USING ASSESSMENT-BASED INSTRUCTION TO IMPROVE EARLY INTERVENTION OUTCOMES

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EARLY INTERVENTION

• Individualized goals based on assessment results
• Individualized teaching strategies
  • Ideal strategy differs across children
EARLY INTERVENTION

• Careful monitoring of learning
  • Frequent review of data

• **Goal**: Increase learning efficiency
WHAT IF THE CHILD ISN’T LEARNING?

• What we do most often:
  • Modify current intervention
    • Add error correction, use differential reinforcement
  • Select and evaluate a new intervention
WHAT COULD WE DO MORE OFTEN?

• Ask:
  • What interventions could we use to teach this skill?

• Do:
  • Identify and assess interventions that we could use to teach a skill
OVERVIEW

1. Assessment-based instruction
   - Brief review of the literature
   - Provide an example of an assessment

2. Assessment-based instruction to address barriers
   - Describe how to design assessments to address barriers to learning in practice
ASSESSMENT-BASED INSTRUCTION

• Growing interest in assessment-based instruction

• Children respond differently to components of intervention (Coon & Miguel, 2012; Hollobaugh & Ingvarsson, 2011; Kodak, McGhan & Lerman, 2013)

• Common in practice to use same intervention with all clients
ASSESSMENT-BASED INSTRUCTION

• Assessment to identify differential reinforcement procedures (Boudreau et al., 2015)

• Assessment of prompts during receptive identification training (Kodak et al., 2012)

• Assessment of prompt fading strategies (Seaver & Bourret, 2014)

• Assessment of error-correction procedures (McGhan & Lerman, 2013)
METHOD

- Purpose: Identify the most efficient error-correction procedure
- 5 Participants
  - Medical or educational diagnosis of ASD
  - Aged 4-10 years
DEPENDENT VARIABLES

• Efficacy
  • Correct responses and meeting mastery

• Efficiency
  • Sessions-to-mastery
  • Exposures-to-mastery
  • Minutes-to-mastery
METHOD (CONT.)

• Experimental Design

  • Adapted Alternating Treatments Design (Sindelar, Rosenberg, & Wilson, 1985)
    • Unique set of targets for each intervention
    • All targets are the same types of skills
    • Targets are equated across interventions
PROCEDURE

Baseline → 0-s Sessions → Treatment Comparison
METHOD

- Baseline
  - Present materials and wait 5 s for response
  - No feedback for correct or incorrect responses
- Purpose: determine that targets require instruction
0-S SESSION

How

how
Awesome!

0-S SESSION

how
PROCEDURE

Baseline → 0-s Sessions → Treatment Comparison
GENERAL PROCEDURE

- Session
  - 9 or 10 trials
- Mastery Criteria
  - 2 consecutive sessions with 8/9 or 90% correct unprompted responses
GENERAL PROCEDURE

- Correct unprompted response
  - All conditions
  - Praise and a preferred toy for 20 s

- Correct prompted response
  - Some conditions
  - Praise and tangible until praise only after differential reinforcement criterion
TREATMENT COMPARISON

• 5 Conditions:

LEAST
1. Differential Reinforcement
2. Demonstration
3. Prompt Delay

MOST
4. Single Response Repetition
5. Multiple Response Repetition
PROCEDURE

• Differential Reinforcement
  • Control condition
  • No feedback following incorrect response
DIFFERENTIAL REINFORCEMENT
PROCEDURE

- Demonstration
  - Vocal model
  - No programmed consequences for echoics
  - Similar to model condition (McGhan & Lerman, 2013)
DEMONSTRATION

how

Ball
DEMONSTRATION

How
PROCEDURE

• Prompt Delay
• Vocal model
• Echoic → preferred item
PROMPT DELAY

Cap

how
PROMPT DELAY

How

how
PROMPT DELAY

How

how
Nice job!

PROMPT DELAY

how
PROCEDURE

• Single Response Repetition
  • One 0-s error-correction trial
How

How

how
SINGLE RESPONSE REPETITION

How

how
SINGLE RESPONSE REPETITION

Yep!

how
SINGLE RESPONSE REPETITION

How

how

Error-Correction Trial
SINGLE RESPONSE REPETITION

Error-Correction Trial
Amazing!

how

Error-Correction Trial
PROCEDURE

• Multiple Response Repetition
  • Three 0-s error-correction trials
Mop

how
MULTIPLE RESPONSE REPETITION

How

how
How

MULTIPLE RESPONSE REPETITION
Mhmm!

MULTIPLE RESPONSE REPETITION
MULTIPLE RESPONSE REPETITION

Error-Correction Trial #1

How

how
MULTIPLE RESPONSE REPETITION

Error-Correction Trial #1
MULTIPLE RESPONSE REPETITION

Good!

how

Error-Correction Trial #1
How

how

Error-Correction Trial #2
MULTIPLE RESPONSE REPETITION

Error-Correction Trial #2
Good!

Error-Correction Trial #2
MULTIPLE RESPONSE REPETITION

How

Error-Correction Trial #3

how
MULTIPLE RESPONSE REPETITION

Error-Correction Trial #3
MULTIPLE RESPONSE REPETITION

Way to go!

how

Error-Correction Trial #3
## EFFICIENCY ACROSS PARTICIPANTS

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ASSESSMENT: UTILITY AND IMPLICATIONS

• Model of assessment-based instruction to identify error-correction procedures for individual clients
• Small differences in efficiency
• Maximizing “bang for your buck”
WORDS ACQUIRED IN ONE YEAR

Multiple Response Repetition

Single Response Repetition

Prompt Delay

Demonstration
WORDS ACQUIRED IN ONE YEAR

Multiple Response Repetition: 95
Single Response Repetition
Prompt Delay
Demonstration
WORDS ACQUIRED IN ONE YEAR

- Multiple Response Repetition: 95 words
- Single Response Repetition: 110 words
- Prompt Delay
- Demonstration
WORDS ACQUIRED IN ONE YEAR

- Multiple Response Repetition: 95 words
- Single Response Repetition: 110 words
- Prompt Delay: 170 words
- Demonstration: (no value shown)
WORDS ACQUIRED IN ONE YEAR

- Multiple Response Repetition: 95 words
- Single Response Repetition: 110 words
- Prompt Delay: 170 words
- Demonstration: 240 words
ASSESSMENTS TO ADDRESS BARRIERS TO LEARNING
MEASURING CURRENT SKILLS

- Commercially available assessments
  - ABLLS-R
  - VB-MAPP
    - Barriers Assessment
BARRIERS DURING INSTRUCTION

• Few reinforcers
• Scrolling through responses
• Prompt dependence
  • Common issue encountered in my own practice
PROMPT DEPENDENCE

- Challenging to distinguish between skill or performance deficit
  - Assessments- might not be able to provide prompts
  - Intervention- mostly prompted responses
PROMPT DEPENDENCE DURING SKILL ACQUISITION

• Cividini-Moto and Ahearn (2013)
  • Compared three types of differential reinforcement for independent and prompted responses to Portuguese sight words
    • Non-differential reinforcement
    • High preference/moderate preference (effective for 3 participant)
    • High preference/extinction (effective for 1 participant)
PURPOSE

• Develop an assessment to compare three interventions to treat prompt dependence
PARTICIPANT

• 13-year-old male with ASD
  • Mands using short sentences
  • Mastered least 3000 tacts
  • Limited intraverbals
  • History of prompt dependence
    • Mands
    • Daily living skills
SETTING AND TASK

- Private area of home
- Target skill: 2-word tacts
  - Could tact animals (lion, dog)
  - Could tact actions (sitting, walking)
  - Did not combine animal and action tacts
<table>
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<td>TEST</td>
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MATRIX TRAINING

- Teach 3 animal-action tacts per condition
  - 9-trial session
- Probe all untrained animal-action tacts (6 total)
  - 6-trial session
- No prompts or reinforcement
  - Interspersed mastered tasks with reinforcement about every 3 trials
TREATMENT CONDITIONS

• Differential reinforcement
  • Full vocal model prompt (“Lion runs”)
  • Highly preferred/extinction

• Vocal prompt fading
  • Prompt faded across sessions (“Zebra sits,” “Zebra s,” “Ze”)
  • Highly preferred/highly preferred

• Wait
  • No prompt
  • Highly preferred

• Control
  • No prompts or reinforcement
METHOD

• Mastery criterion: 2 consecutive sessions with independent correct responses at or above 8/9

• Discontinuation criterion: Double the number of sessions required to reach mastery criterion in first condition mastered

• Implement intervention from the first condition mastered with not-yet-mastered stimulus sets
RESULTS AND DISCUSSION

• Differential reinforcement required fewest sessions to mastery

• Differential reinforcement effective in all other conditions

• Generalization to untrained animal-action tacts

• Some prompt dependence in vocal prompt-fading condition

• Consistent error pattern in wait condition
USE OF ASSESSMENT RESULTS

- Use differential reinforcement in other contexts where prompt dependence is observed
  - Mands in kitchen*
  - Tooth brushing
  - Hygiene routines
CONCLUSIONS

- Assessment-based instruction can help identify effective and efficient interventions
- Preferable to trial-and-error selection of instructional strategies
- Consistent with an evidence-based approach to intervention selection
- Assessment time offset by learning of new skills
- Can increase the efficiency of learning over time
COLLABORATORS

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QUESTIONS?

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