Foundations of Research

Prof Ajai Pratap Singh
Dept. of Applied Psychology
VBS Purvanchal University Jaunpur
Uttar Pradesh
Email: ajaisingh27@gmail.com

Scientific Research

- **Fred Kerlinger (1973)- Scientific research is a systematic, controlled, empirical, and critical investigation of hypothetical propositions about the presumed relations among natural phenomena.**

The Scientific Method

- Scientific method has four goals (description, prediction, explanation and control).
- It is important to remember that these goals are the same for anything that can be studied via the scientific method (a chemical compound, a biological organism, or in the case of psychology, behavior).
- Each goal can be understood in terms of the question that it answers about the entity under investigation.

1. **Description**: What are the characteristics of the behavior?
2. **Explanation**: What causes the behavior?
3. **Prediction**: How likely is it that the behavior will occur?
4. **Control**: Can I make the behavior happen/ not happen?

- Each research type or method attempts to achieve at least one of these goals.
- The research methods that satisfy the goal of description are **naturalistic observation, case history, and survey**.
- The research method that satisfies the goal of prediction is **correlation**: It attempts to predict one observed variable based on another observed variable.
- The research method that satisfies the goals of explanation and control is **the experiment**. The true experiment is the only methodology that can determine causation; "correlation does not equal causation."

- "What happened?" (describing)
- "Why did she do that?" (explaining)
- "What would happen if she did this?" (predicting)
- "What can she do next time to have a different outcome?" (changing/control)

- Taking notes from describing and explaining might

help you to be able to predict future thoughts and behaviors.

- For example, maybe you have described feeling anxiety when faced with a social event. Through the process of asking yourself why you feel anxious, you might come to the conclusion that you feel anxious because you're scared that people might not like you.
- From this, you can predict the next time you attend an event, you will probably feel anxious again. With this prediction, you can then work on acting, or reacting in certain ways to help you control or curb the anxiety, which leads us to the goal of change/control.

- Change/control can also come in the form of breathing techniques, meditation, or mindfulness. In short, it can involve anything that helps you to change or control your feelings and thoughts

Acquiring knowledge about the world

1. **Tradition or tenacity**: I believe it is true because it has always been true
2. **Intuition**: I believe it is true because I feel it is true
3. **Authority**: I believe it is true because an “expert” says it is true
4. **Personal experience**: I believe it is true because I experienced it
5. **Reasoning** : I believe it is true because it is logically derived
6. **Empiricism**: I believe it is true because I measured it
7. **Science**: is the way of acquiring knowledge through the continual interaction of empiricism and reasoning

Tenets of Science

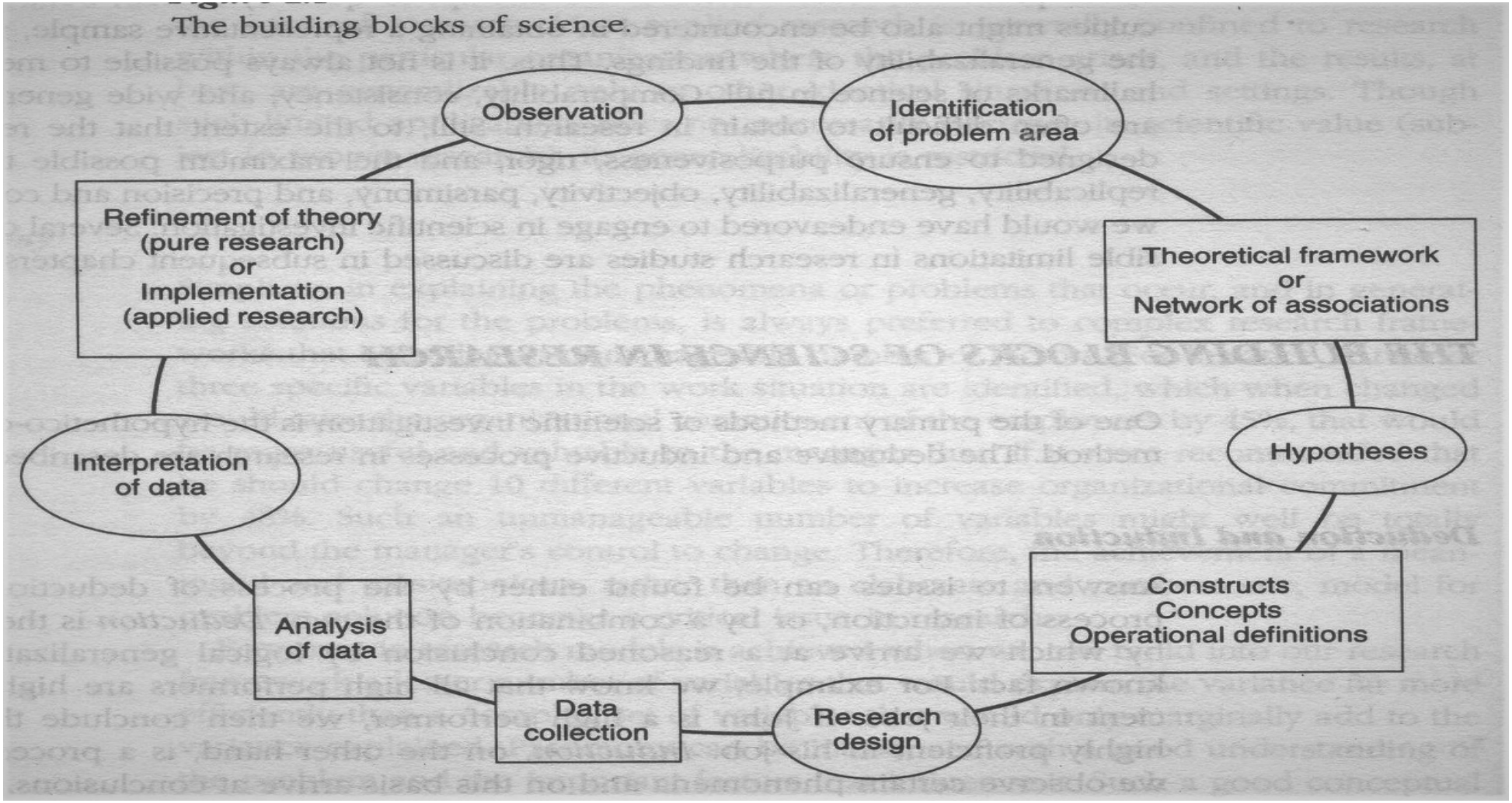
1. **Determinism:** is a doctrine of belief that events have natural causes.
2. **Empiricism**: Scientists rely on real evidence (empirical data to confirm or refute claims).
3. **Replicability**: Scientist require that findings be replicable before they are accepted.
4. **Falsifiability** : For scientists, hypotheses and theories must be falsifiable through empirical research.
5. **Parsimony:** A scientist looks for the simplest explanation for a phenomenon. Parsimony means the quality of being sparing or frugal.

The Scientific Method

The method of science involves logical steps towards finding truth.

1. Assume a natural cause for the phenomenon(i.e. determinism)
2. Make an educated guess about the cause (i.e. generate a testable hypothesis
3. Test your guess
4. Revise your hypothesis
5. Retest your hypothesis
6. Make a conclusion

The building blocks of science.



Thank you