2. Planning your research: Reviews, hypotheses, and ethical pitfalls

Evgeny Osin, HSE
evgeny.n.osin@gmail.com

Today's Questions

- What decisions do we make as we plan our research?
- How to do a good literature review?
- Before you start: how to avoid ethical pitfalls?

What does a research begin with?

- Research **problem**, or a research question.

Any question (which may even seem weird), concerning some mental phenomenon or process.

Research stages

Research question!

Theorising **(lit. review)**

Hypothesing

Operationalizing

Methodological Considerations

Implementation of Study

Review of Outcomes

Publish and move on!..

Data collection □□ Data analysis

Methods:
- what?..
- how?..
- where?..
- in whom?..
…shall we study?

Phenomenon

What research questions can you think of?

Research problem

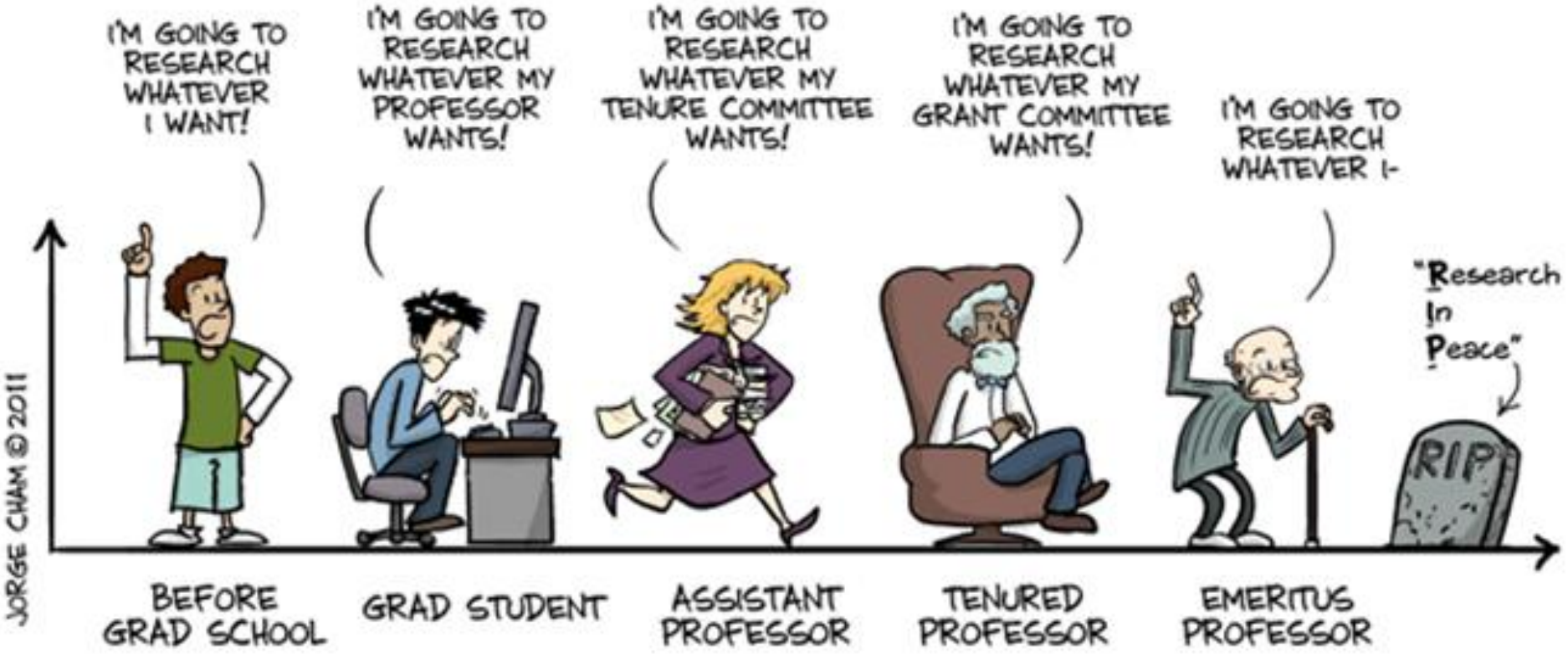
- Is a research problem a scientific problem?
- Depends on:
  - Is it formulated using scientific concepts, does it refer to a scientific view of reality?

    (are the reviewers going to treat it as a nonsense?)
  - Is it related to existing theories, does it seem relevant within current scientific discourse?

    (however, you have a little chance of starting a paradigm shift)
  - Is it important for society?

    (would anyone be willing to give you money to do this research?)

THE EVOLUTION OF INTELLECTUAL FREEDOM



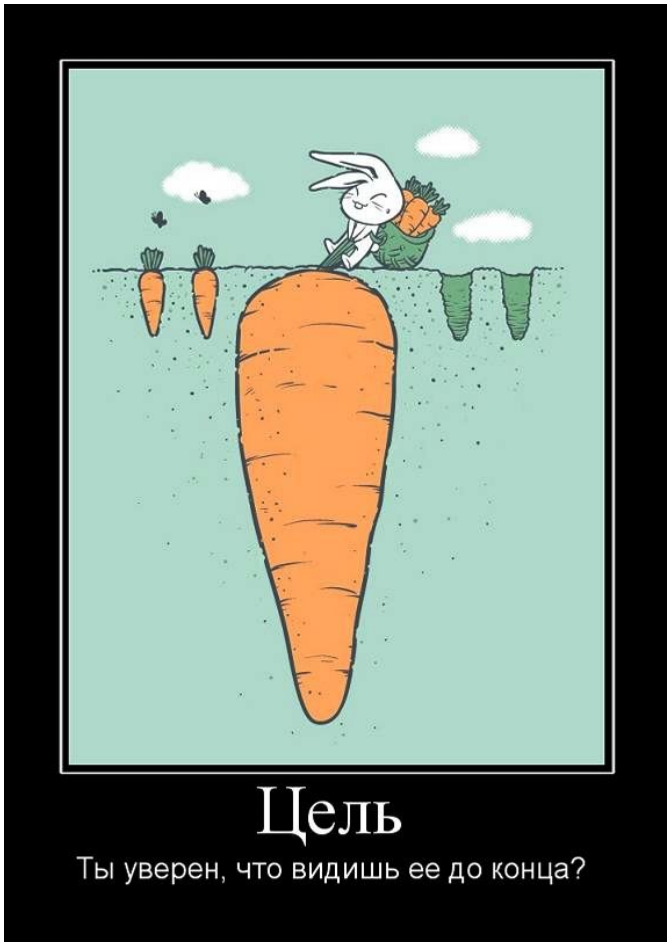
WWW.PHDCOMICS.COM

Doing a Theoretical Review:

How to make it a (relatively) painless process

Aim of the study. A study can be…

- **Exploratory** (looking for associations, describe phenomena to formulate theory)
- **Confirmatory** (based on a theory, test a specific hypothesis or reproduce findings)
- **Critical** (an outcome of the study resolves a competition between two or more different theories)



The Place of Theory in Research

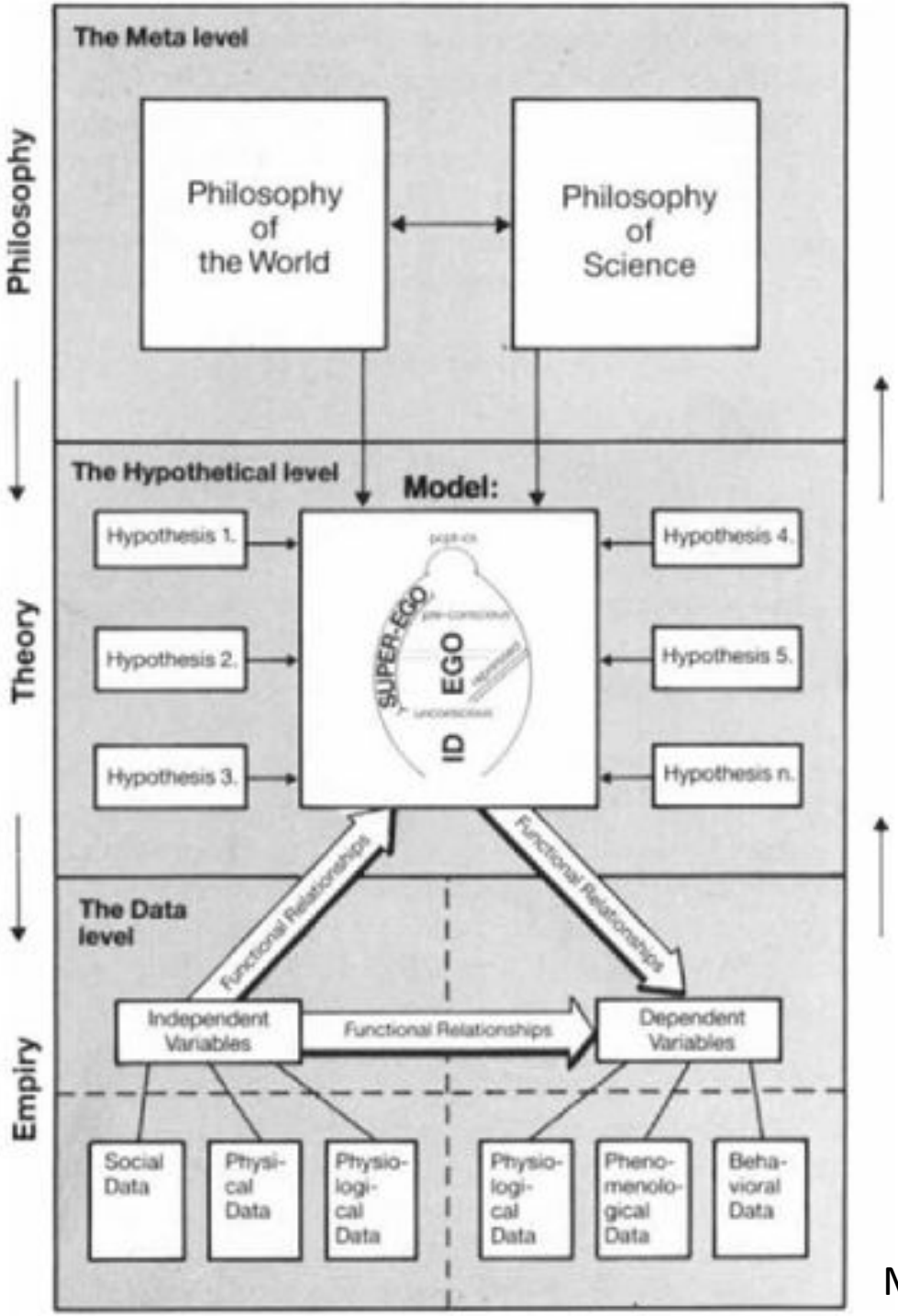
- Two positions concerning the place of theory:
  - **Theory** □ Problem □ Choose Phenomena □ Empirical Study □ Interpret Results
    = traditional strategy
  - Phenomenon □ Problem □ Empirical Study □ Interpret Results □ **Theory**
    ***=** phenomenological (exploratory) strategy*

However, in any case you still need review to know:

1) **What** other people have done
2) **How** they did it
3) **What** conclusions they arrived at?

Three levels of theory (Madsen, 1988)

Criterion of classification / Level of discourse	*Producing processes*	*Linguistic category*	*Purpose (function)*
Meta-stratum (meta-theses)	Philosophical (divergent, creative, intuitive) thinking	Transempirical descriptive language + prescriptive language	Creation of basis of understanding or meta-model
Hypothetical stratum (hypotheses and model)	Theoretical (convergent) thinking	Descriptive language with transempirical terms	Systematization of information (explanation and interpretation)
Data-stratum (Data-theses)	Empirical research (perception)	Purely descriptive language	Presentation of data (information)



Hypothetical constructs,
trans-empirical terms,
research questions

-------- the gap of operationalization --------

Measurable variables
(latent and directly observed),
empirical hypotheses

Madsen, 1988

Trans-empirical terms

- Personality – …
  - Common sense: a human being;
  - General scientific sense: the combination of all individual differences;
  - Narrow sense: whatever a certain personality theory says it is: e.g., subject of needs, subject making decisions, etc.
- R. B. Cattell: personality is like love: everyone knows that it <u>is</u>, but no one knows <u>what</u> it is.
  - It is not a data term, but something different:
    a ‘trans-empirical term’ (Madsen) or
    a ‘metapsychological category’ (Petrovsky & Yaroshevsky).

The danger of everyday language

- The same common language term can denote very different psychological processes (“love”, “conscience”, “personality”…)

- Even a clearly defined scientific construct can often be expressed in many very different everyday terms (“extraversion”)

- We should not completely rely on self-report data but interpret it:
  - e.g. “– I love him – What do you mean by love/feel?”
  - Dmitry Leontiev: “The difference between sociologists and psychologists is that sociologists do believe in whatever people say, and psychologists do not”.

Doing Literature Reviews

Why theoretical reviews?

- Make sure what you want to do is up to date
  = you need to avoid inventing the bicycle.
- Look at different ways to formulate your problem theoretically and to study it empirically
  = find out their strong and weak points.
- Generalize the existing theoretical and accumulated empirical data
  = what is important <u>today</u> (or tomorrow)?

Theoretical Reviews

- Theoretical review **as a basis for an empirical study** has to justify the study by answering questions like:
  - what it is that you are trying to study, how it can be defined?
  - why is it necessary to study this? has anyone done it before?
  - why do you choose this experimental paradigm?
- Theoretical review as a **special type of analytic work**:
  - **clarifies** the way a problem is stated and studied in science;
  - **combines and generalizes** existing studies as a digest for readers;
  - **reveals** connections, contradictions, «blind spots» and inconsistencies in existing literature;
  - shows **next steps** to be made in the solution of a problem. (Eisenberg, 2000).

Sternberg: Quality criteria for reviews & theories

- Original Substantive Contribution = message:
  - **Replication**: “The field is in the right place”
  - **Redefinition** (of the current status of the field)
  - **Incrementation** (a step forward)
  - **Advance** Forward (before others are ready)
  - **Redirection** (of the field)
  - **Reconstruction** & redirection (restart from past)
  - **Reinitiation** (start from a new point)
  - **Integration** (diverse ways of thinking unify)

Sternberg: Quality criteria for theories

- **Clarity** and Detail: is it clear what it says?
- **Relation to Past Work**: does it build on past?
- **Falsifiability**: does it make empirical predictions?
- **Generalizability**: in what situations does it work?
- **Discriminability**: does it include its limitations?
- **Internal Consistency**: is it logically coherent?
- **Correspondence to Past Data**: fit or selective fit?
- **Prediction**: does it fit future data?
- **Parsimony**: is it simple enough?
- **Excitement**: is it exciting or boring?

A good review has

- **Wide** scope
- **Depth** of analysis
- **Relevant** sources
- **Careful** interpretations
- Includes **critical analysis**
- Makes **conclusions**
- Is **logically structured** (A->B->C)
- Is effective: information/volume

Structuring your review

- **Theoretical logic**: general points of a theory specific theories / models empirical findings…
- **Historical logic**: Plato … Wundt … Your supervisor
- **The logic of phenomena**: there is A, there is B their relationship a research problem
- «**As you like**»: Nancy Eisenberg: there is no ‘right’ way to structure a literature review.

Review flaws

- **Ignoring sources** (happens often)
- **Misinterpretation** (is more likely to happen when you rely on secondary sources, like textbooks, existing reviews, etc.)
- **Selective quotation** (unethical in science)
- **Misrepresentation of facts** (completely unscientific)

(Newby, 2010)

Don’t be afraid of re-writing!

Plagiarism

- **Plagiarism** is **using in your own work other people's** results, formulations or ideas **without referencing a source** (appropriation: they are impossible to tell from your original work).
- Plagiarism can be **unintentional** (because of improper or absent referencing), as well intentional.
- «**Self-plagiarism**»: double publication of one's own results (without referencing) or re-using one's existing texts in a supposedly new work (without citing or acknowled).
- Plagiarism is a **violation of academic integrity** sanctions.
- http://turnitin.com/assets/en_us/media/plagiarism-spectrum/#.V8ZO8OOTAqk.facebook

How to avoid plagiarism?

- Make sure that ideas and facts you refer to, except for common knowledge [*e.g., secondary school course*], are provided with references to their sources.
- Make sure you are allowed to re-use fragments of your old work or your old data; provide references.
- Correct citations:
  - verbatim: «”Clearly, the Earth is round,” wrote Ivanov (1988, p. 23)»;
  - paraphrase: «Ivanov (1988) suggested that Earth is round».
  - reference without quoting: «The round-Earth position is shared by Ivanov (1988), Petrov (1989), and Sidorov (2012)».

«Antiplagiat» (Turnitin, …)

- «Percentage of original text» **says very little** about the quality of a work, because it does not differentiate between legitimate citations and plagiarism.

Steps in doing a lit review

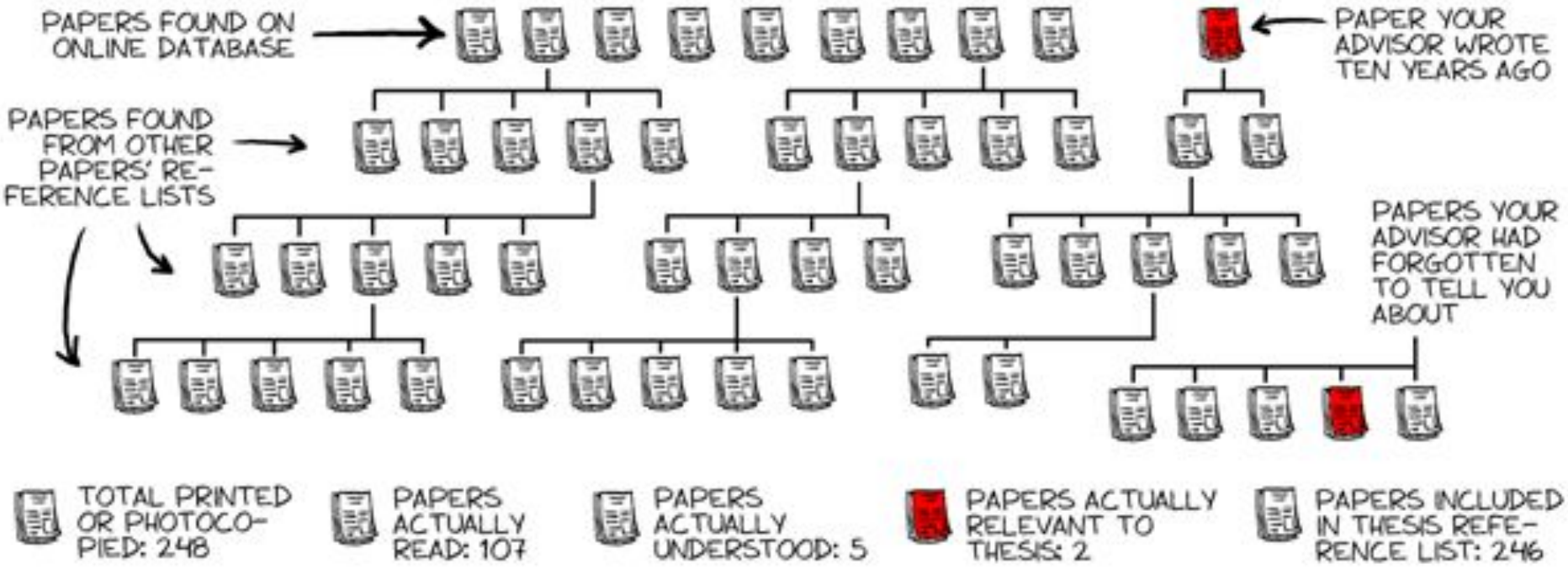
- Define **problem**
  - not too wide, not too narrow
- Set your **questions**
- Choose a **range of sources**
  - Travel, following references
- Make **abstracts**, if needed
- Establish a **structure**
- **Analyze** and **generalize**

REFERENCES

MAKING SURE NO ONE HAS ALREADY WRITTEN YOUR THESIS

phd.stanford.edu

JORGE CHAM ©STANFORD DAILY



How to get a quick overview of a topic?

- Library.hse.ru – Electronic resources Scopus
- Enter keywords
- Sort articles by citations
- Look at first 10-20-… (depending on how much time you have) paper, paying more attention to reviews

Lit Search Algorithm

1) Find papers in **Scopus / ISI Web of Science**.
2) Use **HSE_FullText** button to arrive at papers.
3) If it does not work, use «**A-to-Z сводный каталог**» to find out whether our library subscribes a journal.
4) Use **Google Scholar** (wider scope: e.g., preprints, dissertations and other unpublished works, but more rubbish).
5) Use **РИНЦ** (elibrary.ru) Russian Index of Scientific Citations to look for Russian-language works.

Structuring your review

- Sort papers in folders
- Create files with abstracts
- Use reference managers:
  - Mendeley (http://www.mendeley.com)
  - Zotero (http://www.zotero.org)

  (they store papers and abstracts, creating reference lists automatically in different standards, e.g., ГОСТ or APA)

Questions to assess lit. reviews

- Does the review give a comprehensive information about the way problem has been studies, does it take into account main approaches and methods to solve it?
- Is the review a sufficient justification for a study: does it show that this study needs to be carried out, and in this way?
- Is the review economical (concise), structured, and readable?

Operationalizing

- = going from theory to hypotheses and methods

From a research question to a hypothesis

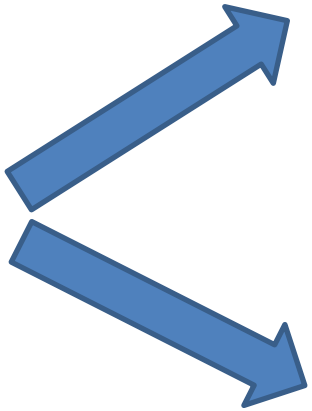
- A research problem can be rather abstract, not always testable
- A hypothesis – is **a general, but exact** statement about reality:
  - formulated in scientific terms (not everyday terms), based in some understanding of reality;
  - the verisimilitude (probability of being true) of a hypothesis can be tested either by logical analysis (theoretical hypothesis) or by an empirical proceduce (empirical hypothesis).
- **A good hypothesis can be tested**.
  A bad hypothesis can not be tested.
- (A good hypothesis: it is also not clear whether it's right or wrong…)

Definitions

- When we formulate our hypotheses, we need to give operational definitions for the concepts based on some theories or some phenomena.
- Operational definition of a construct refers to measurable variables (data stratum) and is always limited, compared to its theoretical definition:
  - E.g., how can we operationalize aggression? = What exactly would we measure/observe/record in a study?

Operational definition

The construct



Operational definition
(depends on research question)

Hypotheses

- Theoretical hypotheses (test logically by theoretical analysis)
- Empirical hypotheses (test empirically):
  - Existence of a phenomenon;
  - Correlation between phenomena;
  - Causal association between phenomena.
- Statistical hypotheses (in terms of measured variables):
  - Null hypothesis (H0): «No effect».
  - Alternative hypothesis (H1): «The null hypothesis is wrong».
- In an exploratory study, a research question without explicit hypothesis may be sufficient.

Evaluating hypotheses

- Are they clear and unambiguous?
- Are they testable?
- Are they grounded in a theoretical context (and why in this one)?
- What other possibilities for operationalization of these hypotheses exist (and why this one is chosen)?

Methods choices

- **What and where** shall we study? (**<u>Operationalization</u>** choices)
  - What phenomena? (consciousness, behavior, …)
  - Using what measurement procedures? (data type)
  - In which setting?
  - Using what sample?
- **How** shall we study it? (**<u>Design</u>** choices)
  - What is the study plan (experiment, etc.)?
  - What data analysis methods shall we use?
- **What** exactly shall we **do**?
  - Procedure (protocol)

The choice of a research question is related to the choice of an approach

«Quantitative» questions

- Is there a causal link between X and Y?
- Do people with different X differ in Y? (association)

«Qualitative» questions

- How…? (describe the situation, experience)
- Why…? (describe the variety of goals, intentions)

A Primer on Research Ethics

before you start investigating

Ethical Considerations

- Why is research ethics important?
- Ethical standards in psychology exist for:
  - **Researchers**
  - **Publication authors**
  - **Test developers / users**
  - Practitioners (therapists, counsellors)
    [we will not look into these]

Aims of research ethics

- Protecting the physical and mental **health** of individuals (and animals) participating in research.
- Protecting **privacy** and/or ensuring **confidentiality** of information.
- Ensuring the scientific data is correct (**academic integrity**).

Care about participants

- Principles (Belmont protocol):
  - Respect for person:
    - Treat people as autonomous agents Provide choice
    - Protect those with diminished autonomy
  - Beneficence:
    - Do not harm Maximize benefits for people, minimize risks
  - Justice (mainly applies to medical research):
    - Select people fairly.

Research Ethics Committees

- **IRB**: *Institutional Review Boards* – do they help?

Care about respondents

- The practical means used in psychology research:
  - Providing **choice Informed consent**;
  - Ensuring **confidentiality Data protection**;
  - Reducing the harmful consequences of **deception Debriefing**.

UNIVERSITY OF EAST LONDON
School of Psychology, Stratford Campus, Romford Road, London E15 4LZ

The development of an integrated well-being scale

Dr. Ilona Boniwell
i.boniwell@uel.ac.uk; +44 20 8223 4384.

Dr. Evgeny Osin
research@porsitivepsychology.org.uk

▪ You are being invited to participate in a research study conducted by the University of East London School of Psychology research team. Before you decide to take part, it is important that you read the following information to understand why the research is being done and what it will involve. The purpose of this letter is to provide you with the information that you need to consider in deciding whether to participate in this study. *(please scroll down)*

▫ The aim of this project is to develop a new questionnaire about psychological well-being and happiness. The questionnaire development procedure also involves investigating the relationships that exist between psychological well-being and the participants' individual characteristics (such as age and gender).

▫ During the research procedure you will be asked to fill out a 158-item questionnaire measuring psychological well-being. We will also ask you to provide us with some personal information that we need in order to see how psychological well-being is related to following characteristics: age, sex, gender, highest level of educational attainment, partnership status, number & age of children, occupation and engagement in volunteer activities. The research procedure also includes several short questionnaires measuring specific aspects of psychological well-being (67 items in total). The average time it takes respondents to complete the whole survey is 35 minutes.

▫ All the data collected are strictly confidential. In case the results of this study are published, your individual answers will never be disclosed. The answer sheets obtained in the course of this study will be safely kept for 5 years, in order to comply with the requirements of scientific journals, after which period they will be destroyed. The anonymised research data will also be stored in a secure electronic database for future reference and verification.

▫ Your participation in this study is voluntary. You are not obliged to take part in this study, and are free to withdraw at any time without disadvantage to yourself and without any obligation to give a reason. The payment offered for participation is specified in the Amazon Mturk interface. Please take care to answer all the questions, otherwise we will not be able to accept the results.

▫ If you have any queries regarding the conduct of the study in which you are being asked to participate please contact the investigators or the Secretary of the University Research Ethics Committee: Ms D Dada, Administrative Officer for Research, Graduate School, University of East London, Docklands Campus, London E16 2RD.

☐ **By proceeding with this survey I indicate that I have read the above information concerning the nature, purposes and procedure of this study, and give my consent to participate in it. I have the right to withdraw from this study at any time without disadvantage to myself and without being obliged to give any reason.**

Informed consent includes:

- Description of research (aims, requirements, procedure, compensation)
- Description of risks and benefits (if any), and of ways risks will be managed
- Explicit notification that a person is free to withdraw from the study at any time without any negative consequences for him/her
  - Even if students are required to take part in studies, there needs to be a choice of available research projects
- Contacts of researchers (for questions) and ethic committee (for complaints)

Privacy and confidentiality in research

- We infringe **privacy** when:
  - we collect **information** about individuals which, **if disclosed, could harm** their reputation, social status, employability, endanger them, etc.
  - **and** this information is collected **together** with **data** that make individuals **identifiable**.
- If both “yes”, then we need to care about **Confidentiality**:
  - take measures to protect the information from disclosure

Privacy / confidentiality advice

- Whenever you can **avoid collecting identifying information** (name, etc.), it is better to do so.
  - E-mails and IP addresses may also be considered identifying information
- If you do collect such information, make sure you **anonymize your data** afterwards
  - Keep identifiers separately from data (and safely = in a restricted-access, protected way)

Deception

- Deception is giving **imprecise or misleading information** about study aims before the study.
- Is **justified** in case when it would be **impossible to perform the study** without using it.
- Whenever deception is used, participants must be debriefed after the study:
  - **unless debriefing results in more harm**: e.g., you selected them based on some unpleasant property, like overweight, etc.

Ethical standards in test use (ITC)

General (in any context)

- **Professionalism** (do not use tools you are not trained in)
- **Responsibility** (only use tests for their proper aims)
- **Competence** (make limited interpretations)
- **Fairness** (use correct and group-specific test norms)
- **Security** (of test materials) and **confidentiality** (of results)

Research-specific

- Obtain **permissions** (for use or re-printing)
- **Document** (describe) measures and any modifications made
- **Prevent research tools** (in progress) from spreading into practice

Unethical Behavior in science

- Violations against authorship / copyright:
  - **Plagiarism**;
  - **Collusion** (wrong authorship credit, ghostwriting);
  - Using products of other people's work **without permission**.
- Violations against scientific integrity:
  - **Self-plagiarism**;
  - **Selective publication**;
  - **Data fabrication**.

APA publication guidelines

Ethical Compliance Checklist

- ☐ Have you obtained permission for use of unpublished instruments, procedures, or data that other researchers might consider theirs (proprietary)?
- ☐ Have you properly cited other published work presented in portions of your manuscript?
- ☐ Are you prepared to answer questions about institutional review of your study or studies?
- ☐ Are you prepared to answer editorial questions about the informed consent and debriefing procedures you used?
- ☐ If your study involved animal subjects, are you prepared to answer editorial questions about humane care and use of animals in research?
- ☐ Have all authors reviewed the manuscript and agreed on responsibility for its content?
- ☐ Have you adequately protected the confidentiality of research participants, clients–patients, organizations, third parties, or others who were the source of information presented in this manuscript?
- ☐ Have all authors agreed to the order of authorship?
- ☐ Have you obtained permission for use of any copyrighted material you have included?

Ethics checklist

- Did you use procedures to protect the rights of participants?
  - autonomy informed consent;
  - information debriefing;
  - privacy confidentiality, data protection.
- Have you ensured the academic integrity is not violated?
  - the data are correct and described in a complete manner;
  - conflicts of interest are disclosed.
- Have you ensured copyright is not violated?
  - no plagiarism;
  - have permissions to use other people's instruments, pictures, etc.
  - authorship and affiliations are stated correctly.
- Do you need (have) an IRB (Ethics committee) approval?

To Read

Recommended reading:

Madsen, 1988, p. 25-29, 47-51, 56-61
(Structure of scientific theories)
Eisenberg, 2000 (Chapter 2 in Stenberg, 2000)
Miller, 2003 (Chapter 7 in Davis, 2003)
(Ethics in experiments).

Supplementary reading:

Madsen, 1988, p. 30-39, 43-47, 51-56.
Sternberg, 2006: Chapter 3
(Quality criteria for a theory article).
APA, 2010, pp. 11-20 (Publication ethics).
International Test Commission, 2014
(Guidelines on ethical test use in research).