MSPP PPOL 501-02 & -06: Fall 2014
Course Notes #1: Overview; Starting Points; Causality; Experimental Designs
Professor Carolyn Hill

I. STARTING POINTS

- Social sciences research attempts to understand and explain human behavior; we study social phenomena:

  -- Formulate and test suppositions about relationships among individual, organizational, societal, and political processes

  -- We can always further think of these as relationships between a *dependent variable* (the effects or result to be explained) and *independent variables* (the factors that influence the dependent variable or cause it to change somehow)

    -- Examples….

- Social scientists and armchair analysts may tackle such questions using a range of approaches:

  -- *Normative / ideological*: based on a system of principles or values assumed to be universally true or valid ("how things should be")
  (Note: Black uses the term "normative" on p. 46 in a different sense)
  or
  -- *Positive*: based on empirical evidence ("how things are")

  -- *Theoretical/deductive*: based on system of assumptions, and propositions derived from these assumptions (general to specific)
  or
  -- *Observational/inductive*: based on descriptions and observations of actual experience (specific to general)

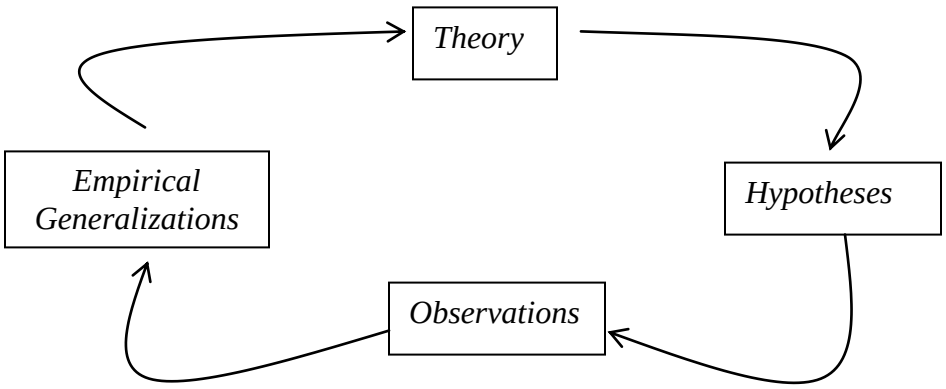
- These aren't methods (we'll distinguish between *quantitative* and *qualitative* methods later). Think of them instead as "where the researcher is coming from" – the mindset she brings to a project, or the type of research question that she will address.

- In this course, we'll focus on developing the skills to conduct positive, inductive analysis. In other words, we'll be studying *statistics: "how we describe and make inferences from data"*

  -- descriptive statistics (summarizing data)

  -- inductive (or inferential) statistics (generalizing from a sample to a population)

-- Examples…..



- Core elements of the scientific method

  Theory: explanations of the relationships between phenomena

  Hypotheses: statements about relationships between dependent and independent variables. More specifically tied to a particular research question or situation than a theory would be

  Observations / Data: information we collect or use to test the hypotheses. We collect these for a particular unit of analysis (e.g., a person, organization, period of time, country, etc.)

  Empirical generalizations: assess the theory and hypotheses that guided the analysis; perhaps develop other generalizations based on the patterns observed.

- The process of first developing a theory and deriving hypotheses based on the theory is *deductive*.

  The process of using observations to generate empirical generalizations and then modify or build new theory is *inductive*.

- Much "basic research" takes place in the core disciplines and departments of the social sciences—economics, sociology, political science.

- So where do Public Policy Schools fit into this picture?

  -- Public policy studies and evaluation research use the tools of the social sciences to understand the effects of government and public programs and services.

  -- This is a very broad definition: policy and evaluation research also occur in core disciplinary departments; and policy school researchers sometimes produce "basic" research.

-- Why are there separate "public policy schools" then? A short answer is that public policy schools have their origins in the Great Society programs of the 1960s. These schools were formed in response to a need for staffs of evaluators and researchers who were trying to determine the effectiveness of the GS's programs (see Haveman reading for more detail)

[Note: Haveman lists several public policy schools (p. 165). Why isn't GPPI here? GPPI was just started in 1990, after the publication of Haveman's book]

- Why do we have to study quantitative methods?

  -- First, what's the alternative?: *Qualitative methods*.

  Generally, qualitative analysis focuses on descriptions or explanations of processes in words (instead of numbers), and tends to be inductive (though is not always).

  "Qualitative research is a loosely defined category of research designs or models, all of which elicit verbal, visual, tactile, olfactory, and gustatory data in the form of descriptive narratives like field notes, recordings, or other transcriptions from audio- and videotapes and other written records and pictures or films." (Judith Preissle)

  -- While some policy and evaluation research is qualitative (e.g., analyses of program implementation conducted by evaluation firms and other researchers), much policy analysis uses quantitative methods.

- Qualitative research provides rich descriptions of programs, events, human interactions, etc. But such research is unable to identify a causal effect.

- Relatedly, qualitative research is usually quite difficult for others to replicate, preventing the larger research community from verifying the findings.

- Aim of most policy analysis and evaluation research is consistent with the goals of <u>positive, inferential social science research</u>. That is, to produce research with:
  -- an understanding of existing policies and programs and their effects
  -- confidence in research findings; findings that can be replicated and compared
  -- social and policy prescriptions with predictive power

- Throughout your next 2 years at GPPI, we'll talk more precisely about what constitutes a "good" research design, and conditions under which we will have more or less confidence in our research findings.

II. CAUSALITY

- In public policy and evaluation settings, often a research goal is to identify the ***causal*** relationships among phenomena we study.

  -- There are many different views of exactly what constitutes a causal condition, which is at its root a philosophical concept (in your packet, the Bradley & Schaefer reading, and the Black readings discuss some of these ideas and their roots).

  -- In some views (i.e., essentialists), *A* must be both a necessary and sufficient condition in order for *B* to occur.

  -- More realistically in the social sciences, we talk about causality in terms of sufficient but not necessary (i.e., *A* alone can lead to *B,* but other factors alone may also cause B); or necessary but not sufficient (i.e., multiple factors are required, often in a specific order in time).

  Define these terms further:

  Necessary condition: "one that must be present for an event to occur. Its presence does not guarantee occurrence but is absence guarantees nonoccurrence." (Bradley & Schaefer p. 162).

  Sufficient condition: 'guarantees that the event will occur whenever it is present. But the event still may occur in its absence." (Bradley & Schaefer p. 162).

  -- Scholars and commentators in the policy world use these terms, and you should have a sense of what they mean.

-- For our purposes in this course and throughout your time at GPPI, the three factors necessary for causal inference identified by Paul Lazarsfeld probably provide the most useful guide:

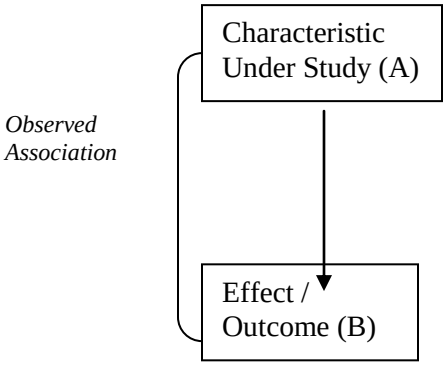
(1) The cause (*A)* must precede the effect *(B).*

(2) The cause and effect must be related (i.e., correlated).

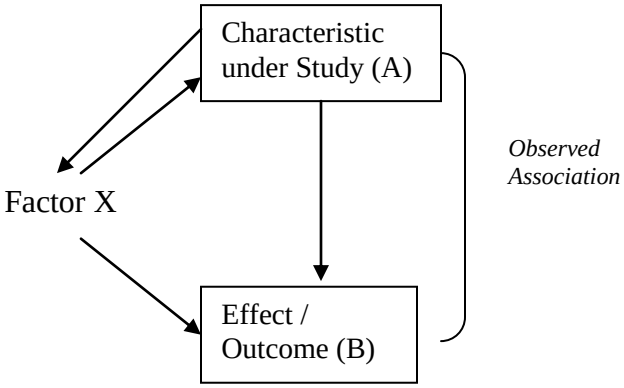
(3) Other explanations of the cause-effect relationship must be eliminated (i.e., rule out spurious or confounding factors)

-- A picture might help:

A causes B:



A appears to cause B, but the association is spurious:



- A key concept for thinking about whether a causal relationship has been established is the *counterfactual*. The counterfactual is <u>what would have happened in the absence of the characteristic or program</u>.

  -- This is a very important concept that you should always have in mind whenever a researcher (or other person) claims to have discovered a causal relationship.

  -- The ideal counterfactual would be the outcome for a group ***exactly*** like the treatment group in ***all*** ways ***except for*** the intervention being studied.

  -- The best way to approximate this ideal counterfactual is through randomly assigning subjects to receive or not receive the treatment.

Example: Does enrollment of pregnant women in pre-natal classes cause healthier babies to be born (i.e., babies who are not low birthweight)? (Note: a baby is considered low birthweight if it weighs less than 2,500 grams, or 5 pounds 8 ounces)

Suppose I studied all pregnant women in DC during the last year, and found the following:

Table 1: Participation in prenatal courses and LBW

	Mother Participated in Pre-natal course		
Low Birthweight (LBW) baby	No	Yes	*Number of observations*
No	100	500	600
Yes	300	0	300
Number of observations	400	500	900

"Healthy" babies" →

a. What is the dependent variable?

What is the independent variable?

b. Is participation in prenatal courses a necessary condition for "healthy" babies?

c. Is participation in prenatal courses a sufficient condition for "healthy" babies?

d. Did the independent variable precede the dependent variable?

e. Are the independent and dependent variables associated?

f. Are spurious or confounding factors present or likely?

g. How would you describe the counterfactual condition?

h. Do you think mothers' participation in a prenatal program causes healthy babies (defined by birthweight) to be born?

i. Based on these data, what would be your advice to a policymaker about whether to support a program that provided prenatal care to teenage mothers?