# Inductive vs deductive approaches

# Inductive approach

The reciprocal relationship between theory and research often becomes evident to students new to these topics when they consider the relationships between theory and research in inductive and deductive approaches to research. In both cases, theory is crucial. But the relationship between theory and research differs for each approach. Inductive and deductive approaches to the relationship between theory and research differ for each approach but they can also be complementary (Dudovskiy, 2011).

**Definitions**

* The inductive approach begins with a set of empirical observations, seeking patterns in those **observations**, and then theorizing about those patterns. The deductive approach begins with a theory, developing hypotheses from that theory, and then collecting and analyzing data to test those hypotheses (Frank, & Rens, 2017 ).

# If observed facts are used to generate a theory to be considered with the facts, the process is called inductive method--the first step in research (Babbei, 2010).

# Inductive reasoning is a method of reasoning in which the premises are viewed as supplying some evidence, but not full assurance, for the truth of the conclusion. ‎The truth of the conclusion of an inductive argument is probable, based upon the evidence given (Streefkerk, 2019).

* This is the process by which we draw a general conclusion from individual instances or observations. The benefits of an inductive approach, as seen for example in grounded theory, are that it allows flexibility, attends closely to context and supports the generation of new theory [see the paper on social loss as example. To its critics, however, inductive research painstakingly works from first principles when there is no overriding need to do so given there is already a huge amount of existing literature (Mahmond,. 2006.

Thus, when researchers take an inductive approach, they start with a set of observations and then they move from those particular experiences to a more general set of propositions about those experiences. In other words, they move from data to theory, or from the specific to the general.

**Purpose**

The purposes for using an inductive approach are to (a) condense raw textual data into a brief, summary format; (b) establish clear links between the evaluation or research objectives and the summary findings derived from the raw data; and (c) develop a framework of the underlying structure of experiences or processes that are evident in the raw data. The general inductive approach provides an easily used and systematic set of procedures for analyzing qualitative data that can produce reliable and valid findings (Thomag, 2006).

# Deductive approach

# Researchers take start with a social theory that they find compelling and then test its implications with data. That is, they move from a more general level to a more specific one. A deductive approach to research is the one that people typically associate with scientific investigation. The researcher studies what others have done, reads existing theories of whatever phenomenon he/she is studying, and then tests hypotheses that emerge from those theories (Dudovskiy, 2011).

# Deductive approach- study what others have done, reads existing theories of whatever phenomenon she is studying, and then tests hypotheses that emerge from those theories. Deductive approach can be explained by the means of hypotheses, which can be derived from the propositions of the theory. In other words, deductive approach is concerned with deducting conclusions from premises or propositions.

**Definitions**

* Deductive research approach explores a known theory or phenomenon and tests if that theory is valid in given circumstances. It has been noted that “the deductive approach follows the path of logic most closely. The reasoning starts with a **theory** and leads to a new hypothesis (Strefkerk, 2019).
* A deductive approach is concerned with “developing a hypothesis (or hypotheses) based on existing theory, and then designing a research strategy to test the hypothesis” (Wilson, 2010).
* Deductive means reasoning from the particular to the general. If a causal relationship or link seems to be implied by a particular theory or case example, it might be true in many cases. A deductive design might test to see if this relationship or link did obtain on more general circumstances (Gulati, 2009).

**Difference**

* **Inductive reasoning** aims at developing a theory while **deductive reasoning** aims at testing an existing theory. Inductive reasoning moves from specific observations to broad generalizations, and deductive reasoning the other way around.
* Deductive reasoning works from the more general to the more specific. Inductive reasoning works the other way, moving from specific observations to broader generalizations and theories.
* Inductive reasoning begins with specific observations and comes up with generalizations where deductive reasoning begins with generalizations and moves toward specific predictions.
* Deductive reasoning is stronger than inductive reasoning because it draws conclusions based on premises everyone can agree on, and begins with something specific to make a broad conclusion.
* Inductive reasoning is a form of argument that—in contrast to deductive reasoning—allows for the possibility that a conclusion can be false, even if all of the premises are true.

# Cross-sectional vs Longitudinal (Panel) Studies

Cross-sectional and longitudinal studies are two different types of research design. In a cross-sectional

study you collect data from a population at a specific point in time; in a longitudinal study you repeatedly collect data from the same sample over an extended period of time.

**Cross-sectional study**

A cross-sectional study might be used to determine if exposure to specific risk factors might correlate with particular outcomes. A researcher might collect cross-sectional data on past smoking habits and current diagnoses of lung cancer.

# It requires broad sampling of persons of different ages, income level, education level, different races and religions, and so on. It is a study in which subjects of different ages are compared at the same time. It is often used in developmental psychology, but also utilized in many other areas including social science, education and other branches of science (Aric, et al, 2008).

A cross-sectional study might be used to determine if exposure to some specific factors might correlate with particular outcomes. For example, if someone wants to conduct a study, exploring effects of family planning ads on married couples (from three to five years of marry), then he/she needs to select one specific area or city (e.g. Sargodha city). To ensure a representative sample of the whole population of the city a researcher needs to draw a large representative sample.

**Definitions**

* Cross-sectional designs are used by empirical researchers at one point in time to describe a population of interest (universe). In cross-sectional designs, researchers record information but do not manipulate variables. A common example of cross-sectional design is a census study in which a population is surveyed at one point in time in order to describe characteristics of that population including age, sex, and geographic location, among other characteristics. This entry defines the characteristics of cross-sectional design, identifies examples of different types of cross-sectional designs, and describes common strengths and weaknesses of such designs (Allen, 2017).
* Cross-sectional designs often collect data using survey questionnaire or structured interviews involving human respondents as the primary units of analysis. Although the majority of cross sectional studies is quantitative, cross sectional design can be also be qualitative or mixed-method in their design (Setia, 2016).
* The defining feature of a cross-sectional study is that it can compare different population groups at a single point in time. Cross sectional data example can be performed on the variations of ice cream flavours at a particular store and how people are responding to those flavours. You can also obtain cross sectional data from a list of grades scored by a class of students on a particular test (Aric, et al, 2008).

**Longitudinal or panel studies**

A longitudinal study is a research design that involves repeated observations of the same variables (e.g., people) over short or long periods of time (i.e., uses longitudinal data).

Many of the advantages of longitudinal studies relate to the analytic questions their data can help address. For example, longitudinal data help with: Exploring patterns of change and the dynamics of individual behavior. Longitudinal data allows researchers to explore dynamic rather than static concepts (ibid).

There are a range of different types of longitudinal studies: cohort studies, panel studies, record linkage studies. These studies may be either prospective or retrospective in nature.

Cohort studies are one type of longitudinal study which sample a cohort (a group of people who share a defining characteristic, typically who experienced a common event in a selected period, such as birth or graduation) and perform cross-section observations at intervals through time.

**Definitions**

* Longitudinal studies collect data from the same sample (panel) of people on more than one occasion (usually using the same methods) over a period of time, so that unlike corss-sectional studies that collect data only once and in short period, sequences of action and social change over time can be analyzed (Geoffi, & Judy, 2004).
* In a longitudinal study, researchers conduct several observations of the same subjects over a period of time, sometimes lasting many years. The purpose of longitudinal research studies is to gather and analyze quantitative data, qualitative data, or both, on growth, change, and development over time (Aric, et al, 2008).
* Longitudinal studies gather numerous amounts of data on a single person or small group of people. Other longitudinal studies may use cohorts to compare data over time. For example, a five-year study of children learning to read would be a cohort longitudinal study (Kendra, 2020).
* In a longitudinal study, researchers repeatedly examine the same individuals to detect any changes that might occur over a period of time. Longitudinal studies are a type of correlational research in which researchers observe and collect data on a number of variables without trying to influence those variables (Setia, 2016).

**Difference**

* Cross-sectional research groups of people of one age are compared with a similar group of people of another age whereas in longitudinal research data is repeatedly collected on the same individuals at different stages of their aging and
* Longitudinal studies differ from one-off, or cross-sectional, studies. The main difference is that cross-sectional studies interview a fresh sample of people each time they are carried out, whereas longitudinal studies follow the same sample of people over time.
* Cross-sectional studies can be done more quickly than longitudinal studies. That's why researchers might start with a cross-sectional study to first establish whether there are links or associations between certain variables. Then they would set up a longitudinal study to study cause and effect.
* Longitudinal data is being collected at multiple points, those observation periods are pre-determined and cannot take into account whatever has happened in between those touch points.
* Cross sectional is relatively easy to conduct (no long periods of follow-up). Data on all variables is only collected once enabling to measure prevalence for all factors under investigation.

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