Towards a Pragmatic Approach to Functional Assessment

Improving Outcomes by not determining the Function of a Problem Behavior

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Assumptions of Traditional Functional Assessment

An event evokes a problem behavior
   e.g., demand issued, toy removed, or attention diverted

An event reinforces the problem behavior
   e.g., escape, tangibles, or attention

Different forms of problem behavior are likely to be evoked and maintained by different reinforcers
<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behavior</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing operation</td>
<td>Problem Beh.</td>
<td>Reinforcement</td>
</tr>
<tr>
<td>Mom instructs to Homework</td>
<td>Throws work</td>
<td>Mom allows a sensory break (escape)</td>
</tr>
<tr>
<td></td>
<td>materials</td>
<td></td>
</tr>
<tr>
<td>Dad instructs to turn off Ipad</td>
<td>SIB</td>
<td>Dad gives a little more time on Ipad (tangible)</td>
</tr>
</tbody>
</table>

This is the “**one thing at a time**” model
Or the traditional model of relying on **isolated reinforcement contingencies**
**Aim of Traditional Functional Assessment**

To identify the function of a problem behavior

**Your options:**

- Attention,
- Tangibles,
- Escape, or
- Sensory
Procedures of Traditional Functional Assessment

(Closed-Ended) interviews

(Closed ended) Descriptive Assessments

Low inference, standard functional analyses
  (attempts to analyze single response-reinforcer relations)
Outcomes of Traditional Functional Assessment

The good *(based on published research)*

- Standard analyses show control of problem behavior
- Standard analyses have generality
- Better treatment efficacy if preceded by a traditional analysis
Outcomes of Traditional Functional Assessment

The unfortunate (based on published research)

- No treatment utility shown for closed-ended indirect or desc. assessments

- Traditional analyses:
  - have not yet yielded a socially meaningful treatment outcome,
  - are not being employed by practicing behavior analysts or others

Why?
- take too long,
- can be unsafe,
- are not socially valid,
- are not ecologically valid,
- often do not control problem behavior enough
Transition from the *traditional reductionist approach* to a more *pragmatic and effective approach* requires changes to

- Assumptions,
- Aims,
- Procedures
Past Working Assumption and Commitment retained in a Practical Functional Assessment Process

COMMITMENT: No attempt to change (improve) problem behavior without first attempting to understand its controlling variables

ASSUMPTION: If problem behavior is occurring with regularity.....

- it is being reinforced
  - Even when important biological/medical factors are known or suspected
“New” Assumptions

Multiple events co-occur to evoke problem behavior

Multiple events occur simultaneously to reinforce (strengthen) problem behavior

Different forms of problem behavior of the same child are often maintained by the same synthesized reinforcement contingency
Child / Parent Baseline Observation
Age: 4      Diagnosis: Autism     Language Level: Fluent speech

Synthesized reinforcement contingency in baseline observation
The "many things at a time" model of a reinforcement contingency:

**Antecedents** → **Establishing operations** → **Behaviors** → **Problem Behaviors** → **Consequences** → **Reinforcers**

- Put away iPad to do chores (brother present) → Noncompliance + resistance + negotiating + screaming + flopping + slapping → Avoidance of chores + continued time on iPad + choices + undivided attention

*Also known as a synthesized reinforcement contingency*
The “many things at a time” TREATMENT model:

Antecedents → Behaviors → Consequences

Put away iPad to do chores (brother present)

→ “excuse me”
  Listens to parent
  “May I have my way please”
  “Okay, no problem”
  Complies with multiple instructions and corrections

→ break from more chores +
  time on iPad +
  choices of activity +
  some undivided attn

*involves the same synthesized reinforcement contingency
Procedures
What is involved in a Practical Functional Assessment (PFA) process?

• An open-ended interview *(always)*

• An informal observation *(perhaps, but not necessary)*

• A functional analysis *(always)*
  ▫ An IISCA
    • An Interview-Informed
    • Synthesized Contingency
    • Analysis
**Example Case: Brandon**

**The open-ended interview**

- **Age:** 3
- **Diagnosis:** None
- **Language:** Speaks in short sentences
- **Referred for:** Aggression, meltdowns, noncompliance
- **To:** Life Skills Clinic (outpatient model) at Western New England University

### Mission to identify:

1. **the most concerning problem behavior and all other forms of problem behavior that co-occur in the same situations as the most concerning problem behavior**

2. **the events that seem to co-occur and reliably evoke problem behavior**

3. **the types of events and interactions that have occurred following problem behavior and are reported to stop the problem behavior**

1. **Hitting, kicking, biting, throwing objects, dropping to the floor while crying, refusing to follow parental instructions**

2. **Interrupting his play/game, removing toys (e.g., action figures), seeing others playing with his toys, adult noncompliance with mands, instructions to play differently, to play quietly on iPad, to sit quietly with books, or to clean up toys**

3. **Escape from parental instructions to his toys, parental attention/interaction, and mand compliance**
Example IISCA: Brandon

All sessions are repeated at least once

Because replication is the key to believability
(Baer, Wolf, & Risley, 1968)

Note:
There should be no problem behavior in the control sessions, if there is, it is redesigned
Example IISCA: Brandon

Notes:

Test sessions are repeated at least twice

Control and test sessions are alternated to evaluate whether suspected contingency influences problem behavior
An IISCA is an **Interview-Informed Synthesized Contingency Analysis**. It involves:

• Provision of personalized and synthesized reinforcers for problem behaviors, reported to co-occur, in a single condition

• Provision of same reinforcers continuously in a second condition, otherwise matched

• Rapid alternation of these test and control conditions, which differ only by the presence/absence of the contingency
Aim of a Practical Functional Assessment

*NOT to identify the function of a problem behavior*

Aim is strong control of class of problem behavior via ecologically-relevant reinforcement contingency

Aim is **functional control not functional classification**
**Aim of a Practical Functional Assessment**

**Its about thinking outside the box while scrutinizing the box’s inside**

Not about checking a function box

More about

  * figuring out what to put in each of the four boxes

  * and considering other boxes for events/interactions that don’t fit properly within the traditional boxes

  * e.g., mand compliance, access to stereotypy, rituals, or movement
Aim of a Practical Functional Assessment

It’s preference for a particular type of precision

It’s indifference towards categorical precision
  (Response X with Reinforcer B)

It’s preference for a more precise emulation of ecology

It’s preference for quantitative precision (i.e., strong control)
Control of problem behavior is paramount and is evident across published IISCAs.

From Jessel, Hanley, & Ghaemmaghami (JABA, 2016)

Problem behavior per minute

Sessions

Problem behavior per minute

Sessions
Control of problem behavior is paramount and is evident within IISCA test sessions.
Control of problem behavior is paramount and is evident *within* IISCA test sessions.

Typical Aggregate Display

- **Test**
- **Control**

*Escape to tangibles, attention, and mand compliance*

Intimate Display of Test Sessions

- **Problem Behavior during Establishing Operation**
- **Problem Behavior during Reinforcement**
- **Reinforcement**

Session 2

Session 4

Session 5

Sessions

1 2 3 4 5

Problem Behavior per Minute

0

1

2

3

Sessions

1 2 3 4 5

Seconds

0 50 100 150 200 250 300
Control of problem behavior is paramount and is usually evident in IISCAs of brief session duration.

“We conducted consecutive functional analyses with 3-min sessions to further evaluate the utility of brief session durations. We found that strong levels of control over problem behavior were maintained when conducting functional analyses with sessions as brief as 3 min.

(from EVALUATING THE BOUNDARIES OF ANALYTIC EFFICIENCY AND CONTROL: A CONSECUTIVE CONTROLLED CASE SERIES OF 26 FUNCTIONAL ANALYSES Jessel et al., 2019, JABA)
Control of problem behavior is paramount and is usually **evident** within the first test session of IISCAs of brief session duration.

Control evident by evaluating relative rates of behavior when suspected reinforcers are present (i.e., EO absent) versus when the reinforcers are absent (EO present).

![Graph showing cumulative responding](image)

(from INTERVIEW-INFORMED SYNTHESIZED CONTINGENCY ANALYSES: THIRTY REPLICATIONS AND REANALYSIS Jessel et al., 2016, JABA)
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“We describe 30 applications of the IISCA.... the first sessions of these analyses were reanalyzed to determine if contingencies that controlled problem behavior could be identified in only 3 to 5 min. This was the case in 80% of analyses.

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Control evident in 1st session
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Different Outcomes driven by different Aims?

Most analyses do not show strong control when the aim is to identify the function of a problem behavior.
from *DETERMINING THE EFFICIENCY OF AND CONTROL SHOWN IN DIFFERENT FUNCTIONAL ANALYSIS FORMATS*
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Outcomes in Context of Aims

Most “efficiency-based” analyses do not show strong control when the aim is to identify the function of a problem behavior

from DETERMINING THE EFFICIENCY OF AND CONTROL SHOWN IN DIFFERENT FUNCTIONAL ANALYSIS FORMATS
Jessel, Hanley, Ghaemmagherami (in prep.)
Outcomes in Context of Aims

When *aim* is directed away from identifying the function of a problem behavior, strong control is usually evident.

from *DETERMINING THE EFFICIENCY OF AND CONTROL SHOWN IN DIFFERENT FUNCTIONAL ANALYSIS FORMATS*  
Jessel, Hanley, Ghaemmaghami (in prep.)
Implications of strong control of problem behavior

You can turn off problem behavior quickly
  = analysis-informed treatment process can be safe & effective

You can turn on problem behavior quickly
  = skills may be developed in treatment

With an ecologically relevant contingency
  = skills are more likely transfer to relevant context
Diego / treatment session

- Age: 11
- Diagnosis: Autism
- Language Level: Speaks in Short Sentences
- Referred for: Self-injurious behavior, Aggression, Property Destruction

*The skills of functional communication, delay/denial toleration, and contextually appropriate behavior were shaped via intermittent and unpredictable delivery of the same synthesized reinforcers during the same synthesized establishing operations.
Despite some subjectivity at the start of the PFA process, lack of precision with respect to generic functions, the PFA process results in socially valid treatment outcomes.
Effects deemed meaningful by parents and teachers following analysis and treatment involving synthesized reinforcement contingencies.

Similar effects reported in these studies from other research groups:

- Jessel, Ingvarsson, Metras, Hillary, & Whipple (2018) JABA
- Beaulieu, Clausen, Williams, & Herscovitch (2018) BAP
- Chusid & Beaulieu (2018) JABA
Positive outcomes are possible with reliance on synthesized reinforcement contingencies (and assumptions of interactive control), but are they probable?
Jessel, Ingvarsson, Metras, Hillary, & Whipple (2018, *JABA*)

Achieving Socially Significant Reductions in Problem Behavior following the Interview-Informed Synthesized Contingency Analysis:
A Summary of 25 Outpatient Applications

You found the recommended treatment acceptable
You are satisfied with the amount of improvement seen in problem behavior
You are satisfied with the amount of improvement seen in communication skills
You found the assessment and treatment helpful to your home situation

Not acceptable/satisfied/helpful
Highly acceptable/satisfied/helpful

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**Problem behavior per min**

<table>
<thead>
<tr>
<th>Problem behavior per min</th>
<th>Baseline</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$p < .001$

$N = 25$
Aim clarification in context of PFA outcomes

When PB is strongly controlled in an IISCA as part of the PFA process, socially valid outcomes are probable, despite not attempting to determine:

✓ THE function of a problem behavior

✓ Whether problem behavior is maintained by positive or negative reinforcement

✓ Whether one of the synthesized reinforcers is a “true” reinforcer or merely a “false positive”

(see Fisher et al., 2016, Slaton et al., 2017, 2018)
Isolated contingencies sometimes do not control behavior whereas synthesized contingencies do.

This is not a paradox, just a classic example of an interaction without main effects.

Single tests of individual reinforcers are not capable of verifying the irrelevance of synthesized reinforcers.

From Hanley et al., 2014, *JABA*

Case Example
Gail, 3 yo, dx: PDD-NOS
Setting: Clinic
From Slaton et al., 2017, *JABA*

Most often, our comparative analyses show that synthesized reinforcement contingencies influence problem behavior whereas isolated ones do not.

Whole contingencies have properties that sometimes cannot be found in the parts of the contingency.

Single tests of individual reinforcers are not capable of verifying the irrelevance of synthesized reinforcers.
When both isolated and synthesized reinforcement contingencies influence problem behavior in analysis, validate via treatment.

IISCA-based treatment

Problem behavior per min

BL
FCT + EXT
Escape to tangibles, attention
FCR

Standard-based treatment

BL
FCT + EXT
Escape

(From Slaton et al., 2017, *JABA*)
Comparative treatment analyses reliably reveal the advantage of synthesized reinforcement contingencies.

From:
NATURE AND SCOPE OF SYNTHESIS IN FUNCTIONAL ANALYSIS AND TREATMENT OF PROBLEM BEHAVIOR
Slaton & Hanley (JABA, 2018)

Synthesized contingencies had a better effect size in 25 of 26 cases (96%)
Change is hard but eased by historical voices

**VOICE:** Skinner, 1958, *Science and Human Behavior*, p. 205:

“A common source of misunderstanding is the neglect of what happens when variables are combined in different ways.”

Although a functional analysis begins with relatively isolated relations, an important part of its task is to show how its variables interact.”
For more information and implementation support,
go to: www.practicalfunctionalassessment.com

or call the PFA hotline: +1 413-782-1771
*calls taken on Mon: 5-6:30 pm (est) or Wed: 8-9:30am (est)

or join the Facebook group: BCBAs using the IISCA

or schedule an organizational training/consultative support by emailing: ghanley@ftfbc.com