

Significance & Effect Size

February 18, 2004

Statistical vs Practical

- How do we determine statistical significance?
- What makes for practical significance?

Statistical Significance

- Analyzed by using hypothesis testing
- Determines if differences are due to random errors

Practical Significance

- Cost-benefit analysis
 - Low cost, big benefit - Do it!
 - High cost, little benefit - Don't bother
 - High cost, big benefit - Something to think about carefully
 - Low cost, little benefit - Might still do it; maybe not

Practical Significance

- Crucial difference
 - Determined by the priorities of the stakeholders
 - Is this something that will make a very important difference/
- Client acceptability
 - Looks to avoid negative side effects
 - Can result in abandoning a method that carries statistical significance

Practical Significance

- Public and political acceptability
 - Decision makers examine the possibilities in terms of social and community norms.
 - Will it be accepted or will there be backlash?
- Ethical and legal implications
 - If it violates an ethical code or legal statute, don't do it.

Effect Size (d)

- Used to compare different experiments
- Measures the size of the difference on a standardized scale
- A fairly standard guide for interpretation
 - .20 Small
 - .50 Medium
 - .80 Large
 - 1.10 Very large

Effect Size in the Real World

- Review the articles linked from the web site