Uses of Research

- Informed citizens need knowledge of research methods
- Occupations require the use of research findings
- Scientific research is important in public policy decisions
- Research is important when developing and assessing the effectiveness of programs

Methods of Knowing

- Charles Peirce said there are four general methods of knowing:
  - Tenacity
  - Authority
  - A priori or intuition
  - Science

Limitations of tenacity, intuition and authority

- Cognitive and motivational biases
- Erroneous conclusions about cause and effect

- We need more “evidence” than what these approaches can give us

The Scientific Method:
- Goes beyond ordinary ways of “knowing”
- “Scientific method” refers to
  - an abstract concept,
  - not a particular technique or method.
- The scientific method refers to ways in which scientists ask questions and the logic and methods they use to gain answers.
- Allows for self-correction through hypothesis testing

The Scientific Approach:
- Rejects the notion that one can accept on faith the statements of authority
- Requires more evidence than intuition before drawing conclusions
- Recognizes that intuition and authority are sources of ideas about behavior
- Requires that ideas must be evaluated on the basis of careful logic and results from scientific investigations

The Scientific Method (con’t)
- The Scientific Method
  - Empiricism is knowledge based on systematic observations
  - Data are collected that form the basis of conclusions
  - Uses rules for collecting and evaluating data

Goodstein’s Evolved Theory of Science
- Characteristics of scientific inquiry:
  - Observations accurately reported to others
  - Search for discovery and verification of ideas
  - Open exchange and competition among ideas
  - Peer review of research ensures the best research is published
Published Research Findings

**LIVING TOGETHER LEADS TO DIVORCE**
- Don’t live together if you want to stay married. So says a nationwide study of over 2000 couples. The study found that couples that had lived together before getting married were 2.3 times as likely to get divorced as couples who had not lived together.

**BAGPIPES GIVE YOU MORE THAN AN EARACHE**
- A survey has found that having a passion for the pipes is linked to alcoholism and can contribute to the breakdown of players’ marriages. About 10% of players said their hobby had ended their marriages while 84% knew pipers who were alcoholics.

Goals of Science

- **Describe behavior**
  - Does watching violence on TV increase aggression?

- **Predict behavior**
  - Watching television violence is a predictor of aggression.

- **Determine the causes of behavior**
  - Temporal precedence
    - TV (cause) then aggression (effect)
  - Covariation of the cause and effect
    - TV with aggression; No TV – No aggression
  - Elimination of alternative explanations
    - Other explanations? Lack of parental supervision?

- **Understand or explain behavior**
  - Why does TV watching cause aggressive behavior? Imitation or modeling behavior? Psychological desensitization?

Basic and Applied Research

- **Basic research**
  - Fundamental questions about the nature of behavior
    - Theoretical issues concerning phenomena such as cognition, emotion, motivation, learning, psychobiology, personality development, and social behavior.

Basic and Applied Research (con’t)

- **Applied research is conducted to address issues in which there are practical problems and potential solutions.**
  - Findings are immediately useful or applied in a situation or setting
  - Program evaluation is a major area of applied research
Basic and Applied Research (con’t)

- Basic or applied?
  - Does memory process visual images and sound simultaneously?
  - In what way can video games increase aggression among children?
  - Which coping strategies are best for tsunami survivors?
  - How do neurons generate neurotransmitters?

Basic and Applied Research (con’t)

- Comparing basic and applied research
  - Both are important
  - Neither can be superior to the other
  - Applied research is often guided by theories and findings of basic research
  - Findings in applied settings often require modification of existing theories and spur more basic research

Questions?