

Conceptual frameworks of hypothesis testing

Different questions answered by different approaches

Fisherian significance testing

- Primary question:
- Is the data surprising under H_0 ?

- Key concept:
- p-value as evidence

No decision rule
No Type II error

Neyman-Pearson testing

- Primary question:
- What decision rule controls error?

- Key concepts:
- Type I error (α)
 - Type II error (β)
 - Power

Bayesian inference

- Primary question:
- How should beliefs change?

- Key concepts:
- Prior → Posterior
 - Bayes factor
 - Expected loss

Popperian falsification

- Primary question:
- Has the theory survived a severe test?

- Key concepts:
- Risky predictions
 - Refutation, not confirmation