An Overview of Applied Behavior Analysis

ABA
- Is an extension of Experimental Analysis of Behavior to applied settings
- Is not the same as behavior modification
  - Uses cognition in its approach
- Focuses on clinically or socially relevant behaviors
- Is used in many settings
  - Medicine
  - Education
  - Business
  - Rehabilitation
- Main focus
  - Behavior management for youth disorders or problems

Interventions
- Primarily focus on antecedents and consequences that alter behavior
- Cognitive aspects are not emphasized
  - beliefs, perceptions, thoughts, expectations
- Interventions focus on overt behavior.
  - Before, during, following a behavior
- Primarily uses operant conditioning techniques
- Uses experimental and quasi-experimental techniques

History of ABA

Late 1800’s and Early 1900’s
- Sensory Psychology
  - Dominated by focus on sensory processes
    - Helmholtz, Weber, Fechner and others
    - Vision, Audition, Perceptual processes etc.
- States of consciousness, images, & other mental processes
  - Structuralism, Functionalism, etc.
  - Wundt, James and others
  - Clinical
    - Freud and others
- Experimental
  - Thorndike

Mentalistic Approaches
- Assumes that a mental or “inner” dimension exists that differs from a behavioral dimension
  - Mental phenomena directly cause or mediate some forms of behavior
- Dominated Western intellectual thought & most psychological theories (e.g. Descartes, Freud, Piaget)
  - Still occurs in context of cognitive psychology today
Structuralism
- Wundt, Titchner, Wertheimer
  - Rejected all events that were not operationally defined by objective assessment
  - Used Introspection
  - Restricted activities to descriptions of behavior
  - Made no scientific manipulations
  - Did not address causal questions

Watson
- Founder of School of Behaviorism
- Wrote a Landmark Paper: Psychology as the Behaviorist Views it.
  - Changed the direction of Psychology
  - Argued that subject matter for psychology should be the study of observable behavior, not states of mind or mental processes
  - Created foundation for the study of behavior as a natural science
  - Created the groundwork for the Neo-Behaviorists

ABA Comes From Three Areas
- Behaviorism
  - Philosophy of the science of behavior
  - Watson and Others
- Experimental Analysis of Behavior (EAB)
  - Basic research in the study of behavior
  - Skinner and others
- Introduction of Journal Applied Behavior Analysis (ABA)
  - Development of a technology for improving behavior
  - Can only be understood in the context of the philosophy & basic research traditions & findings

Experimental Analysis of Behavior
- B.F. Skinner’s *The Behavior of Organisms* (1938/1966)
  - Formally began the experimental branch of behavior analysis
  - Summarized his laboratory research from 1930-1937
  - Discussed two types of behavior
    - Respondent
    - Operant

Respondent Behavior
- Reflexive behavior
- Ivan Pavlov (1927/1960)
- Respondents are elicited (“brought out”) by stimuli that immediately precede them
- Antecedent stimulus & response it elicits form a functional unit called a reflex
- Involuntary responses
- Occur whenever eliciting stimulus is present
- S-S-R Model (CC) or S-R model (Instrumental Cond.)

Operant Behavior
- Thorndike began basic idea.
- Skinner
  - Developed and Identified Specifically
  - Behavior is shaped through the consequences that immediately follow it
  - Three term contingency
  - S-R-S model
    - Behaviors that are influenced by stimulus changes that have followed the behavior in the past
Experimental Analysis of Behavior (EAB)
- Named as a new science by Skinner
  - Outlined specific methodology for its practice:
    - The rate or frequency of response is the most common dependent variable
    - Repeated or continuous measurement is made of carefully defined response classes
    - Within-subject experimental comparisons are used instead of designs comparing the behavior of experimental & control groups
    - Visual analysis of graphed data is preferred over statistical inference
    - A description of functional relations is valued over formal theory testing

Skinner & colleagues
- Conducted many laboratory experiments between the 1930’s -1950’s
  - Discovered & verified basic principles of operant behavior
  - Same principles continue to provide the empirical foundation for behavior analysis today

Skinner
- Wrote extensively
  - Very influential in the guiding practice of the science of behavior & in proposing the application of the principles of behavior to new areas
    - Walden Two (1948)
    - Science and Human Behavior (1953)
    - About Behaviorism (1974)
- Philosophy of science became known as radical behaviorism
  - Contrast with methodological behaviorism

Methodological Behaviorism
- Considers behavioral events that cannot be publicly observed to be outside the realm of the science
  - Rejects all events that are not operationally defined by objective assessment
  - Deny existence of “inner variables” or consider them outside the realm of scientific account
  - Acknowledge the existence of mental events but do not consider them in the analysis of behavior
  - Use scientific manipulations to search for functional relationships between events
  - Restrictive view since it ignores major areas of importance (cognition)

Radical Behaviorism
- Did not object to cognitive psychology’s concern with thoughts & feelings (i.e. events taking place “inside the skin”)
  - Referred to these as “private events”
- Considered them to be behavior and analyzed with the same conceptual & experimental tools used to analyze publicly observable behavior

Three Assumptions About Private Events
- Private events such as thoughts and feelings are behavior
- Behavior that takes place within the skin is distinguished from other (“public”) behavior only by its inaccessibility
- Private behavior has no special properties & is influenced by (i.e. is a function of) the same kinds of variables as publicly accessible behavior
Development of Applied Behavior Analysis

- Radical behaviorism (Skinner’s behaviorism)
  - Includes & seeks to understand all human behavior
  - Far-reaching & thoroughgoing
  - Dramatic departure from other conceptual systems

Other Contributors

- Fuller (1949)
  - One of the first studies to report the human application of operant behavior
  - Participant: 18-year-old boy with profound mental retardation
  - Arm-raising response was conditioned by injecting a small amount of a warm sugar-milk solution into participant’s mouth every time he moved his right arm

Ayllon & Michael (1959)

- “The Psychiatric Nurse as a Behavioral Engineer”
- Formed the basis for branch of behavior analysis that would later be called Applied Behavior Analysis (ABA)
  - Described techniques based on principles of behavior to improve the functioning of chronic psychotic or mentally retarded residents

1960’s

- Researchers began to apply principles of behavior to improve socially important behavior
- Techniques for measuring behavior & controlling & manipulating variables were sometimes unavailable, or inappropriate
- Little funding was available
- No ready outlet for publishing studies
  - Difficult to communicate findings

Many Applications Were Made

- Education is a major area of impact
  - Provided the foundation for:
    - behavioral approaches to curriculum design
    - instructional methods
    - classroom management
    - generalization and maintenance of learning

1968

- Formal beginning of ABA
- Journal of Applied Behavior Analysis (JABA) began publication
  - First journal in U.S. To deal with applied problems
  - Gave researchers an outlet for publishing their findings
    - Flagship journal of ABA
Baer, Wolf, & Risley
- Founding fathers of the new discipline (ABA)
- Paper “Some Current Dimensions of Applied Behavior Analysis”
- Defined the criteria for judging adequacy of research & practice in ABA & outlined the scope of work for those in the science
- Most widely cited publication in ABA
- Remains standard description of the discipline

Seven Defining Dimensions
- For research or behavior change programs:
  - Applied
  - Behavioral
  - Analytic
  - Technological
  - Conceptual
  - Effective
  - Generality

Applied
- Investigates socially significant behaviors with immediate importance to the participant(s)
- Behavior Examples include:
  - Social
  - Language
  - Academic
  - Daily living
  - Self-care
  - Vocational
  - Recreation and/or leisure

Behavioral
- Need precise measurement of the actual behavior
- Need to document that it was the participant’s behavior changed

Key: The behavior is in need of improvement and it is a study of behavior (not about behavior)

Analytic
- Demonstrates experimental control over the occurrence and non-occurrence of the behavior
- Functional relationships are demonstrated
- Also needs to be replicable

Technological
- Written description of all procedures in the study is sufficiently complete and detailed to enable others to replicate it
- All operative procedures are identified and described in detail & clarity
- Replicable technology
Conceptually Systematic
- Behavior change interventions are derived from basic principles of behavior
- Allows research consumers to derive other similar procedures from the same principle(s)
- Assists in integrating discipline into a system instead of creating a “collection of tricks”

Effective
- Improves behavior sufficiently to produce practical results for the participant(s)
- Improvements in behavior must reach clinical or social significance
- Extent to which changes in the target behavior(s) result in noticeable changes

Generality
- Produces behavior changes that last over time...
  - OR appear in other environments (other than the one in which intervention was implemented)
  - OR spread to other behaviors (those not directly treated by the intervention)

Additional Characteristics

Accountable
- Created by the focus on
  - Accessible environmental variables that reliably influence behavior
  - Reliance on direct & frequent measurement to detect changes in behavior
    - Detect successes and failures
    - Allow changes to be made

Public
- Visible, explicit, & straightforward
- Of value across a very broad spectrum of fields
Doable

- Not prohibitively complicated or arduous
- Variety of individuals are able to implement principles and interventions
- Involves more than learning to do some procedures

Empowering

- Provides practitioners with real tools that work
- Raises confidence
- Increases confidence for future challenges

Optimistic

- Possibilities for each individual (Strain et al., 1992)
  - Detect small improvements
  - Positive outcomes yield a more optimistic attitude about future successes
  - Peer-reviewed literature provides many examples of success

Summary

- Applied behavior analysis is:
  - A scientific approach to improving socially significant behavior...
  - In which procedures derived from the principles of behavior are systematically applied to improve socially significant behavior...
  - And to demonstrate experimentally that the procedures employed were responsible for the improvement in behavior

Six Key Components of ABA

1. Guided by attitudes of methods of scientific inquiry
2. All behavior change procedures are described & implemented in a systematic, technological manner
3. Only procedures conceptually derived from the basic principles of behavior are circumscribed by the field
4. Focus is socially significant behavior
5. Seeks to make meaningful improvement in important behavior
6. Seeks to produce an analysis of the factors responsible for improvement

Domains of Behavior Analytic Science

- Four domains
  - Behaviorism
  - Experimental Analysis of Behavior (EAB)
  - Applied Behavior Analysis (ABA)
  - Professional practice
- Behavior analysts may work in one or more of the four domains
- Domains are very interrelated & influence one another
Behaviorism

- Pursues theoretical & philosophical issues
- Conceptual basis of behavior principles as it relates across many spectrums

Experimental analysis of behavior (EAB)

- Does basic research
- Experiments in laboratory settings with both human participants and nonhuman subjects
  - Goal of discovering & clarifying fundamental principles of behavior

Applied Behavior Analysis (ABA)

- Does applied research
- Experiments are aimed at discovering & clarifying functional relations between socially significant behavior & its controlling variables
  - Desire to contribute to further development of a humane & effective technology of behavior change

Professional practice

- Providing behavior analytic services to consumers
  - Design, implement, & evaluate behavior change programs
    - Discovered by basic researchers
    - Experimentally validated for their effects on socially significant behavior by applied researchers

Conclusions

- Lots of aspects to ABA
- Has lots of applicability
- Has a solid theoretical core
- Has made lots of contributions to helping people and organizations