Mystifying Mentalisms: Executive Functioning Redefined

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Applied Behavioral Learning Services
Evaluating New Theories

• Scientific

• Behavior analytic

• Useful
In God we trust.
All others must provide data.
All swans are white.
All swans are NOT white.
A scientific theory is one which can in principle be falsified.

The theory has to make verifiable predictions about evidence.

If the statements aren't strong, then the theory fits any evidence, and is unfalsifiable.
Seven Dimensions (Baer, Wolf, Risley, 1968)

• Applied
• Behavioral
• Analytic
• Technological
• Conceptual
• Effective
• Generality
The 7 Dimensions of Applied Behavior Analysis
Baer, Wolf, & Risley (1968)

Behavioral
Focus on observable and measurable behavior

Applied
Make a difference of social importance

Analytic
Prove relationships between behavior and the environment

Conceptually Systematic
Relate procedures to behavioral principles

Technological
Procedures are clear and replicable

Effective
Behavioral techniques result in socially significant change

Generality
Results are durable and long lasting

To help you remember: G.E.T. A.C.A.B.

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Applied

Theories have to attempt to solve problems of demonstrated social importance.
Behavioral

They have to address measurable behavior.
ABA interventions require an objective demonstration that the procedures caused the effect.
Technological

Interventions are described in operational terms.
Conceptual

Interventions need to be derived from behavioral theories.
Effective Interventions must produce desired change in behavior.
Behavior change should be durable and long lasting.
Is a theory useful and parsimonious?

• Range of Convenience: Does a theory explain a wide range of phenomena?

• Focus of Convenience: Does a theory explain particular phenomena more effectively than other theories?
Executive Functions

• Neurologically-based skills involving mental control and self-regulation.

• A set of processes that have to do with managing oneself and one's resources in order to achieve a goal.

• The conductor or “boss” of all cognitive processes.
Executive Functioning
Foundational Executive Behavior

- Attending (Attention)
- Inhibiting (Inhibition)
- Remembering (Memory)
- Shifting Sets (Flexibility)
- Regulating Emotions (Emotional Regulation)
Complex Executive Behavior

• Managing Time
• Organizing Space
• Planning
• Managing Mood
• Managing Energy
• Problem Solving
Verbs vs. Nouns

Executive Behavior is a complex set of processes, not unitary things.
Nominal Fallacy?

“What caused the earthquake”
“A sudden movement of rocks beneath the earth’s surface”
Attention

• *The mental faculty of considering or taking notice of something or someone.*

• Behaviorally: A response to a stimuli?
Attention is not a unitary construct

David Palmer:
“Attention is a complex set of behavioral processes."
Joint Attention (Dube, MacDonald, Mansfield, Holcomb, & Ahearn, 2004)

• Context: Presence of familiar adult
• Interesting event
• RESPONSE: Gaze shift
• REINFORCER: Adult attending Stimuli functions as SD
• Event related behavior
• REINFORCERS Event-related consequences & Adult-mediated consequences
Attention Training

• Contrived
  • Discrete Trials
  • Joint attention training

• Naturalistic
  • Inclusion support
  • Comprehension checks
Attention Training: Structured Teaching
Inhibition

• Behavioral Inhibition: Following rules in the absence of immediate contingencies.

• Cognitive inhibition: Selectively attending to or ignoring information.
We Challenged Kids to Stay Completely Still | Don't You Dare | HiHo Kids
EXECUTIVE FUNCTION SKILLS TIED TO ATTENTION

CHILDREN WITH ADHD
Cognitive Inhibition Training

• Contrived
  • Simon Says
  • Red Light/Green/Light
  • Duck Duck Goose
  • Reading every underlined word silently
  • Signing a song substituting a word with another

• Naturalistic
  • Contingency management
Verbal Operants

• **Receptive Language Response:** Following instructions or complying with the mands of others (e.g., touching a picture of a dog when asked to touch a dog).

• **Echoic:** Repeating what is heard (e.g., saying “dog” after someone else says “dog”).

• **Tact:** Naming or identifying objects, actions, or events (e.g., saying “dog” because you see a dog).

• **Intraverbal:** Answering questions or conversations where your words are controlled by other words (e.g., saying dog when someone else says “Lassie is a...”).
Memory

• The faculty by which the mind stores and remembers information. The “scratch pad” of the brain.

• Behaviorally: An intraverbal with a time delay.
• Inside Out - "Memory Workers / Lost / Long-Term Memory / Tripledent Gum
Verbal Memory Training

• Contrived
  • Auditory Memory

• Naturalistic
  • School-home log
Flexibility (Shifting Sets)

- *The ability to shift attention from one task to another.*

- Behaviorally: The ability to transition between one set of stimulus control conditions or rules to another set of stimulus control conditions or rules.
Wisconsin Card Sorting Test
Flexibility (Shifting Sets) Training

• Contrived
  • Loose training
  • Indiscriminable contingencies
  • No schedules!
  • Changing rules of games
  • Backward day

• Naturalistic
  • Rehearse Snafu
Emotional Regulation

• Discriminating
  • Behaving
  • Feeling
  • Thinking
• Talking
Behavior

Anything that you do!
Coping Skills

COOL DOWN STRATEGIES

2. Balloon Breathing: Slow, deep breaths.
3. Boomerang Bird: Stop and think how your actions will affect yourself and others.
4. Mighty Eagle: An adult that can step in to help.
Emotion Wheel
Emotions
Emotion

Angry

Hit

Hit

Angry

Angry
Coping Skills

1. I feel super
2. Things are ok. I can handle it.
3. I am not fully in control. I need to take deep breaths.
4. I am losing control. I need a Chiliville break to calm down.
5. I am not safe. I need to leave before anyone gets hurt.
Thinking vs. Talking

Thought Bubble

I HAVE TO KEEP MY FEELINGS IN MY THOUGHT BUBBLE IF...

- It's not the right TIME
- It's not the right PLACE
- It's not the right AUDIENCE
- Or if it might HURT someone's feelings or get me in TROUBLE

I CAN:
✓ Write it down for later
✓ Pick a better place to talk
✓ Make an appointment to talk
✓ Ask for help from someone else

OR

Speech Bubble

I CAN TALK ABOUT MY FEELINGS IF IT'S...

✓ A good TIME (for everyone)
✓ A good PLACE
✓ To the right PERSON
✓ It's good for EVERYONE

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Complex Executive Behavior

- Time Management
- Spatial Organization
- Planning
- Mood Management
- Energy Management
How do we teach Complex Executive Behavior?

• Pre-requisites
  • Language
  • Instructional Control (concept of the teacher)
  • Foundational Executive Behaviors

• Explain the contingency

• Practice Executive Behavior

• Ensure maintenance through motivation
•What is motivation???
Motivation

<table>
<thead>
<tr>
<th>APPLY</th>
<th>REMOVE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavior</strong></td>
<td><strong>Positive</strong></td>
</tr>
<tr>
<td>Increases</td>
<td>Reinforcement</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Behavior</strong></td>
<td><strong>Positive</strong></td>
</tr>
<tr>
<td>Decreases</td>
<td>Punishment</td>
</tr>
</tbody>
</table>
### Self Management

<table>
<thead>
<tr>
<th></th>
<th>Homeroom</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>SSR</th>
</tr>
</thead>
</table>
|                      | S | T | S | T | S | T | S | T | S   | T 
| I responded correctly and politely to help from instructional assistant and teachers. | 1 | 1 | 1 | 1 | 1 | 1 | Drop | Drop | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| I interacted appropriately with friends: (compliments, questions, and comments). | 1 | 1 | 1 | 1 | 1 | 1 | Drop | Drop | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| I did not have rude, bossy, or gross behaviors. | 1 | 1 | 1 | 1 | 1 | Drop | Drop | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| I paid attention to my lessons. | 1 | 1 | 1 | 1 | 1 | Drop | Drop | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |

**Today’s Total:** 28  
**Possible Points:** 35
• I responded correctly and politely to help from instructional assistants and teachers.
• I interacted appropriately with friends (compliments, questions, and comments).
• I did not have rude or disrespectful behaviors.
• I paid attention to my lessons.
Percentage of Perfect Periods & Frequency of Disrespectful Behavior

Self-Management Data

Percentage of Perfect Periods
Disrespectful Behavior
Time Management

• Determine amount of time available
• Estimate how much time an activity would take
• Determine if you have enough time
• Use time effectively via multitasking
• Prioritization
Getting Things Done: The Art of Stress Free Productivity

By David Allen
The consistent, unproductive preoccupation with all the things we have to do is the single largest consumer of time and energy.

-Kerry Gleeson
Why are things in your mind?

• You have not decided what the outcome should be.
• You have not operationalized the next action step.
• You have not developed effective reminder systems.
Workflow Management

1. Capture
2. Clarify
3. Organize
4. Reflect
5. Engage
“stuff”

- In-basket
- What is it?
- Is it actionable?
  - no
  - Trash
  - Someday/maybe
    - thicker file, hold for review
  - Reference
    - treat like work required
  - What’s the next action?
    - Will it take less than 2 minutes?
      - yes
        - Do it
          - Waiting (for someone else to do)
          - Calendar (to do at a specified time)
          - Next actions (to do as soon as I can)
        - Delegate it
      - no
        - Defer it
Inbox (Capture) Tools

• A Physical In-Tray
• Device Inbox

Get it out of your head → Inbox → Action
Two Minute Rule

• <2 minutes, do it!

• >2 minutes
  • Schedule
  • Delegate
Project List

• A project is any result that can be accomplished within a year that requires more than one action step.

• Must be in digital format if collaboration with others is required.
Project List

• Next Actions
• Waiting For
• Done

• MUST BE REVIEWED ONCE A WEEK
Choosing Actions in the Moment

• Context
• Time Available
• Energy available
• Mood
Teaching Workflow to Teens

• Make a list of assignments.

• Estimate time for each.

• What is easiest? What is already started?

• How much time do I have?
Teaching Workflow to Teens

• How is my energy?
• 90-100: On fire
• 60-89: Pretty good
• 40-59: Sort of kind of good
• 0-39: Not good
Teaching Workflow to Teens

- How is my mood?
- 90-100: Super happy
- 60-89: Pretty happy
- 40-59: Kind of sad or angry
- 0-39: Not in a good place
Stress and Executive Functioning

• Stress impairs working memory and cognitive flexibility (Shields, Sazma, Yonelinas, 2016)
Stress and Executive Functioning

• Cognitive inhibition, which is sometimes called *interference control*, refers to selectively attending to or ignoring information.

• Stress-induced enhancements in inhibition have often used tasks requiring response inhibition (Schwabe et al., 2013),
Stress and Executive Functioning

• Studies that have found stress-induced impairments have often used tasks requiring cognitive inhibition (Sänger et al., 2014; Vinski and Watter, 2013).
Complex Executive Behavior

The set of behaviors that result in the desired modification of one’s own behavior.
Self-Management

• The personal and systematic application of behavioral principles that result in the desired modification of one’s own behavior (Cooper, Heron, & Heward, 1987).
Self Control: Skinner, Science and Human Behavior (1953)

• Controlling responses are used by the individual to influence his/her controlled responses.
Guest Speaker
Skinner on Counseling
Physical Interventions

• The manipulation of the environment to make some responses easier to physically execute and others more difficult.
Changing the stimulus

• Changing behavior by manipulating the occasion for behavior (stimulus control).
Manipulating emotional conditions

- Manipulating emotional conditions in order to induce certain ways of responding via classic conditioning processes.
Reinforcement

• Using reinforcement to increase the probability of occurrence of a desired behavior
Using aversive stimulation

- Aversive stimulation is used as a means of increasing or decreasing the likelihood of target behavior.
Reinforcement and Punishment
## Reinforcement and Punishment

<table>
<thead>
<tr>
<th>Reinforcement</th>
<th>Punishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject to satiation</td>
<td>Subject to habituation</td>
</tr>
<tr>
<td>Must be varied</td>
<td>Variety is ethically constrained</td>
</tr>
<tr>
<td>Will generalize to the setting and person delivering</td>
<td>Will generalize to the setting and person delivering</td>
</tr>
</tbody>
</table>
• Homer Simpson not listening
Variety

- Good work!
- Sensational!
- Wow!
- Terrific!
- You’re on the right track now!
- You’ve got it made.
- Excellent!
- Super!
- That’s right!
- That’s good.
- I’m very proud of you.
- You’re really working hard today.
- You are very good at that.
- That’s coming along nicely.
- Marvelous!
- That’s it!
- Nothing can stop you now.
- That’s the way to do it.
- That’s much, much better!
- Exactly
- Keep it up!
- You’ve just about got it.
- Fantastic!
- Now you’ve figured it out.
- Great!
- I knew you could do it.
- Congratulations!
- Outstanding!
A conditioned response to one object is exhibited in the presence of similar stimuli.
• Modern Family - Tableau Vivant
Doing Something Else

• Differential Reinforcement
DRO: Differential Reinforcement of Other Behavior

The Rf is delivered following intervals of time in which the problem behavior does NOT occur.
DRA: Differential Reinforcement of Alternative Behavior

Alternatives that serve the same function as the problematic behavior are taught and reinforced. These alternatives may include functional communication the child can use to express the need that is motivating the behavior.
DRL: Differential Reinforcement of Low Rates of Responding

The reinforcer is delivered when the rate of behavior is decreased to a criterion level.
Depriving and satiating

• Manipulating our own behavior by changing states of deprivation and satiation.
• Natural Environment Teaching NET
Executive Functioning Services

• Grid A: Consultation by a Behavior Analyst, SLP, or a School Psychologist

• Grid B: Push in services by Behavior Technician, Behavior Analyst SLP, or a School Psychologist

• Grid C: Pull out services by Behavior Analyst, SLP, or a School Psychologist
IEP Objectives

• Child will make a plan for homework assignments and projects by identifying the amount of time he expects each task to take, execute each task, identify how much time it actually took, and reflect upon corrective action to take in the future as evidenced by teacher and parent checks three times per week.
IEP Objectives

• Child will use a self-monitoring rubric to check assignments for accuracy and completion with increased independence as evidenced by teacher and parent checks three times per week.
IEP Objectives

• Given multi-step instructions, tasks, or projects, Child will demonstrate planning skills by independently initiating the instruction within 5 minutes and completing 90% of the task accurately in 80% of opportunities.
IEP Objectives

• The student will use a self-monitoring rubric to check assignments for accuracy and completion with increased independence as evidenced by teacher and parent checks three times per week.
IEP Objectives

• Given multi-step instructions, tasks, or projects, the student will demonstrate planning skills by independently initiating the instruction within 5 minutes and completing 90% of the task accurately in 80% of opportunities.
IEP Objectives

• The student will make a plan for homework assignments and projects by identifying the amount of time he expects each task to take, execute each task, identify how much time it actually took, and reflect upon corrective action to take in the future as evidenced by teacher and parent checks three times per week.
IEP Objectives

• Given a difficult task, the student will indicate that it is difficult, explain why some tasks are easy/difficult for him, and request help as evidenced by self-monitoring and teacher checks.
IEP Objectives

• Given support and visual cues, the student will create a system for organizing personal items in his locker, desk, and binder.
IEP Objectives

• Given a specific work checking routine, the student will identify errors in his work without teacher assistance with 80% accuracy across six consecutive days.
IEP Objectives

The student will use a structured recipe or routine for generating new ideas to respond successfully to open ended assignments 4/5 opportunities as evidenced by permanent products.
IEP Objectives

Given concrete training and visual supports, the student will appropriately label “flexible” and “stuck” behaviors in himself 80% of opportunities across one quarter.
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