Ten Common Mistakes Made by Applied Behavior Analysts and Ways to Avoid Them

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ONTABA
November, 2011
Mistake 1: We rely on behavior modification when the situation calls for behavior analysis.

Example: Treating problem behavior

• Functional assessment increases treatment precision and efficacy
  – E.g., Carr & Durand, 1985; Iwata, Pace, Cowdery, Miltenberger, 1994; Newcomer & Lewis, 2004; Taylor & Miller, 1997; Meyer, 1999

• Conduct a functional assessment in order to identify an effective, precise, personally relevant, and humane treatment for problem behavior
Mistake 2: We adopt a “least restrictive” hierarchy to conduct a functional assessment

Example:

1. Start with indirect assessment.

2. If you are not confident in the results, then conduct a descriptive assessment.

3. If you have competing hypotheses regarding the variables controlling behavior, then, and only then, conduct a functional analysis (and make sure it is comprehensive).
Closed-ended indirect assessments are not useful; open-ended ones are useful...for setting up a functional analysis.

• **Closed ended indirect assessment are unreliable**
  – Without reliability, questions regarding their validity are moot.

• **Open-ended indirect assessments (akin to clinical interviews) allow for discoveries which can then be verified in a functional analysis**
  – See Iwata et al., 1982.... Iwata, Wong, Riordan, Dorsey, Lau (JABA; 1982) ...clinical interviewing skills....
Closed-ended descriptive assessments are not useful; open-ended ones may be useful...for setting up a functional analysis.

Closed-ended DAs are:

- redundant w/ functional analyses
- time-consuming
- require complex data collection and analysis
- usually suggest invalid relations

Descriptive assessments can suggest prevalence but can never demonstrate relevance
Indirect assessments/descriptive assessments and functional analyses are not substitutable; they are complimentary.

Open ended assessment allows for discovery of possible factors whereas functional analyses allow you to demonstrate the relevance of those factors....

Therefore, use both of them....both are essential.
Mistake 3: Analyses require five or more conditions (e.g., attn, esc, tang, alone, play)

Functional analysis:
Direct observation of behavior under at least two conditions in which some event is manipulated

Two Conditions:
Test: Contains the contingency thought to maintain severe problem behavior
Control: Does not contain the contingency thought to maintain severe problem behavior
Consider Pair-wise Analysis: Alternation of a test and a matched control condition
Take Home Point

Start with an open-ended indirect assessment and a brief observation and allow them to inform the design of a pair-wise functional analysis

• This assessment model allows for efficient discovery and demonstration of variables influencing problem behavior .... and leads to individualized, humane, and precise treatments
These assertions with references can be found in these chapters:


Bonus Myths!

1. Compared to other assessment types, functional analyses are more **time-consuming, complex, risky, impossible to “sell” to constituents, less ecologically valid.**

2. Problem behavior is shaped during a functional analysis, or irrelevant functional relations are created during a functional analysis.

3. Functional analyses can’t address:
   - low rate problem behavior,
   - covert problem behavior,
   - extremely dangerous problem behavior,
   - problem behavior influenced by constantly changing reinforcers
New Lore: Compared to other types of assessment, functional analyses are not more time-consuming.

- **Consider:**  5-min sessions (Wallace et al., 1999)  
  Pairwise (Iwata, Duncan et al., 1994)  
  Trial-based (Sigafoos & Saggers, 1995)

- **Avoid:**  Brief assess. (e.g., Northup et al., 1991)
REINFORCEMENT SCHEDULE THINNING FOLLOWING TREATMENT WITH FUNCTIONAL COMMUNICATION TRAINING

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THE UNIVERSITY OF FLORIDA
New Lore: Compared to other types of assessment, functional analyses are not more complex.

- Complexity
  - Iwata et al. (2000): 2 hrs to train other to do it.
    - Replicated by Moore et al. (2002)
  - Hagopian et al. (1998) showed us how to train others to interpret the data from an analysis.
  - Contrast with complexity of measurement and data analysis systems in DAs
New Lore: Compared to other types of assessment, functional analyses are not more risky.

- **Risk**
  - More than they experienced prior to analysis?
  - Signaled contingencies and continuous schedules result in decreases in intensity and frequency of SPB

- **Riskier alternatives**
  - Ambiguous outcomes: Indirect or DAs alone
  - Extended assessment time (closed ended DAs)
  - No consequences arranged in FA (Carr & Durand, 1985)
  - FAs with schedules deduced from DAs
New Lore: Compared to other types of assessment, functional analyses are not more difficult to “sell.”

• First: build a relationship during your open-ended interview and casual observations

• Second: Use analogies to help assessment partners understand what you are doing with a functional analysis
  – E.g., allergy test
New Lore: Compared to other types of assessment, functional analyses are not less ecologically valid

• **Ecological validity**: Extent to which relations shown in a functional analysis are the same as those influencing behavior outside of analysis context

• DAs are also conducted in 3m x 3m rooms (e.g., Vollmer et al., 2001)

• Functional analyses can be conducted during typical routines (e.g., Sigafoos & Saggers, 1995)
Problem behavior is not shaped during a functional analysis.

- Requirements for *shaping* are not met in functional analyses.
New: Irrelevant functional relations are not created during a properly informed functional analysis.

Lore:

- Attention and escape are ubiquitous (Thompson & Iwata, 2001; McKerchar & Thompson, 2004)

- Happens with unique events (e.g., tangibles; Shirley et al., 1999), but these should not be incorporated into a functional analysis without sufficient evidence.

- Also, no functional relation is irrelevant—could be considered a risk assessment to inform teaching programs and preventive contingencies.
New Low rate problem behavior can be functionally analyzed

Lore:

- Strong contingencies in typical analysis can result in differentiated analyses for low rate behavior
- See methods of Kahng, Abt, & Schonbachler (2001)
New Covert problem behavior can be functionally analyzed

Lore:

- Pill ingestion:

- Self injury:
  Grace, Thompson, & Fisher (1996)
New Dangerous problem behavior
Lore: can be functional analyzed

• Precursor assessments
  – Borrero & Borrero (2008)
  – Langdon, Carr, and Owen-DeSchryver (2008)
Problem behavior influenced by constantly changing reinforcers can be functional analyzed

- Bowman et al. (1997)
Mistake 4: Teachers should be expected/trained to conduct functional assessments

Take home point: Behavior analysts should conduct functional assessments with teachers and parents as partners in the process
Here is why:

• Analysis is not complex, but the assessment and treatment development *process* is complex.

• Functional assessment process involves:
  – building relationships,
  – clinical interviewing,
  – direct measurement,
  – single-subject experimental designs,
  – data graphing, analysis, and interpretation,
  – an understanding of schedules & behavioral processes
Mistake 5: We forget that extinction takes many forms, is necessary, but is insufficient and non-preferred.

- Function and context predict form of extinction.
- Almost all effective function-based treatments involve extinction.
- Extinction should not be used as sole component of a function-based treatment
  - Too many negative side effects & it is probably aversive
From Hanley, Piazza, Fisher, Maglieri, and Conrucci, JABA, 1997
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### Treatment Preference Assessments

- **FCT**: Blue dots
- **NCR**: Red squares
- **EXT**: White circles

Sessions

![Graph showing treatment preference assessments for Tony and Carla.](image-url)
Treatment Preference Assessments

Number of Switch Presses

Tony

Carla

FCT
NCR
EXT

1 2 3 4 5 6 7

1 2 3 4 5 6 7 8 9

1 2 3 4 5 6 7 8 9

1 2 3 4 5 6 7 8 9
Take home point: Use a properly formed extinction procedure as part of a differential reinforcement-based program (e.g., functional communication training; FCT)

Functional Communication Training: A Review and Practical Guide
Jeffrey H. Tiger, Louisiana State University, Gregory P. Hanley, Western New England College and Jennifer Bruzek, Vanderbilt University

ABSTRACT
Functional communication training (FCT) is one of the most common and effective interventions for severe behavior problems. Since the initial description of FCT by Carr and Durand (1985), various aspects of the FCT treatment process have been evaluated, and from this research, best practices have emerged. This manuscript provides a review of these practices as they arise during the development of effective FCT interventions.

Descriptors: Behavior disorders, differential reinforcement of alternative behavior, functional communication training, function-based treatment

Published in *Behavior Analysis in Practice*
Mistake 6: After we teach an alternative response to problem behavior during FCT, we impose a delay to make the treatment practical.

Example:
Child: “Play, please”
Adult: “In a minute....”
1 or so minutes pass
Adult: “Okay, Billy let’s play!”
With Reinforcement Delay:
With Reinforcement Delay:

As delay increases, FC weakens & probability of PB increases
With Reinforcement Delay:
Reinforcement delay....
Intuitive, but ineffective for children without strong language skills
Consider an alternative: Gain stimulus control of the alternative response

--Tactic: Correlate cues with Reinforcement and EXT periods

--also known as a *multiple schedule*

--akin to the “red light, green light” game

--teaches appropriate time and place
With Multiple Schedules:
Which is more preferred: MULT schedule or Delayed Sr?

**Take home point:** Teach appropriate times and places for requests to be reinforced through use of correlated stimuli
Mistake 7: When presented with a problem behavior, we assess and then design a treatment for that child

Under the same circumstances, consider designing an *idiographic* treatment but applying it to all children in the classroom or home.

Go class-wide!
Mistake 8: We try to prevent problem behavior by removing the EO or SD.
Examples of “Preventing” Problem Behavior through Proactive Tactics

- Multiple sets of the same play materials
- Carefully designed and predictable schedules
- Child-led free-play activities
- Frequent choice provision
- High levels of noncontingent social praise
- Developmentally appropriate instruction
- Instruction embedded in play
- Incidental and errorless teaching
- Removal of non-preferred teaching materials

- Typical EOs are actively eliminated or weakened and these are critical for teaching relevant social responses
To prevent the development of problem behavior, consider a compliment to the proactive approach:

Teach functional skills to prevent problem behavior from developing or reemerging
Which skills?

All skills taught following effective functional assessment should be taught to all children and all persons with ASD.
Which skills?

• Prevent problem behavior by teaching generalized repertoires for:
  – Producing automatic reinforcers (i.e., play and leisure skills)
  – Complying with typical instructions
  – Recruiting and maintaining others attention
  – Escaping or avoiding unpleasant situations
  – Gaining or maintaining preferred materials or contexts
  – Tolerating delays and denials of these same events/contexts
Key Factor: Identifying and Setting up Evocative Situations

Repeatedly introduce evocative situations and teach functionally equivalent skills

- Arrange low or divided attention-- teach requests for attention

- Arrange difficult or impossible tasks-- teach requests for assistance

- Arrange viewable but unattainable materials-- teach requests for materials

- Arrange delays and denials of same events-- teach tolerance
Prevention Model: A Start

EVALUATION OF A CLASSWIDE TEACHING PROGRAM FOR DEVELOPING PRESCHOOL LIFE SKILLS

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AND

EINAR T. INGVARSSON
JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE
Unit 1: Instruction Following

Preschool Life Skill
Problem of Omission
Problem of Commission

% of trials with Problem Behavior

Baseline

Unit 1
Unit 2
Unit 3
Unit 4
Unit 1 Skills: Instruction Following

Unit 2 Skills: Functional communication

Unit 3 Skills: Delay Tolerance

Unit 4 Skills: Friendship Skills
Problem Behavior

-100
-50
0
50
100
Baseline

Post Unit 1 Training

Post Unit 2 Training

Post Unit 3 Training

Post Unit 4 Training

Post Booster Training

Preschool Life Skill

Instruction Following

Functional Communication

Tolerance for Delay

Friendship Skills

Percentage of trials with:

Preschool Life Skill

Problem of Omission

Problem of Commission

Unit 1 Skills

Unit 2 Skills

Unit 3 Skills

Unit 4 Skills

Preschool Life Skill Problem of Omission Problem of Commission

Percentage of trials with:

Preschool Life Skill

Problem of Omission

Problem of Commission

Unit 1 Skills

Unit 2 Skills

Unit 3 Skills

Unit 4 Skills

Preschool Life Skill Problem of Omission Problem of Commission
Evocative Situations

Percentage of Trials in which a PLS was Observed
Study Summary and Implication

• **Summary:**
  – 74% reduction of problem behavior
  – 4-fold increase in target skills
  – Teachers report high overall satisfaction with the teaching strategies and the size of the effects

• **Take home point:** Evocative situations should not be avoided in schools or homes; they should be introduced thoughtfully, systematically, and when skills can be taught.
Mistake 9: Teaching functionally equivalent skills will prevent the development of problem behavior

(What the....?)

Take home point: Contingencies to support skills need to be historic and present in current environment
**Pre-Teaching (Initial Baseline)**

- **Social Skills**
  - Control: \( U = 36.0, \ p < .001^{***} \)
  - Test: \( d' = 25.0, \ 95\% \text{ CIs (14.3, 29.1)} \)

- **Undesirable Behavior (problem behavior & less-desirable behavior)**
  - Control: \( U = 11.5, \ p > .05 \)
  - Test: \( U = 18.0, \ p > .05 \)

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**Mand for Attention**

- **Framed-Mands for Materials & Assistance**
- **Delay/Denial Tolerance**

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K Luczynski

Dissertation data
Pre-Teaching (Initial Baseline)

$U = 11.5, p > .05$

Post-Teaching (Final Baseline)

$U = 36.0, p < .001^{***}$

$d' = 25.0, 95\% \text{ CIs (14.3, 29.1)}$

Undesirable Behavior (problem behavior & less-desirable behavior)

$U = 18.0, p > .05$

$U = 0.0, p < .001^{***}$

$d' = 46.8, 95\% \text{ CIs (55.2, 23.6)}$
Generalization Test
First Try

Social Skills

Test

Control

Undesirable Behavior (problem behavior & less-desirable behavior)

Test

Control

Generalization A

\[ U = 36.0, \ p < .001^{***} \]

\[ d' = 3.2, \ 95\% \ CIs \ (1.3, 4.5) \]

\[ U = 0.0, \ p < .001^{***} \]

\[ d' = -5.3, \ 95\% \ CIs \ (-7.1, -2.6) \]

Generalization B

\[ U = 36.0, \ p < .001^{***} \]

\[ d' = 14.7, \ 95\% \ CIs \ (8.0, 19.0) \]

\[ U = 0.0, \ p < .001^{***} \]

\[ d' = -13.4, \ 95\% \ CIs \ (-17.5, -7.3) \]
Generalization Test
First Try

- **Social Skills**
  - **Test**
  - **Control**
  - **Post-informed Teaching**
    - \( U = 36.0, \ p < .001^{***} \)
    - \( d' = 3.2, \ 95\% \text{ CIs} \ (1.3, 4.5) \)
  - **Pre-informed Teaching**
    - \( U = 36.0, \ p < .001^{***} \)
    - \( d' = 2.0, \ 95\% \text{ CIs} \ (0.5, 3.2) \)
  - **Undesirable Behavior (problem behavior & less-desirable behavior)**
    - **Test**
    - **Control**
    - **Generalization A**
      - \( U = 0.0, \ p < .001^{***} \)
      - \( d' = -5.3, \ 95\% \text{ CIs} \ (-7.1, -2.6) \)
    - **Generalization B**
      - \( U = 0.0, \ p < .05^{*} \)
      - \( d' = -2.5, \ 95\% \text{ CIs} \ (-3.8, 0.9) \)

\( U = 36.0, \ p < .001^{***} \)
\( d' = 2.0, \ 95\% \text{ CIs} \ (0.5, 3.2) \)
Post-informed Teaching

$U = 36.0, p < .001^{***}$

$d' = 3.2, 95\% \text{ CIs (1.3, 4.5)}$

$d' = 2.0, 95\% \text{ CIs (0.5, 3.2)}$

$d' = -5.3, 95\% \text{ CIs (-7.1, -2.6)}$

$d' = -2.5, 95\% \text{ CIs (-3.8, 0.9)}$

Pre-informed Teaching

$d' = 14.7, 95\% \text{ CIs (8.0, 19.0)}$

$d' = -13.4, 95\% \text{ CIs (-17.5, -7.3)}$

Generalization A

$d' = -2.5, 95\% \text{ CIs (-3.8, 0.9)}$

Generalization B

$d' = -5.3, 95\% \text{ CIs (-7.1, -2.6)}$

Social Skills

Undesirable Behavior (problem behavior & less-desirable behavior)
**Generalization Test**

**First Try**
- Social Skills: $U = 36.0, p < .001^{***}$
- $d' = 2.0, 95\% \text{ CIs} (0.5, 3.2)$

**Second Try**
- Social Skills: $U = 36.0, p < .001^{***}$
- $d' = 3.2, 95\% \text{ CIs} (1.3, 4.5)$

**Third Try**
- Social Skills: $U = 36.0, p < .001^{***}$
- $d' = 14.7, 95\% \text{ CIs} (8.0, 19.0)$

**Undesirable Behavior (problem behavior & less-desirable behavior)**

**First Try**
- Control: $U = 0.0, p < .05^{*}$
- $d' = -2.5, 95\% \text{ CIs} (-3.8, 0.9)$

**Second Try**
- Control: $U = 0.0, p < .001^{***}$
- $d' = -5.3, 95\% \text{ CIs} (-7.1, -2.6)$

**Third Try**
- Control: $U = 0.0, p < .001^{***}$
- $d' = -13.4, 95\% \text{ CIs} (-17.5, -7.3)$
Teaching functionally equivalent skills will only take you halfway in preventing the development of problem behavior.

Take home point: We need strong programming in the initial environments and at least some programming in the terminal environments for children to engage in important social skills that interfere with the emergence of problem behavior.
Mistake 10: Inferring what children and clients prefer based on what staff tell you, happiness indices, or a twist on the golden rule

(Their values may not correspond with yours.)
How can preferences for contexts be determined?

• Allow them to experience and then choose contexts

• Method requires only slight changes to typical preference assessments (Fisher et al., 1992)

Counter intuitive results are often observed.
ON THE EFFECTIVENESS OF AND PREFERENCE FOR PUNISHMENT AND EXTINCTION COMPONENTS OF FUNCTION-BASED INTERVENTIONS

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SCHOOL OF MEDICINE

Participants
Jay: 5y.o. / Mod MR, Autism, seizures/ SIB, Agg, & Dis
Betty: 8y.o. / Mod. MR, ADD, ODD / Agg

Setting:
Inpatient Hospital
Example: Functional Analyses
Example: Treatment Analyses
Example: Treatment Analyses
Contingency: FR-1

Blue Switch

DRA (69% rdxn)

Red Switch

DRA + Pun (91% rdxn)

White Switch

Pun (Control)

Contingencies:

2 min period:
Alt. R = 20 s of Attn
PB = EXT

2 min period:
Alt. R = 20 s of Attn
PB = 30 s Pun proc.

2 min period:
Alt. R = ø
PB = 30 s Pun proc.
Example: Preference Assessments

![Graph showing preference assessments for different conditions](image)

- **FCT + Pun**
- **FCT + EXT**
- **Pun**

Sessions

Number of Switch Presses

- Betty
- Jay
Example: Preference Assessments

Number of Switch Presses

FCT + Pun
FCT + EXT
Pun
Jay

Betty

Sessions
Example: Discussion

• Implications
  – If only positive or “non-aversive” Rxs, children would have received both ineffective and non-preferred Rxs

• Why did the children prefer treatments involving punishment?
  – Punishment suppressed problem behavior, which led to a higher probability of reinforcement per response
Punishment Considerations

1. Efficacy of punishment procedure
   – Immediacy and consistency are most important

2. Acceptability to multiple stakeholders

3. Functionally equivalent responses at strength

4. Punishment is contingent, predictable, and thus avoidable
What about common treatments for automatically-reinforced problem behavior?
Trials
6 12 18 24 30 36 42 48 54 60
Cumulative # of Selections
0
2
4
6
8
10
12
14
16

No Differential Consequences for Selections

Patrick (1) (2) (5) (3) (4) (6) (7) (8) (9) (10)
(Sessions)

Link Colors Correlated Treatments
Pink       Blocking only
Yellow    Activities only
Green        Tx Package

Data from Jackie Potter ‘s Dissertation project (co-author: M. Phelps)
Contingency:

- **FR-1**
  - **Pink Card**
    - Blocking Only
  - **Yellow Card**
    - Activities Only
  - **Green Card**
    - Activities, Blocking, and Contingent Access to Stereotypy
Why a preference for the treatment package?

• Perhaps this is another example of people:
  • avoiding extinction and
  • preferring *contingent* reinforcement over *noncontingent* reinforcement

• Perhaps they preferred the treatment in which they were most effective
  (Hanley, 2010)
Take home point:

Objective assessments of our children's and client's values for contexts and treatments can and should be done.

See Hanley (2010) in *Behavior Analysis in Practice* for tips on how:

Subscriptions at:  http://www.abainternational.org
Good luck with all that you do for all who you teach and provide care

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