Week 1: The Research Process and Design

Quantitative Research Requirements:

- Precise question - **testable and doable**.
- Reflection is required on all aspects
- Participants – an ethical approach to analysis.
- Builds on research

Research Involves a Scientific Approach

- Science refers to **both** a system for **producing knowledge** and the **knowledge resulting from that system**
  - **Evolving process**
  - **Systematic approach.** Combines assumptions about the world; our accumulated understandings; an orientation toward knowledge; specific procedures, techniques as well as instruments.
  - **Knowledge links to theories and is grounded in empirical data**

Key Terms - Production of Knowledge

- **Social Theory** - "Coherent system of logically consistent and interconnected ideas used to condense and organize knowledge".
- **Data** - "Forms of empirical evidence or information carefully collected according to the rules or procedures of science".
- **Empirical** - "Evidence or observations grounded in human sensory experience (HSE): touch, sight, hearing, smell, and taste"

Scientific Method Process

1. Research idea
2. Concepts and propositions within theory
3. Specific question/hypothesis
4. Testing

Application of Scientific Approach:

- **Researchers use a Scientific method which is a** "collection of ideas, rules, techniques and approaches used by the scientific community" (Neuman, 2011, p. 14).
- **They have a Scientific attitude -** strict conduct when reporting research.
- **Can apply a Scientific orientation -** exact, rational, open ended and flexible in its approach.
- **Know it involves a Transformative process** - variety of methods used in research to assess thoroughly hypotheses testing, research questions/assumptions through approach within your research domain.
- **Publish in Journals –** Look for high impact journals where Articles are blind peer review used in psychology

Research Norms:

Norms within the scientific community **(CHOUD)**

- **Communalism** – there is an onus on researchers to publish their work and findings – it is part of the standards when undertaking research, you don't waste participants' time.
- **Honesty** – Cultural norm that should be applied to research. (Neuman, 2011)
- **Organized Skepticism** – A standard where we want to challenge information from a position of academic enquiry
- **Universalism** - Attribution based solely on scientific merit
- **Disinterestedness** – Scientists must be impartial, neutral & receptive

Concepts underpinning research that are assumed knowledge in order to inform others are that researchers have:

- **Scientific Literacy –** the capacity to understand scientific knowledge; apply scientific concepts, principles, and theories; use scientific processes to solve problems, make decisions and interact in a way that reflects core scientific values (Laugksch, 2000:76, cited Neuman, 2011, p. 11) but do not have
- **Innumeracy –** A lack of quantitative literacy (Paulson, 1990, cited Neuman, 2011, p. 11).

Non-Scientific Production of Knowledge

AVOID THE FOLLOWING:

1. **Overgeneralization** – We have evidence and believe it applies to many situations
2. **Selective Observation** – Take notice of special situations or events and then generalize from them. May occur due to unintentional bias
3. **Premature Closure** – We believe we have the answer and no longer need to listen
4. **Halo Effect** – Draw a general impression about an individual on the basis of a single characteristic
5. **False Consensus** – Greatly overestimate how much our views match those of others (Neuman, 2011, pp. 4-5).

ALSO AVOID FALLING INTO THE TRAP OF:

1. **Experts and authority.** Someone in power says so – legitimate experts in a specific field may disagree.
2. **Popular and media messages.**
    - Window into a distorted reality – average level of knowledge has increased but in reality most people run on non-factual information.
    - Road rage – correlation with increased crashes and increased road rage. Actually an increase in the focus by the press may be the point that is researched.
    - Holiday havoc – people distort stats and facts for their own agenda.
3. **Ideological beliefs and values.**
    - 'It's the way things are done'
4. **Pseudoscience – pop psychology.**
    - A Body of ideas or information clothed in jargon and outward appearance of science that seeks to win acceptance but that was not credited with the systematic rigor or standards required of the scientific method.

5. **Junk Science**
    - An example of a term used to denigrate information from a perspective of presenting their own ideas as correct.

Kinds of Research (Quantitative)

- **Descriptive research:** researchers who conduct this are looking at a **well-defined area** (Neuman, 2011). THINK **D** FOR **D**EFINED.
    - Detailed, highly accurate picture
    - Locate new data
    - Create typology (form of research design)
    - Clarify stages or process
    - Document process
    - Report on background &/or context
        - Naturalistic Observation - observing and recording behavior in naturally occurring situations
        - Case Study

- **Exploratory research:** researchers who conduct this form of research must be **flexible, open minded** and be able to **explore objectively** or as objectively as possible the phenomenon. (Neuman, 2011).
    - Familiar with basic facts
    - Creating a general picture
    - Formulating a question for future or intended research
    - Generating new ideas for research
    - Feasibility of future research
    - Measurement development
    - Generally **requires a larger sample,** particularly if novel, Without prior research you cannot assume an effect. Therefore, you cannot assume it has anything other than a small effect to estimate sample size for your research power analysis.

- **Explanatory/ Experimentally designed research**
    - Familiar with basic facts
    - Test hypothesis/es
    - Elaborate or extend on theory
    - Support or refute theory
    - Link specific situation to theory
    - Determine, which of several explanations is best

Parametric vs Non-Parametric

- **Parametric** statistics – stringent set of assumptions.
- **Non-parametric** statistical analysis - less stringent.

Non-parametric tests should be used with **ordinal** data but may be used when sample is **small &/or unequal**