Acknowledging essentials and all that you are willing to not know when functionally analyzing behavior

Gregory P. Hanley, Ph.D., BCBA-D

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For more information and materials, go to:
www.practicalfunctionalassessment.com

Functional assessment process to determine the variables influencing problem behavior
Some Assumptions

Problem behavior is an operant

Certain situations potentiate certain consequences

Goal of a Functional Assessment

Identify the consequences that maintain problem behavior

Identify the situations that evoke the behavior

In order to treat problem behavior
Functional Assessment Process

Indirect Assessment
- Interview

Functional Analysis
- Observe while manipulating

Descriptive Assessment
- Observe

Discovery and Demonstration

Be wary of incontrovertible truths.
“All models are wrong; some are useful.”

Box & Draper, 1987, p. 424

Defining features of the Standard Functional Analysis

- Multiple test conditions
- Uniform test conditions
- Isolated test contingencies
- Reinforce dangerous behavior only
- Toy-play control condition
Example of a standard functional analysis

How do we know this is the standard functional analysis?
(Jessel, Hanley, Ghaemmaghami, 2016)

- Multiple test conditions
  - 1965-2000 (Hanley et al., 2003)
  - 64% SFAs
  - 1 out 3 with modifications

- Uniform test conditions
  - 2001-2012 (Beavers et al., 2014)
  - 85% SFAs
  - 1 out of 7 with modifications

- Isolated test contingencies
- Reinforce dangerous behavior only
- Toy-play control condition
Is the Standard Functional Analysis Effective?

**Does it lead to a differentiated analysis?**

**Literature reviews:**
- Hanley et al. (2003): 94%  
- Beavers et al. (2014): 92%

**Case series:**
- Hagopian et al. (2014): 47%  
- Slaton et al. (2016): 44%

Is the Standard Functional Analysis Effective?

**Does it leads to larger treatment effects?**

Campbell (2003)

*Higher PZD when Rx was based on “EFA”*

But, these larger effects were almost exclusively obtained when:  
--researchers implemented the treatments  
--in controlled settings  
--under rich schedules of reinforcement  
--for short periods of time
Is the Standard Functional Analysis Effective?

Not one study showing a socially-validated outcome in a relevant setting when implemented by a relevant person when a standard functional analysis was used.

Apparent solution to ineffectiveness:

Excessive elaboration
Elaboration of the standard functional analysis (SFA)

Prior to a SFA
- Formal Descriptive assessments
- Preference assessments
- Demand Assessments
- Manuals outlining extensive team-based processes

Following a failed SFA
- Slight and systematic deviations from the SFA core procedures

Following a failed SFA-based treatment
- Stimulus avoidance assessments
- More preference assessment and reinforcer assessments

Despite the Excessive Elaboration of the Standard Functional Analysis...

Not one study showing...

...a practical, socially valid outcome in a relevant context
“Since all models are wrong, the scientist cannot obtain a ‘correct’ one by excessive elaboration. Just as the ability to devise simple but evocative models is the signature of great science so overelaboration is often the mark of mediocrity.”

George Box, 1976, p. 792

Research to practice gap

Possible reason:
Because the outcomes are mediocre

even when the process is elaborate
Functional analysis has been around for approx. 50 years (e.g., Lovaas et al., 1965; Sailor et al., 1968)

Standard functional analyses have been around 34 years (Iwata et al., 1982)

Over 300 studies containing over 500 standard functional analyses have been published (Jessel et al., 2016)

Yet, 55 to 65% of practitioners recently surveyed reported never conducting a functional analysis (Oliver et al., 2016; Roscoe et al., 2015)

IISCA

Interview-informed Synthesized Contingency Analysis
Standard Functional Analysis

Multiple test conditions → Single-test condition
Uniform test conditions → Individualized test conditions
Isolated test contingencies → Synthesized contingencies
Reinforce dangerous behavior → Reinforce precursors to and dangerous behavior
Toy-play control condition → Test-matched control

An IISCA

![Graph showing problem behavior per minute over sessions for Zeke](image)
Some Important Aspects of the IISCA

1. An open-ended interview is always part of the process

*Primary goals* are to identify:

- a) co-occurring topographies
- b) events/interactions that appear to routinely evoke problem behavior
- c) interactions that follow problem behavior and are reported to stop it

*Interviews* allow for *discoveries* which can then be verified (or not) in the IISCA

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Some Important Aspects of our Approach

2. We *synthesize* multiple contingencies into one test condition

which contingencies and the specific materials and interactions are informed by the interview
Why might problem behavior occur?

Single contingencies:
1. **Attention or toys** (social-positive reinforcement)
2. **Escape/avoidance** (social-negative reinforcement)
3. **Sensory/non-social** (automatic reinforcement)

Combinatorial contingencies:
1. Attention and Toys
2. Escape to toys
3. Escape to toys and attention
4. Escape to automatic reinforcement
5. Compliance with mands
6. Escape to access to rituals, preferred conversations
7. Etc.....

Why synthesize?

1. Seems to emulate the ecology better
Why synthesize?

1. Seems to emulate the ecology better

2. Isolated contingencies sometimes do not control behavior whereas synthesized contingencies do.
   - Call et al., 2005
   - Dolezal & Kurtz, 2010
   - Hanley et al., 2014
   - Ghaemmaghami et al., 2016
   - Mueller et al., 2005
   - Slaton et al., 2016
   - Slaton et al., 2016

Case Example (Gail, 3 yo, dx: PDD-NOS)
Analyst: Nicholas Vanselow
Setting: Clinic
Article: Hanley et al., 2014
Why synthesize?

1. Seems to emulate the ecology better

2. Isolated contingencies sometimes do not control behavior whereas synthesized contingencies do

3. Doing so leads to effective action—meaningful treatment effects
   - Hanley et al., 2014, Santiago et al., 2016; Ghaemmaghami et al., 2016
Treatment:

Unpredictable and intermittent reinforcement of communication, tolerance, and compliance

Implemented by relevant caregivers in relevant contexts who impose relevant and historically challenging routines

*from Santiago et al., JADD, 2016*
Some other reasonable questions:

Have IISCAs been replicated?
(I.e., Do they have generality?)

Yes.

From Jessel, Hanley, & Ghaemmaghami (JABA, 2016)
Has the process been socially validated?

Yes.

Have socially validated treatments been developed from the IISCA?

Yes.

Have socially validated effects been achieved from the IISCA?

Yes.
Be on the lookout in *JABA* for this study by Dr. Joshua Jessel & colleagues:

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

But, didn’t Dr. Fisher just publish an article in *JABA* showing the IISCA’s were always incorrect?

**Comparisons of synthesized and individual reinforcement contingencies during functional analysis**
Wayne W. Fisher, Brian D. Greer, Patrick W. Romani, & Amanda N. Zangrillo
2016
Differentiation
SFA: 4 of 5
IISCA: 4 of 5

From Fisher et al., 2016

Irrelevance of a contingency is hard to prove.

Generic functions can be easily moderated in analyses.
(see Hanley, Piazza, & Fisher, JABA, 1997)

There are no pure tests of control by single reinforcers, especially tangibles.

The truth can be found in effective action
- Differentiated analysis
- Efficiency of and control in analysis
- Meaningful treatment effects
Slaton, Hanley, & Raftery
(*JABA*, 2017, issue 2; now available via Early View)

### Table 1

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Sex</th>
<th>Diagnosis</th>
<th>Language Ability</th>
<th>Communication Mode</th>
<th>Problem Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diego</td>
<td>11</td>
<td>M</td>
<td>Autism</td>
<td>3</td>
<td>Vocal</td>
<td>Aggression, SIB, disruption</td>
</tr>
<tr>
<td>Mason</td>
<td>10</td>
<td>M</td>
<td>Autism</td>
<td>4</td>
<td>Vocal</td>
<td>Aggression, disruption</td>
</tr>
<tr>
<td>Riley</td>
<td>12</td>
<td>M</td>
<td>Autism</td>
<td>3</td>
<td>SGD</td>
<td>Aggression, SIB, disruption</td>
</tr>
<tr>
<td>Kyle</td>
<td>17</td>
<td>M</td>
<td>Autism, tic disorder</td>
<td>3</td>
<td>SGD</td>
<td>Aggression, SIB</td>
</tr>
<tr>
<td>Jonah</td>
<td>7</td>
<td>M</td>
<td>Autism</td>
<td>2</td>
<td>SGD</td>
<td>Bolt, flapping and holding, climbing</td>
</tr>
<tr>
<td>Emily</td>
<td>13</td>
<td>F</td>
<td>Autism</td>
<td>4</td>
<td>Vocal</td>
<td>Aggression, SIB, screaming</td>
</tr>
<tr>
<td>Jeff</td>
<td>16</td>
<td>M</td>
<td>Autism, LKS</td>
<td>2</td>
<td>Vocal, SGD</td>
<td>Aggression, SIB, disruption, flapping</td>
</tr>
<tr>
<td>Dylan</td>
<td>7</td>
<td>M</td>
<td>Autism</td>
<td>3</td>
<td>Vocal</td>
<td>Aggression, disruption</td>
</tr>
<tr>
<td>Chloe</td>
<td>14</td>
<td>F</td>
<td>Autism</td>
<td>3</td>
<td>Vocal</td>
<td>Aggression, SIB</td>
</tr>
</tbody>
</table>

Note: SGD = speech generating device; SIB = self-injurious behavior; LKS = Landau-Kleffner syndrome

1 = no independent communication; 2 = single word utterances; 3 = short sentences; 4 = full fluency

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### IISCA vs. Standard Analysis

#### Diego
- **IISCA**
- **Standard**
- **IISCA**

#### Mason
- **IISCA**
- **Standard**
- **IISCA**

#### Riley
- **IISCA**
- **Standard**
- **IISCA**

Sessions

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IISCA vs. Standard Analysis

IISCA

Test
Control
Escape to predictable schedule
Escape to tangibles, stereotypy, and attention

Standard

Ignore/Alone
Escape
Tangible
Play

Problem behavior per min

Sessions

Problem behavior per min

Sessions
Treatment Comparison Results

IISCA-based treatment

- Problem behavior per min
- BL
- FCT + EXT
- Escape to tangibles, attention
- FCR

Standard-based treatment

- Problem behavior per min
- BL
- FCT + EXT
- Emily
- Jeff

Sessions

Emily

Jeff

Sessions

IISCA-based treatment

- Problem behavior per min
- BL
- FCT + EXT
- Escape to rituals

Standard-based treatment

- Problem behavior per min
- BL
- FCT + EXT
- Emily
- Jeff

Sessions
The supposed problem(s) with the IISCA

Imprecision

1. Do not know the specific operant class to which any particular topography of problem behavior belongs.
2. Do not know whether some part(s) of the synthesized contingency are irrelevant
3. Do not know whether behavior is maintained by pos or neg sr
4. Sometimes cannot neatly describe or compartmentalize the controlling variables

Consider the effective action without knowing these things

Imprecision is not Unique to the IISCA

Partly synthesized contingencies populate all SFA conditions

(be on lookout for review paper by J. Slaton)

The supposed precision of a SFA is an illusion
“All models are wrong; the practical question is how wrong do they have to be to not be useful.”

Box & Draper, 1987, p. 424

Recognize the Historical Significance of the Standard Functional Analysis

- Moved us from behavior modification to behavior analysis
  - Taught us our professional humility

- Inspired us to transcend description and prediction to control
  - Allowed us to be scientific practitioners

- Showed us how to create stable and controlled baselines
  - Allowed us to discover and enhance treatments
To achieve the humane promise of a function-based treatment and a socially valid outcome

From a functional analysis:

✓ What must I know?
✓ What do I not need to know?
That which I must know via my functional analysis:

✓ That I can reliably turn problem behavior off with the presentation of the reinforcers

✓ That I can reliably turn problem behavior on with the presentation of the evocative events

✓ And that the reinforcers and evocative events were identified by other people relevant to the behaver

That which I do not need to know via my functional analysis:

✓ The single operant function of each problem behavior

✓ Whether problem behavior is maintained by positive or negative reinforcement (see Michael, Behaviorism, 1975)

✓ Whether some element of a synthesized contingency is a “true” contingency or merely a “false positive”
That which I do not need to know via my functional analysis:

✓ The single operant function of each problem behavior
✓ Whether problem behavior is maintained by positive or negative reinforcement (see Michael, Behaviorism, 1975)
✓ Whether some element of a synthesized contingency is a “true” contingency or merely a “false positive”
✓ Whether I can neatly compartmentalize the operation in the analysis into a tidy generic class of reinforcement
  (e.g., social positive, social negative, attn, tang, esc, etc.)

The original gold standard
General and socially validated behavior change by relevant people in relevant contexts

I achieve it:
  by being able to turn on and off problem behavior in an analysis informed by caregivers

I achieve it with an IISCA

Baer, Wolf, & Risley, 1968
For more information go to:
www.practicalfunctionalassessment.com

Many thanks to my Practical Functional Assessment Research and Practice group:

Nick Vanselow, Sandy Jin, Laura Hanratty, Joana Santiago,
Mahshid Ghaemmaghami, Joshua Jessel, Jessica Slaton,
Robin Landa, Christy Warner, Shannon Ward, Tanya Mouzakes
Adithyan Rajaraman, Ellen Gage, Holly Gover, & Kelsey Ruppel

For some of the latest research in the IISCA at APBA:

Time and Place: 10:00-11:30 Room:
Chair: Dr. Jessica Slaton
Presenters: J. Slaton, A, Rajaraman,
K. Ruppel, & R. Landa
Symposium Title: On the Validity and Generality of the Interview-Informed Synthesized Contingency Analysis (IISCA)

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