POLI210: Political Science Research Methods

Lecture 2.2: The Scientific Process

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The scientific process

0. Familiarize yourself with the literature
1. Come up with a research question
2. Clarify the core concepts
3. Develop a theory
4. Derive hypotheses
5. Find a suitable way to test hypotheses
6. Gather evidence and test the hypothesis

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Important: this is an endless, iterative process!

- Results refine theory, which leads to more hypotheses, more tests…

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The RQ can be fairly broad; we don't have a clear hypothesis yet

4

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  - Duverger's Law and Canada's party system

Karl Popper: "there is no such thing as a logical method of having new ideas…Discovery contains an 'irrational element,' or a 'creative intuition.'"

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Justice Potter Stewart in *Jacobellis v. Ohio*: "I know it when I see it" re: obscenity – we want a better standard!

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These are **observationally equivalent**, i.e. we may all believe in the link Harvard -> earnings, but diverge on the *why*

- Ideally, each theory has *testable implications*

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- There lives a white gorilla on Mount-Royal
- Bertrand Russell: "If I were to suggest that between the Earth and Mars there is a china teapot revolving about the sun in an elliptical orbit, nobody would be able to disprove my assertion provided I were careful to add that the teapot is too small to be revealed even by our most powerful telescopes."

4. Generating hypotheses: quote on falsifiability

"It is comforting that the finest minds in science are as prone as the rest of us to bitching. But the theoretical physicist Wolfgang Pauli (1900-1958) is in a category of his own: the withering comment for which he's best known combines utter contempt on the one hand with philosophical profundity on the other. 'This isn't right,' Pauli is supposed to have said of a student's physics paper. It's not even wrong."'

Source: see this Guardian article

5. Find a suitable way to test your hypotheses

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- We'll see some research designs later in the course!

6. Gather evidence and test hypothesis

The empirical evidence can be: interviews, survey data,
country-level statistics, election results, historical records…

The purpose is to test your hypothesis to see if it is supported by
the data

- We are working to disprove the **null hypothesis**
- The null states that IV and DV are not related to one another
- If we find evidence that is (very) inconsistent with the null
  hypothesis, we **reject the null hypothesis**

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- Consider strength of evidence as a continuum
    - A theory is not either "true" or "debunked"
- Think about accumulation of evidence
    - Your study is just a small drop in an ocean of scholarship

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Leo Strauss: "Nevertheless one may say of it [quantitative political science] that it fiddles while Rome burns. It is excused by two facts: it does not know that it fiddles, and it does not know that Rome burns." (quoted in Bond 2007, 897)

14

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    - "Further research should…"
    - Also helps you avoid to do the work yourself if lazy ;)

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- Transparent data collection and analysis

17

Improvements in transparency

The data, code, and any additional materials required to replicate all analyses in this article are available on the *American Journal of Political Science Dataverse* within the Harvard Dataverse Network, at: https://doi-org.proxy3.library.mcgill.ca/10.7910/DVN/YFPQJH

Wrapping up this week

What you should know:

- Key terms: independent/dependent variable, hypothesis, inductive/deductive theory-building, falsifiability
- You should be asking yourself:
    - What distinguishes science from non-science?
    - What distinguishes the natural sciences from the social sciences?
    - How close to the scientific ideal is political science?

Questions?

Bond, Jon R. 2007. "The Scientification of the Study of Politics: Some Observations on the Behavioral Evolution in Political Science." *The Journal of Politics* 69 (4): 897–907. https://doi.org/10.1111/j.1468-2508.2007.00597.x.

Gerring, John. 2011. *Social Science Methodology: A Unified Framework*. 2nd edition. Cambridge: Cambridge University Press.