Cooper Book Notes

Chapter 1

ABA: A science devoted to the understanding and improvement of human behavior

* Focus: objectively defined behaviors of social significance
* Goals: intervene to improve the behaviors under study while demonstrating a reliable relationship between their interventions and the behavioral improvements
* Methods: scientific inquiry
* a scientific approach for discovering environmental variables that reliably influence socially significant behavior and for developing a technology of behavior change that takes practical advantage of those discoveries

**science**: a systematic approach for seeking and organizing knowledge about the natural world

* pursuit of knowledge according to general methodological precepts and expectations that define science

**purpose of science**: to achieve a thorough understanding of the phenomena under study (socially important behaviors for ABA)

* must be separated from any personal, political, economic reasons

systematic observation enhances the understanding of given phenomenon by enabling accurate **description**

* facts about the observed events that can be quantified, classified, and examined for possible relations with other known facts

when systematic covariation found between 2 events, this correlation can be used to **predict** the relative probability of one event occurring based on the presence of the other event. Prediction enables preparation

functional relation: when a well-controlled experiment reveals that a specific change in one event (dependent variable) can reliably be produced by specific manipulations of another event (independent variable), ruling out the possibility of being affected by extraneous factors (confounding variables)

* y = f(x)

attitudes of science – determinism, empiricism, experimentation, replication, parsimony, philosophic doubt

* **determinism**
  + the universe is a lawful and orderly place in which all phenomena occur as the result of other events (things happens in relations to other factors)
    - accidentalism – every event occurs by accident or without cause
    - fatalism – events are predetermined
  + thus, a man’s behavior can be anticipated or determined
  + assumes lawfulness, then proceeds to look for lawful relations
* **empiricism**
  + the practice of objective observation of the phenomena of interest
    - objectivity
  + thorough description, systematic and repeated measurement, and precise quantification of the phenomena of interest
  + the foremost rule in the science of behavior
* **experimentation**
  + the basic strategy of most sciences
  + experiment must be performed in which factors suspected of having causal status are systematically controlled and manipulated while the effects on the event are carefully observed
  + experimental method: isolating the relevant variables, to change one factor at a time, then observe the effects on the target behavior – a functional relation may be obtained
* **replication**
  + results of a single experiment is not sufficient enough to become scientific knowledge
  + replication – the repeating of experiments (or repeating independent variable conditions within experiments)
    - the primary method with which scientists determine the reliability and usefulness of findings and discover mistakes
* **parsimony**
  + “great frugality” (节俭)
  + it requires all simple/logical explanations for one phenomenon to be ruled out under investigation, before considering more complex or abstract explanations
    - consists only necessary and sufficient elements of explanations – the one that requires the fewest assumptions
  + the law of parsimony!
* **Philosophic doubt**
  + Requires the scientists to continually question the truthfulness of what is regarded as fact (constantly fact checking); be willing to set aside known beliefs and findings and replace them with knowledges from new discoveries
  + A healthy level of skepticism
  + Open to all possibility (looking for evidence)

**Definition of science** (conclusion) – a systematic approach to the understanding of natural phenomena, as evidenced by description/prediction/control, relies on determinism as its fundamental assumption, empiricism as its prime directive, experimentation as its basic strategy, replication as its necessary requirement for believability, parsimony as its conservative value, and philosophic doubt as its guiding conscience.

Behaviorism

* the philosophy of the science of behavior
  + EAB: experimental analysis of behavior
    - Formed with B.F.Skinner, two kinds of behavior
      * Respondent behavior – reflexive behavior (Pavlov); reflex; involuntary
        + Hypothetical constructs – presumed but unobserved entities that could not be manipulated in an experiment. Ex. Free will, innate releasers, language acquisition devices, information processing
      * Operant behavior – influenced by stimulus changes that have followed the behavior in the past
  + ABA
* **Watson: stimulus-response behaviorism**
  + Objective study of behavior as natural science should consist of direct observation of the relationship between environmental stimuli (S) and the responses (R) they evoke.
  + “a dozen healthy babies”
  + Contribution: Watson made a strong case for the study of behavior as a natural science together with physical and biological sciences.
* Skinner: Radical Behaviorism
  + Mentalism
    - An approach that assumes a mental/inner dimension exists that differs from a behavioral dimension; phenomena in this dimension directly cause or mediate some form of behavior if not all
  + **Explanatory fiction**
    - A fictitious variable that often is simply another name for the observed behavior that contributes nothing to an understanding of the variables responsible for developing or maintaining the behavior
    - “a circular way of viewing the cause and effect of a situation” (“a man walks carefully because of his caution”)
  + **Structuralism**
    - Avoid mentalism by restricting its content to descriptions of behavior; do not use scientific manipulations; do not address questions of causal factors
  + **Methodological behaviorism**
    - Using scientific manipulations to search for functional relations between events
    - Acknowledge the existence of mental events but do not consider them in the science of behavior analysis
    - Rely on public events, excluding **private events** (events taking place “inside the skin”; thoughts and feelings)
  + **Radical Behaviorism** – incorporating private events into overall conceptual system of behavior
    - 3 assumptions made by Skinner:
      * Private events are behavior
      * Private events differ from public events only by its inaccessibility
      * Private behavior is influenced by the same variables as public behavior

ABA

* Applied,
  + Select behaviors to change that are socially significant for participants
* behavioral,
  + the behavior chosen for study must be the behavior in need of improvement; studies of behavior, not studies about behavior
  + measurable behavior
* analytic,
  + Demonstrate a functional relation between the manipulated events and change in a measurable targeted behavior
* technological,
  + replicable by third trained staff
* conceptually systematic,
  + describe a procedure using the same principle where the procedure comes from
* effective,
  + practical outcome, clinical significance
  + the change in targeted behavior also results in noticeable changes in the reasons why the behavior was first targeted
* generalized outcomes
  + behavior change lasts over time (continues after treatment procedure withdrawn)