History & Methods of Psychology (2024/2025)

Course overview

Oliver Lindemann

Online Resources

1. Course Manual
2. Canvas

Establishing Academic Psychology

Learning Objectives

Psychology wasn't always seen as a real science, so it's important for most psychologists today to be recognized as scientific. Over time, psychology had to prove itself as a legitimate science. Think of it like joining a club—you have to show why you belong.

In our first week, we examine the emergence of psychology as an academic discipline. Who were its early pioneers? How do they shape the foundations of our field?

> ! Required Reading
>
> - Hyland (2024), Chapter 2: *How psychology joined the science club.*

Study Checklist

- Early Psychophysics
  - Ernst Weber and Gustav Fechner
  - Just-noticable difference
- Wilhelm Wundt
  - Introspection
  - Folk psychology ('Völkerpsychologie')
- John Lock: "Tabula Rasa" hypothesis
- David Hartley & associationist philosophy
- controversy: coalescencey vs brick wall hypothesis
- influence of medicine: Pierre Broca and Carl Wernicke

Disciples and Schools of Psychology

Learning Objectives

When Wundt established an experimental psychology laboratory in Leipzig, he stressed that psychology should focus on fundamental science and is not an applied science. Later, many different subdisciplines of psychology emerged. Importantly, psychology at the same time evolved from being solely theoretical to also encompassing applied science.

We'll also talk about how psychology developed in the US, including different areas and how psychology became also a applied subject. Finally, we explore the history of various schools or paradigms of psychology. Of particular significance is the rise of behaviorism and its subsequent replacement by the cognitive paradigm.

> ! Required Reading
>
> - Hyland (2024)
>   - Chapter 3: *Applied psychology, prejudice and intellectual snobbery.*
>   - Chapter 4: *The rise of behaviourism and its replacement by the cognitive paradigm*

Study Checklist

- Predecessors of Psychology (see lecture 1)
  - Early Brain Science: Franz Gall, Pierre Broca, Phineas Gage
  - Ophthalmology: Herman von Helmholtz and Franz C. Donders
  - Method of subtraction
- Psychometrics in Europe (see lecture 1)
  - Francis Galton
  - Alfred Binet
- American psychology
  - William James
- Applied psychology
  - Hugo Münsterberg
  - Lightner Witmer
- Difference to American and European psychology
  - pure science vs applied psychology
  - structuralism vs functionalism
- Introspection
  - failures of introspection
- Edward Thorndike as a precursors to behaviourism
- Behaviorism
  - Skinner's view of theorizing: Explanatory fictions
  - Skinner's contributions to psychology
- Neobehaviourism
  - Hull's quantitative theory of animal behaviour
  - Tolman's purposive behaviourism
- Cognitive paradigm, cognitive psychology
  - Noam Chomsky's critique of Skinner
  - differences to behaviorism
  - information processing & computers as a model/metaphor
  - Control systems

Mind-Body Problem

Learning Objectives

Humans who engage in self-reflection always asked questions about the soul or the mind. Already ancient Greek philosophers tried to explore the these fundamental questions, which is basically a psychological question.

The mind-body problem is a philosophical debate concerning how the mind and body are connected. It's a key issue in philosophy, psychology, and neuroscience. Are the mind and body separate entities? Or is there only a body or only a mind? Philosophy has been tackling these questions for centuries. While you may not aspire to be a philosopher, psychologists should be aware of the philosophy of the mind and the fundamental concepts proposed in this context.

Prepare Lecture

Read Westphal (2016) Chapter 1 to prepare for the lecture.

! Required Reading

- Westphal (2016)
  - Chapter 1, 2 and 3 (partially): pages 1-71
  - Chapter 3 and 4: pages 77-90
  - Chapter 6: pages 159-163

Study Checklist

- Basic philosophical concepts
  - Ontology & epistemology
  - Rationalism versus empiricism
  - Reductionism
  - Appearance versus reality
- The mind–body problem
  - Descartes' interactionism
  - Substance dualism
  - Property dualism
  - Parallelism
  - Interactionalism
  - Epiphenomenalism

  - Emergentism
  - Occasionalism
  - Double Aspect Theory
  - Psychophysical parallelism
  - Physicalism
  - token identity theory
  - Eliminative materialism
  - Leibniz: pre-established harmony (lecture)
  - Idealism / Phenomenalism
  - Identity Theory
  - Qualia (lecture)
  - Category mistake (lecture)

What is Science?

Learning Objectives

Psychologists often face the question: Is psychology truly a science, like biology or physics?

While you may have your own opinion on this matter, answering it requires an understanding of what constitutes science. We need to develop an understanding what science is. What are the criteria of good or bad science? What is distinguishes science and pseudoscience? In addition, we must ask, how should science be or in other words, whether there are established norms for scientific practice.

> **!** Required Reading
>
> - Bem & Looren de Jong (2013), Chapter 1: *Science: Why, and How?*
> - Turner & McCreery (2015), *Scientific Norms/Counternorms*

Study Checklist

- Definition scientific knowledge
  - unification, underlying causes, reduction
  - everyday (common-sense) vs. scientific knowledge
  - realism, idealism and pragmatism
  - 6 characteristics
- Basic Epistemological Concepts
  - Deduction
  - Induction (& problems of induction)
  - Abduction
  - pure observation (empiricism) & theory-ladenness
  - definition of theory and model
  - empirical & theoretical laws
- Causality
- The Empirical Cycle
- "C.U.D.OS" Norms of Science

Philosophy of Science

Learning Objectives

We will closely examine the perspectives of various thinkers on the question of what distinguishes science from non-science or pseudoscience, known as the demarcation problem. This will include a look on the historical ideas of philosophy of science (empiricism & positivism), and a detailed exploration of modern philosophers of science such as Karl Popper and Thomas Kuhn (refer to the picture above).

> **!** Required Reading
>
> - Bem & Looren de Jong (2013), Chapter 3: *Phil. of Science (1): Logical Positivism and its Failure*
> - Piekkola (2017), Chapter 7.1 & 7.2: *Philosophy of Science* *
>
> * Only the two short subchapters on empiricism and positivism are relevant for us. You can use the ebook from the library or these scans of the printed book.

Study Checklist

- Pioneers in the Philosophy of Science (from Piekkola subchapters)
  - Empiricists: Lock & Hume
  - Positivism: Comte & Mach, Vienna Circle
- Demarcation Problem
- Logical Positivism
  - The Standard View
  - Assumptions of Positivism (see lecture 3)
  - Problems of Positivism
  - especially (not independent) Observations

- Karl Popper
  - Critique of Positivism
  - Falsificationism
  - critical vs. dogmatic Thinking
- Thomas Kuhn
  - paradigms
  - incommensurability
  - Scientific revolution
  - Phase model of scientific development (see lecture 3)
- Lakatos
  - Competition between research programmes
  - Empirical content

Methods of Quantitative Psychology

Learning Objectives

The last weeks of this course were very philosophical and looked rather general at science. To apply this knowledge to the question of whether psychology is a science, it is essential to understand empirical psychological research and the methods employed in quantitative psychology.

To examine something unobservable (the psyche), modern psychology employs various methods to measure or quantify experiences, emotions, and cognition. But how do these methods work? What are the foundations of these measurements? What types of research designs exist? What are the phases of a research project in psychology?

As an example, we will focus on one of the most popular methods in cognitive psychology: reaction times, also known as chronometric methods.

! Required Reading

- Barker, Pistrang, & Elliott (2015)
  - Chapter 4: *Foundations of Quantitative Measurement*[*] (only pages 50–57)
  - Chapter 8: *Foundations of Design*[*]
- Lindemann & Fischer (2023), Chapter 3: *Chronometric Methods*[**] (only pages 37–41)

[*] Chapter 4 is to a large extend merely a repetition of the basic ideas of positivism. Chapter 8 explains research designs in clinical psychology. [**] The chapter discusses chronometric methods in the context of "embodied cognition", which is a disciple of psychology that studies the role of the body on cognitive processes. Note, the two psychological disciples are just examples for us. Everything that is explain in theses chapters counts for any psychological disciple.

Study Checklist

- Operatizonalisation
- Advantages of quantitative methods
- Causation
  - General conditions for causality
  - Possible causal relationships
- Non-experimental designs
  - Descriptive and correlational designs
- Experimental designs
  - Four types of validity
  - Threats to validity
  - Non-randomized designs
  - Randomized designs
  - Types of comparison groups
- Chronometric methods
  - Hick-Hyman law
  - Donders' method of subtraction
  - Additive factors logic

Questionable Research Practices

Learning Objectives

We will have a closer look at the scientific practice in psychology today. How sound or reliable is the psychological research today? What are the major problems and threads of good practice? Can we identify questionable research practices and publication biases? Are there any approaches to prevent these problems?

! Required Reading

- Wagenmakers, Wetzels, Borsboom, Maas, & Kievit (2012), *An Agenda for Purely Confirmatory Research*[*]
- Ioannidis, Munafò, Fusar-Poli, Nosek, & David (2014), *Publication and other reporting biases in cognitive sciences*[**]
- Wicherts (2017), *The Weak Spots in Contemporary Science (and How to Fix Them)*[***]

[*] Elaborates the difference between good and bad scientific practices. [**] Describes the problem of reporting biases in research and possible approaches to prevent these problems. The article talks predominately about "cognitive science". The considerations are however valid for any disciple in psychology. [***] The article discusses the same issues and solutions as Ioannidis et al. (2014). What is new here are the questionable research practices HARKing and p-hacking. You can focus on that. Chapter 3 and 4 can be ignored anyway.

Study Checklist

- Exploratory and confirmatory science
- Replication rates / replication crises
- Confirmation bias
- Publication and reporting biases
  - selective outcome and analyses reporting
  - file-drawer problem
  - proteus phenomenon
- Questionable research practices
  - reporting biases (see above)
  - HARKing
  - *p*-hacking
  - optional stopping (lecture 4)
- Approaches to prevent biases
  - study registration or pre-registration
  - Transparency and Open Science (that is, the availability of data & analyses)
  - Replications
  - different publication practices & incentive structures

Literature

Barker, C., Pistrang, N., & Elliott, R. (2015). *Research methods in clinical psychology: An introduction for students and practitioners* (3rd ed.). Nashville, TN: John Wiley & Sons. Retrieved from https://eur.on.worldcat.org/oclc/910914868

Bem, S., & Looren de Jong, H. (2013). *Theoretical issues in psychology : An introduction* (Third edition.). Los Angeles: SAGE. Retrieved from https://eur.on.worldcat.org/oclc/1020004737

Hyland, M. (2024). *A history of psychology in ten questions : Lessons for modern life* (Second edition). London: Routledge, Taylor & Francis Group. Retrieved from https://eur.on.worldcat.org/oclc/1392072595

Ioannidis, J. P. A., Munafò, M. R., Fusar-Poli, P., Nosek, B. A., & David, S. P. (2014). Publication and other reporting biases in cognitive sciences: Detection, prevalence, and prevention. *Trends in Cognitive Sciences*, *18*(5), 235–241. Retrieved from https://www.sciencedirect.com/science/article/pii/S1364661314000540

Lindemann, O., & Fischer, M. H. (2023). Chronometric methods. In A. Felisatt & M. H. Fischer (Eds.), *Experimental methods in embodied cognition* (pp. 37–48). London, England: Routledge. Retrieved from https://eur.on.worldcat.org/oclc/1391329439

Piekkola, B. (2017). *Conceptual and historical issues in psychology*. London, England: SAGE Publications. Retrieved from https://eur.on.worldcat.org/oclc/1129786511

Turner, S., & McCreery, G. (2015). Scientific Norms/Counternorms. In *The Blackwell Encyclopedia of Sociology*. American Cancer Society. https://doi.org/10.1002/9781405165518.wbeoss052.pub2

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Wicherts, J. (2017). The weak spots in contemporary science (and how to fix them). *Animals*, *7*(12), 90. https://doi.org/10.3390/ani7120090