Hypotheses

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Hypothesis

- According to your text is: "prediction of the outcome of a study"
- Can be directional (higher, lower) or non-directional (different, with no prediction for direction of the difference)
- Related to or derived from a research question

Example

- Q: Will students taught by a teacher of the same gender like the subject more than students taught by a teacher of a different gender?
- H: Students taught by a teacher of the same gender will like the subject more than students taught by a teacher of a different gender. (directional or not?)

Another example

- Q: Is rapport with clients different with counselors using client-centered therapy than with those using behavior modification therapy?
- H: Counselors who use a client-centered therapy approach will have a greater rapport with their clients than counselors who use a behavior-modification approach. (D or ND?)

Why state a hypothesis?

- It makes you think about the outcome, probably coming up with more than one possible hypothesis.
- It's good science. It helps build a body of knowledge and helps make specific predications. Increases persuasiveness of your assertion.
- Makes relationships more clear.

Disadvantages to stating a hypothesis

- Can lead to bias (intentional or not) as researcher wants the experiment to "work"
- Not always appropriate (some qualitative work, for example)
- May cause researcher to focus too narrowly and miss other interesting information

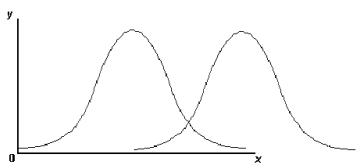
Null hypothesis

- Used when setting up an experiment
- Assumes there is no "real" difference between groups on the dimension of interest
- If a difference appears, the assumption is that it's because of sampling error

Versions of null hypotheses

- The observed difference was created by sampling error
- There is no true difference between the two groups
- The true difference between the two groups is zero

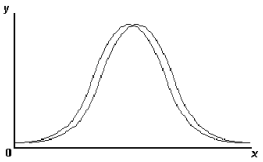
Our old friend... normal curves



What about between these two groups?

What about the null hypothesis? **We reject it!**

Our old friend…normal curve



Is there a true difference between these groups?

What about the null hypothesis? **We fail to reject it!**

If we reject the null…

- what's left?
- An alternate hypothesis
- Sometimes called the "research" hypothesis
- So why have more both?

Einstein put it well…

- "No amount of evidence can prove me right, and any amount of evidence can prove me wrong."
- We start with the null, and try to prove it wrong.

Two kinds of significance

- Is it of statistical significance?
  - This means the researcher believes the differences are real and not just a fluke attributed to a sampling problem
- Is it of practical significance?
  - In other words, does it matter?
- One hopes to have both practical and statistical significance!