

DEDUCTION AND INDUCTION

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- Research involves **inductive** and **deductive methods**.”
- Inductive research methods are **used to analyze the observed phenomenon** whereas, deductive methods are used to verify the observed phenomenon.
- Inductive approaches are associated with qualitative research and **deductive methods** are more commonly associated with **quantitative research**.

Deduction

- In logic we often refer to the two broad methods of reasoning as deductive approaches.
- Deductive reasoning works from the more general to the specific .
- Sometimes it is informally called a **top down approach**. We might begin with thinking up a theory about our topic interest.
- We then narrow down even further when we collect observations to address the hypothesis.
- This ultimately leads us to be able to test the hypothesis with specific data- a confirmation (or not) of our original theories.

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graph TD; Theory --> Hypothesis; Hypothesis --> Observation; Observation --> Confirmation;
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The diagram illustrates a four-step process in a vertical flow. Each step is contained within a light orange rectangular box, which is itself centered within a wider, solid orange rectangular frame. The steps are: Theory, Hypothesis, Observation, and Confirmation. Downward-pointing orange arrows connect each step to the next one below it.

Theory

Hypothesis

Observation

Confirmation

Induction

- Inductive reasoning works the other way ,**moving from specific observations to broader generalization and theories.** Informally, we sometimes call this a **bottom up approach.**
- In inductive reasoning , we begin with specific observations and measures, begin to detect patterns and regularities, formulate some tentative hypothesis thus we can explore and finally end up developing some general conclusions or theories.

Induction

Observation



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graph TD; A[Observation] --> B[Pattern]; B --> C[Tentative Hypothesis]; C --> D[Theory];
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The diagram illustrates the process of induction through four sequential steps, each contained within a light orange rectangular box. These boxes are centered within a series of four horizontal orange bars. The steps are connected by large, downward-pointing orange arrows, indicating a linear progression from top to bottom. The steps are: Observation, Pattern, Tentative Hypothesis, and Theory.

Pattern

Tentative Hypothesis

Theory

- These two methods of reasoning have a different feel when you are conducting research.
- Thus inductivism is a scientific method of knowledge focusing that scientific knowledge is generated by arriving at generalizations on the basis of particular observations using the principle of induction.