organization, Hanken School of Economics, P.O. Box 287, 65101 Vaasa, Finland
[b] Economics, Faculty of Social Sciences, University of Helsinki, Finland
[c] Department of Economics, Aalto University School of Business, Finland
[d] Aalto NeuroImaging, Aalto University School of Science, Finland
[e] College of Business Administration, California State University, Sacramento, United States
[f] Department of Management and Organization, Hanken School of Economics, Helsinki, Finland
[g] Entrepreneurship and Innovation, University of St Gallen, Switzerland
[h] Entrepreneurship and Innovation, Luleå University of Technology, Sweden

ARTICLE INFO

Keywords:
Bonding
fMRI

ABSTRACT

This paper investigates why and how founding entrepreneurs bond with their ventures. We develop and test theory about the nature of bonding in a functional magnetic resonance imaging

Lahti, T., Halko, M. L., Karagozoglu, N., & Wincent, J. (2019). Why and how do founding entrepreneurs bond with their ventures? Neural correlates of entrepreneurial and parental bonding. *Journal of Business Venturing*, *34*(2), 368-388.

Organizational Research Topic that could benefit from Neuroscientific Measures

- **Individual level-constructs**
  - Emotional Intelligence
  - Mood
  - Cognitive abilities
  - Organizational justice
  - Sensemaking
- **Team-level constructs**
  - Emotional contagion
  - Shared mental models
  - Leadership

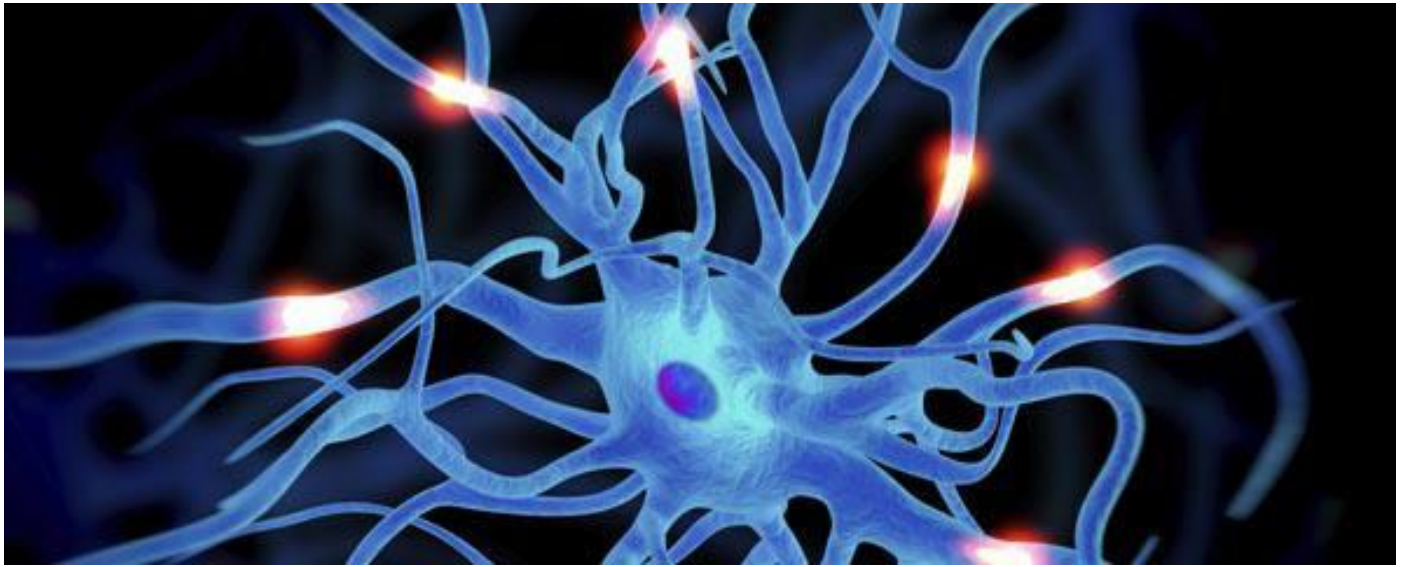
Waldman, D. A., Wang, D., & Fenters, V. (2019). The added value of neuroscience methods in organizational research. *Organizational Research Methods*, *22*(1), 223-249.

Food for thoughts: Some TEDx talks

- **The neuroscience of social conflict | Tim Phillips | TEDxBoston**
  https://www.youtube.com/watch?v=AfljJGTVcKE
- **The Neuroscience of Decision-Making: Are We Foul or Fair? | Kimberly Papillon | TEDxNashvilleWomen**
  https://www.youtube.com/watch?v=aCWYkZ5i-gE
- **Neuromarketing: The new science of consumer decisions | Terry Wu | TEDxBlaine**
  https://www.youtube.com/watch?v=UEtE-el6KKs
- **The Neuroscience of Leadership: Thomas Maak at TEDxESADE**
  https://www.youtube.com/watch?v=CvOLbYChYcw
- **After watching this, your brain will not be the same | Lara Boyd | TEDxVancouver**
  https://www.youtube.com/watch?v=LNHBMFCzznE
- **The neuroscience of social intelligence: Bill von Hippel at TEDxUQ 2014**
  https://www.youtube.com/watch?v=CM2wIS8UejE

Exercise!

Which neuro-physiological measures could you apply to examine your research question/topic?

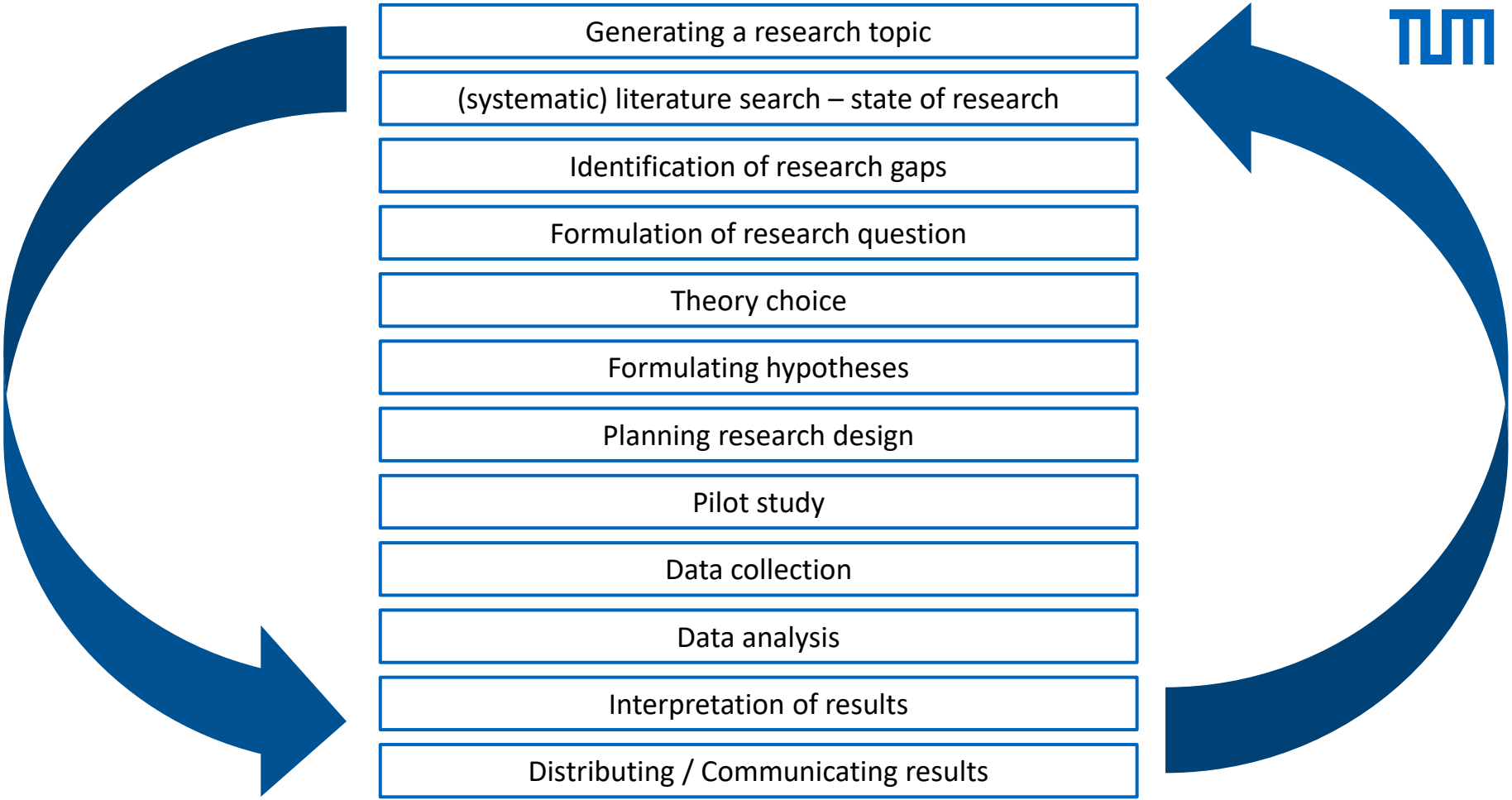


https://images.app.goo.gl/XbZJvJXimT3r1onEA

Caveat! No method is without flaws

- Methods are a **means to an end**.
  Neurological or physiological measures and technology are not silver bullets.
- Neurological mechanisms can inform various organizational behavior and practices.
- **Fancy technology is not necessarily required** to take an ON approach to research and practice.
  → **Have a sound design, be open-minded, and strike up collaborations.**
- Conducting organizational neuroscience research is not without its **challenges**:
  - practical issues
  - collaborative translation
  - interpretation and communication of results
- **Beware:**
  - potential for excessive reductionism and ethical concerns!
  - neurophilia

https://www.siop.org/Research-Publications/Items-of-Interest/ArtMID/19366/ArticleID/870/Where-Have-We-Been-with-Organizational-Neuroscience-A-Review-of-Past-Themes-and-Visions-of-the-Future; Waldman, D. A., Wang, D., & Fenters, V. (2019). The added value of neuroscience methods in organizational research. *Organizational Research Methods*, *22*(1), 223-249.


Generating a research topic
(systematic) literature search – state of research
Identification of research gaps
Formulation of research question
Theory choice
Formulating hypotheses
Planning research design
Pilot study
Data collection
Data analysis
Interpretation of results
Distributing / Communicating results

Pretesting

Expert check or qualitative Pretest (think aloud study)	Quantitative Pretest (SPSS, Excel, STATA etc.)
Are the questions easy to understand? Can the questions be answered?	Do participants‘ answers have enough variance?
Are there language barriers?	Are there missing values?
Are the instructions easy to understand?	Do experimental manipulations work?
Do the technicalities work (online questionnaire, experiment)?	Do experimental tasks work?
Do participants guess the purpose of the study?	…
…	