Psychology and Scientific Methods

Authored by

mohammad looti

November 19, 2022

The Nature of Scientific Enquiry

Is psychology a science or just common sense?

Psychology uses an empirical approach. Empiricism (founded by John Locke) states that the only source of knowledge comes through our senses - e.g. sight, hearing etc.

This was in contrast to the existing view that knowledge could be gained solely through powers of reason and logical argument (known as rationalism). Thus empiricism is the view that all knowledge is based on, or may come from experience.

The empirical approach through gaining knowledge through experience quickly became the scientific approach and greatly influenced the development of physics and chemistry in the 17th and 18th centuries.

The idea that knowledge should be gained through experience, i.e. empirically, turned into a method of enquiry that used careful observation and experiments to gather facts and evidence.

The nature of scientific enquiry may be thought of at two levels:

that to do with theory and the foundation of hypotheses.
and actual empirical methods of enquiry (i.e. experiments, observations)

The prime empirical method of enquiry in science is the experiment.

The key features of the experiment are control over variables (independent and extraneous), careful objective measurement and establishing cause and effect relationships.

The Key Features of a Science

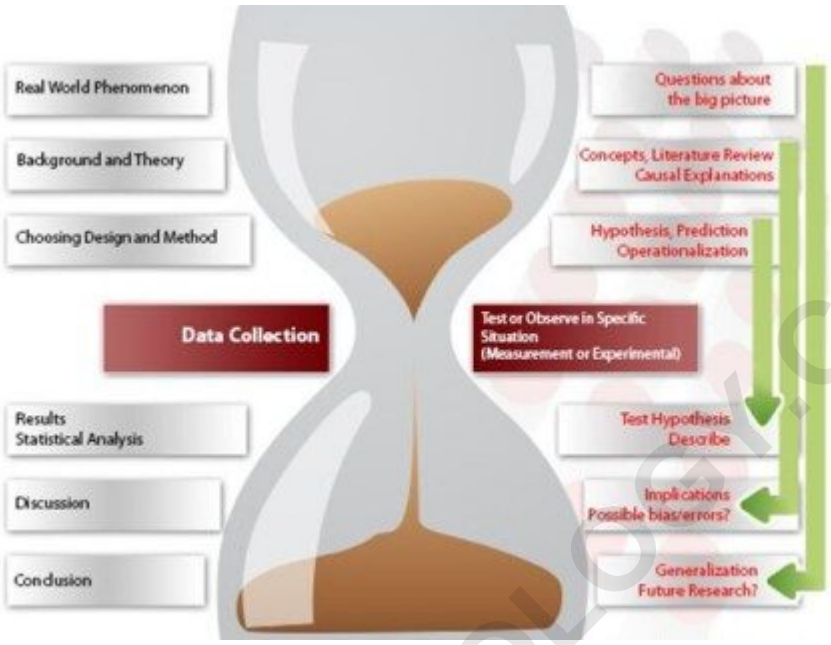
Empirical Evidence:

Refers to data being collected through direct observation or experiment.
Empirical evidence does not rely on argument or belief.
Instead experiments and observations are carried out carefully and reported in detail so that other investigators can repeat and attempt to verify the work.

Objectivity:

Researchers should remain totally value free when studying; they should try to remain totally unbiased in their investigations. I.e. Researchers are not influenced by personal feelings and experiences.

Objectivity means that all sources of bias are minimised and that personal or subjective ideas are eliminated. The pursuit of science implies that the facts will speak for themselves even if they turn out to be different from what the investigator hoped.



Control:

All extraneous variables need to be controlled in order to be able to establish cause (IV) and effect (DV).
Predictability:
We should be aiming to be able to predict future behavior from the findings of our research.

Hypothesis testing:

e.g. a statement made at the beginning of an investigation that serves as a prediction and is derived from a theory. There are different types of hypotheses (null and alternative), which need to be stated in a form that can be tested (i.e. operationalised and unambiguous).

Replication:

This refers to whether a particular method and finding can be repeated with different/same people and/or on different occasions, to see if the results are similar.
If a dramatic discovery is reported but it cannot be replicated by other scientists it will not be accepted.
If we get the same results over and over again under the same conditions, we can be sure of their accuracy beyond reasonable doubt.

This gives us confidence that the results are reliable and can be used to build up a body of knowledge or a theory: vital in establishing a scientific theory.

Click on the topics below to explore further:

The Historical Development of Scientific Psychology

Psychological Approaches and Science

Alternatives to the Scientific Approach

Common Sense Views of Behavior

Limitations of Scientific Psychology