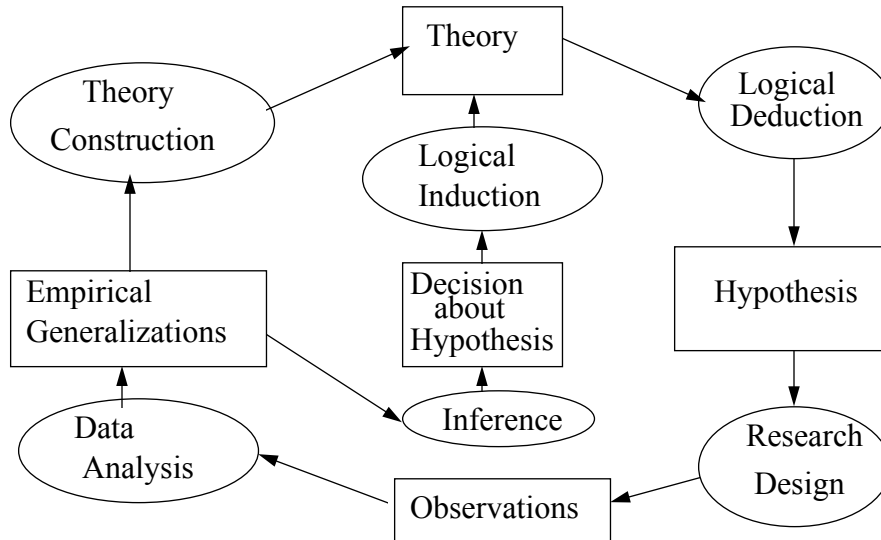


Soc. 315 Wallace Wheel

1. Walter Wallace's "Wheel" diagram of the research process:



2. Explanation of the "wheel:" The words in the boxes refer to "information components" in the research process; the words in the circles or ovals refer to methods used to move from one information component to the next. One way to view the process is to start at the top with theory and move clockwise back to theory through decisions about hypotheses. The research process is flexible, however, so that research can start anywhere, and counter-clockwise movement can occur when the research becomes blocked. We label downward movement as *deductive* and upward movement as *inductive*.

a. Information components:

i. Theory: a set of interrelated propositions plus assumptions and definitions.

"Propositions" are cause and effect statements that (typically) link variables to one another. We refer to these variables as "constructs," "concepts," or latent variables because we cannot observe them directly but have to *measure* them. Example from Durkheim's study of suicide. Suicide will be high among individuals whose integration into society is low.

ii. Hypotheses: Statements of relations between variables. An hypothesis is like a proposition, except that the variables in a hypothesis are observed. Hence, we often to refer to these variables as: measures, operational definitions, manifest variables, etc. In addition, we no longer assume cause effect relations between the variables in the hypothesis. A hypothesis is a prediction that a particular

- relation will be found. Example from *Suicide*: Married people have a lower rate of suicide than do people who are not married.
- iii. Observations: The data--the impact of the world on our senses, although our interpretation of these data will be coloured to some extent by our expectations. . Example from the study of suicide: someone observes a death.
 - iv. Empirical Generalizations (Findings): Typically a statement of relations between variables. It is just like a hypothesis. The crucial difference between the two is that a hypothesis is derived from theory, and its empirical truth is open to question. A finding is a generalization from data. It is empirically true, but its connection to a theory (or theories) is open to question. Example from the study of suicide: Catholic countries have lower suicide rates than Protestant countries.
 - v. Decision about the hypothesis: The researcher decides whether the evidence supports or fails to support his research hypothesis (component ii)..
- b. Methodological Controls:
- i. Logical deduction: Use formal logic to move from a proposition to a hypothesis. In order to do this, the researcher needs an additional statement (sometimes called a linking statement). Example: Married people are more integrated into society than single people. Therefore, married people will have lower rates of suicide.
 - ii. Research design: decisions about the *cases* studied, the method of data collection, the method of measurement, and procedures for ruling out alternative explanation of findings should they support the hypothesis. Example from Durkheim: used official statistics; sometimes the case was a country, sometimes a person. He relied on the people who kept vital statistics to determine whether a death was due to suicide or not and whether the person was married or not at the time of death. His design was *non-experimental*.
 - iii. Data analysis: "coding" the data and computing the (descriptive) statistics.
 - iv. Inference (Hypothesis testing): conducting tests of statistical inference (i.e., testing the "null" hypothesis).
 - v. Logical induction: Evaluating the validity of the theory in light of the evidence. Note that you never can prove a theory true, but the generation of a variety of hypotheses that turn out to be true enhances the theory's *credibility*. In principle, there are an infinite number of theories that could explain a research finding. Durkheim's theory is believed to have high credibility because it generated a large number of hypotheses that turned out to be true. On the other hand, its validity is still open to question, and many scholars continue to dispute it.
 - vi. Theory construction: a procedure used to invent theory, sometimes to turn a set of findings into a smaller set of propositions. The researcher looks for common content and indications of more general constructs in a set of varied research findings.