

# Framing Hypotheses

POSC 3410 – Quantitative Methods in Political Science

Steven V. Miller

Department of Political Science



## Goal for Today

*Discuss theory-writing and proper framing of hypotheses.*

# Introduction

A review of what we have done to this point:

- The problem and interest of “concepts”.
- Issues of reliability and validity in operationalization.
- Descriptive statistics of our measure.

# Introduction

Description of a variable should give way questions of the distribution of the variable.

- e.g. why is the mean of some interval variable  $x$  greater for one group than another group?

We have gone from description to explanation.

- Our question is no longer “what”, but “why”.

# The Importance of “Why”

We don't take the “why” part lightly. It's not enough to say.

- Republicans and Democrats differ on support for some policy.
- Western Europe is more developed than Sub-Saharan Africa.
- Asia has more regional threat than North America.

These are testable statements, but uninteresting when put this way.

- After all, aren't these facts we want to explain?

# Today's Lecture

Today's lecture will discuss.

1. Theory-writing
2. Framing hypotheses

# On Theories and Proposed Explanations

Theory-writing is the hardest part of research.

- It's also the most important.

Some general things to consider:

- "Keep it Kosher"
- Speak conceptually. Test operationally.
- Don't fit theory to data.

# On Theories and Proposed Explanations

Ultimately, theory-writing is *your* argument.

- What do *you* think explains variation in a variable?
- What's the overall causal process you're wanting to tell?
- How "non-obvious" is your story?

The example of partisanship and gun control illustrates this well.



# Hypotheses

When done right, theories lead to **hypotheses**.

- These are testable statements about the empirical relationship between an **independent variable** and a **dependent variable**.
- Dependent variable: something you wish to explain, or an “effect”.
- Independent variable: something you think explains the effect, or the “cause”.

# What Should Hypotheses Say?

Hypotheses must communicate the following:

1. The cause and effect
2. The relationship expected between both variables
3. The unit of analysis
4. The measured variables and not the concepts

# What Should Hypotheses Say?

Consider the following hypothesis taken from the book.

- In a comparison of individuals, those who are Republicans will be more likely to oppose gun control than will those who are Democrats

Is this a satisfactory hypothesis?

# What Should Hypotheses Say?

The answer is yes.

1. It clearly specifies a cause and effect.
2. It specifies a relationship (negative).
  - This assumes Republicans are coded as 1.
3. It is clear about the unit of analysis.
4. The cause and effect are/can be intuitively operationalized.

# What Should Hypotheses Say?

Consider the following hypotheses?

1. Some people are more likely to donate money to political action committees than others.
2. Catholics show high rates of political intolerance.
3. A comparison of countries in the international system shows that democracy and gross national income are related.
4. As a result of prevailing changes in the international system shortly after World War II, the incidence of observed alliance contracts between countries has greatly diminished.

Which of these are satisfactory?

# What Should Hypotheses Say?

It wouldn't be the first.

- No independent variable is specified. Who are “some people”?

# What Should Hypotheses Say?

The second is also inadequate.

- It's not an insufficient hypothesis. It's just not a hypothesis.
- It could be true, for all we know, but hypotheses are relative statements.

# What Should Hypotheses Say?

The third is also not a good hypothesis.

- No relationship is specified.



# What Should Hypotheses Say?

The fourth is also inadequate.

- Concepts are not concretely defined.
- What does “prevailing changes in the international system” even mean?

# Conclusion

The “why” part of political science is the most important.

- Theories communicate our proposed explanations, to be tested empirically.
- Hypotheses communicate testable relationships.

There may not be a single “right” way to do either one.

- There are clearly wrong ways to do it, however.

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