

# Analysis in Behavior Treatment

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# Two-part Didactic Plan

## Dr. Colombo

- Foundations of Behavior Assessment
- Analysis in Behavior Assessment

## Dr. Boelter

- Analysis in Treatment
- Reliance on science and research



# Analysis in Treatment

## Behavior Analysts Rely on Research and Scientific Principles

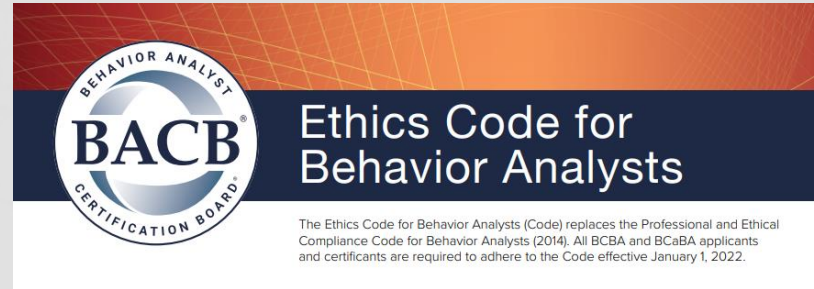
1. A reliance on scientific knowledge reduces the risk of harm to clients (Taylor et al., 2023; Weiss, 2018)
2. A reliance on research expedites access to effective treatment through decision-making (Brown et al., 2025; Colombo et al., 2020; Rosenberg & Schwartz, 2019; etc.)
3. Science helps us promote the least intrusive method with the greatest effect (Van Houten et al., 1988; Kelly et al., 2024)



# Analysis in Treatment

## BACB Ethical Code

- Requires reliance on scientific evidence in Treatment

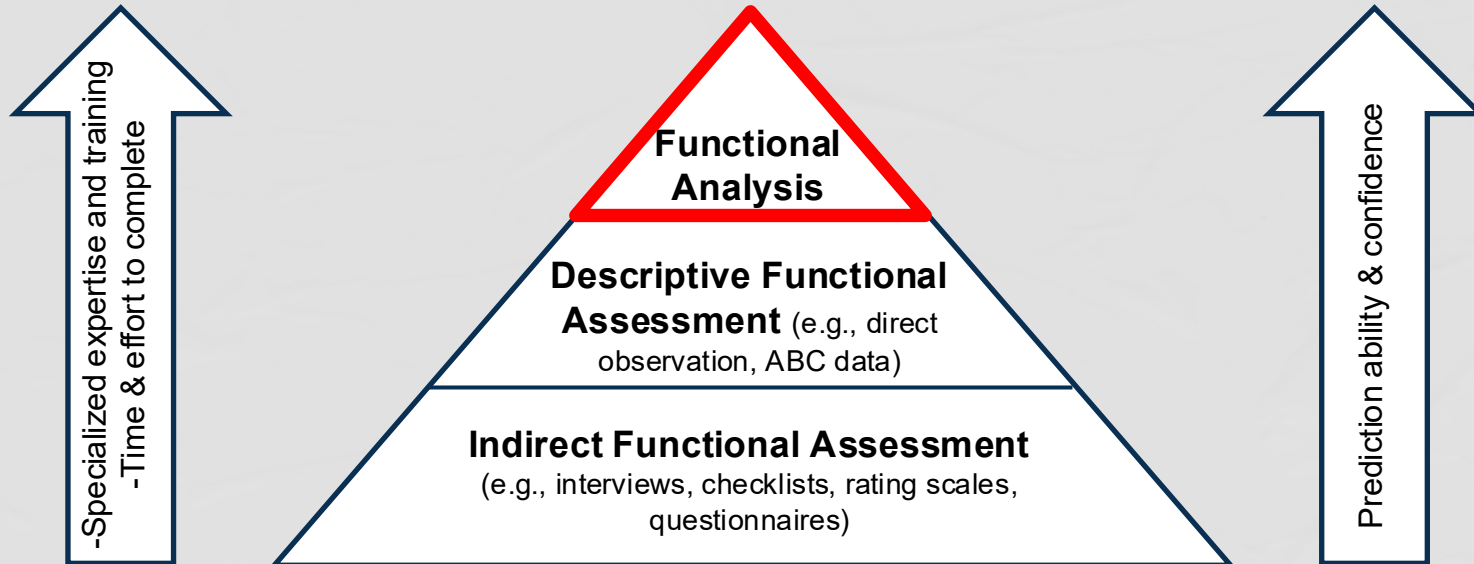


“Behavior analysts select, design, and implement behavior –change interventions that: 1. are conceptually consistent with behavioral principles; 2. are based on scientific evidence; 3. are based on assessment results; 4. prioritize positive reinforcement procedures; and 5. best meet the diverse needs, context, and resources of the client and stakeholders. Behavior analysts consider relevant factors (e.g., risk, benefits, side effects, client and stakeholder preference; implementation efficiency; cost effectiveness...” BACB 2.14 (Selecting Designing and Implementing Behavior-Change Interventions)



# Foundations of Behavior Assessment

Goal of FBA is to identify functional variables (the WHY)





# Function-Based Treatment Development

- Following completion of FA (assessment) results used to develop function-based Treatment
- Function-based behavioral treatment for severe behaviors more effective than treatment not based on function (Slocum & Call, 2021)
- The FA allows us to understand the relation between the components of the ABC unit of analysis and thus informs ways to alter A and C to change B.





# Functional Consequence-Based Treatment





# Consequence-Based Treatment

- Differential reinforcement = reinforcement and extinction
- DRA (Petscher et al., 2009)
- DRO (Jessel & Ingvarsson, 2016)
- FCT (Carr & Durand, 1985)
  
- DRA Example: FA = SIB to escape task demands. Tx= Reinforce with escape contingent on completion of one task.
- DRO Example: FA = SIB to gain preferred items/activities. Tx = reinforce with access to item for 1 minute of waiting without SIB.
- FCT Example: FA = SIB to gain preferred items/activities. Tx = Reinforce with access for FC.
- For all examples: SIB does not result in reinforcement (extinction)



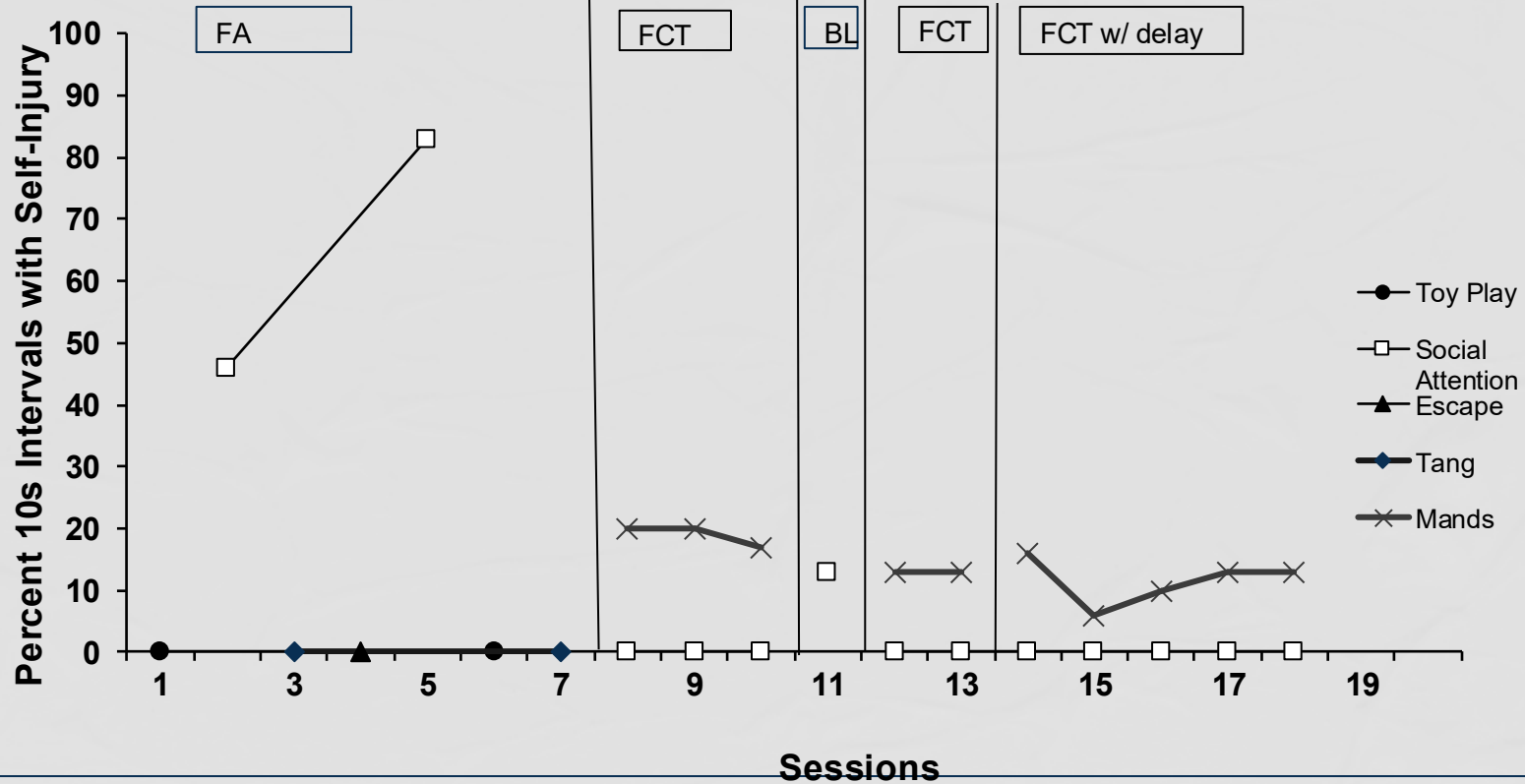
# Science of ABA- Use of Single-Case Design

- “Single-case designs have been used in many areas of research, including psychology, psychiatry, education, rehabilitation, social work, counseling, and other disciplines.”
- “The special feature that distinguishes the methodology is the provision of some means of rigorously evaluating the effects of interventions with the individual case.”

Kazdin (1982)




# FCT Example





# Functional Antecedent-Based Treatment

EO  $\rightarrow$  A<sub>1</sub>  $\rightarrow$  B<sub>1</sub>  $\rightarrow$  C<sub>1</sub> 

AO  $\rightarrow$  A<sub>1</sub>  $\rightarrow$  B<sub>2</sub>  $\rightarrow$  C<sub>1</sub> 

- Establishing Operations: Events that momentarily **increase** the value of a reinforcer and all stimuli and behaviors that historically are associated with gaining that reinforcer
- Abolishing Operations: Events that momentarily **decrease** the value of a reinforcer and all stimuli and behaviors that historically are associated with gaining that reinforcer

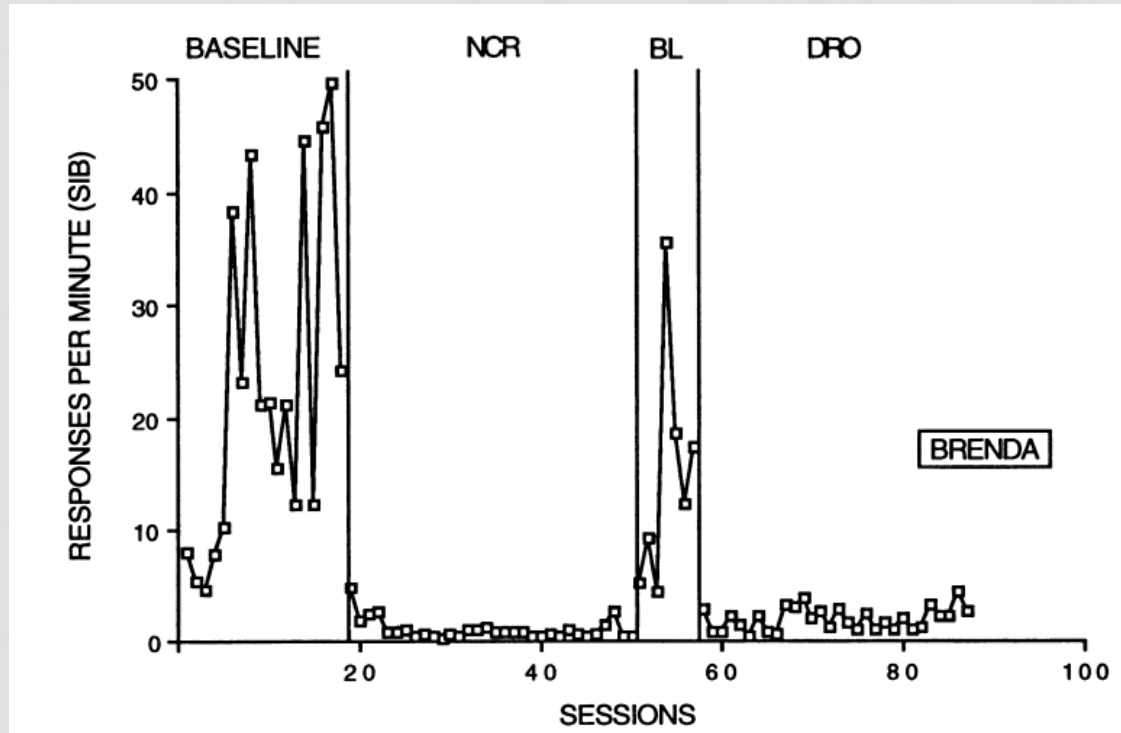


# Antecedent-Based Treatment

- Altering the motivation= EO and AO
- NCR (Vollmer et al, 1993)
- Competing Stimuli (Haddock & Hagopian 2020)
- Medication as MO (Valdovinos et al., 2009)
  
- NCR Example: FA = aggression to gain attention. TX= provide praise every few minutes when need to divert attention from the child. NCR decreases value of attention as reinforcer via satiation and therefore behavior to gain attention
- CS Example: provide access to a high preferred toy when attention needs to be diverted and toy momentary decreases value of attention as reinforcer via competing reinforcement and all behavior associated with gaining attention
- Med as MO example: FA pre/post med change shows changes in rate/function of behavior. Med effects on brain can decrease/increase value of reinforcement.



# NCR + DRO Example



Vollmer et al., 1993



# Function Based Treatments

So what do we know about functional analysis and function-based treatments

1. FA gold standard of practice for developing functional interventions for challenging behavior (Miltenberger et al., 2019; Suchowierska-Stephany, 2024)
2. Hundreds of research studies verify its effectiveness (Melanson and Fahmie, 2023)
3. Function-based Treatments have been shown to effectively reduce challenging behaviors across:
  1. Form of Behavior: SIB (Kahng et al., 2002); aggression (DeLeon et al., 2000); pica (McCord et al., 2005); elopement (Scheithauer et al., 2025)
  2. Settings: Hospital (Iwata et al, 1994); schools (Boyajian et al, 2001); homes (Derby, et al., 1997)
  3. Diagnoses: schizophrenia (Wilder et al., 2001); IDD (e.g., Lindauer, et al., 2002); ASD (Hoch, et al., 2002); ADHD (Northup et al. 1997); Down Syndrome (Dalton, Rubino, & Hislop, 1973); Feeding disorders (Piazza, et al., 2003)



Thank You

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