Why Errors Matter: The Importance of Effective Error Analysis and Correction in Applied Behaviour Analysis

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Agenda

- Literature review
- Two types of error corrections: Modified Mathetics and Discrimination Error Correction
- Training staff to implement Error Correction Procedures
- Goals for today

Definition

- What is an Error Correction Procedure?
  - "An error-correction procedure is one component of instruction that has a direct impact on the learner's rate of acquisition, the amount of time spent in instruction, and the intrusiveness of the procedure for the learner" (Kodak et al., 2016, pg. 532).
  - Critical component of our teaching
  - Error correction (e/c) procedures should be part of our staff training when implementing programs

Literature Review

- Drevno et al. (1994) evaluated the effectiveness of modelling with active student participation (imitation) vs. modelling without active student participation (no imitation) with science facts. Found students in active participation group acquired facts more rapidly.
- Barbetta, Heron, and Heward (1993) compared effects of error correction procedures where students had active participation vs. no-response for sight word instruction. For all 6 participants, the active student response condition resulted in more words read correctly.

Different Types of E/C Procedures

- Turan, Moroz, and Croteau (2012) compared 2 e/c procedures: Independent probe (IP) and delay across four individuals with Autism Spectrum Disorder (ASD). Found 2 out of 3 participants had quicker acquisition in delay condition, one participant had quicker acquisition in the IP condition than delay.
- Smith, Mruzek, Wheat, and Hughes (2006) examined 3 procedures; error statement (saying no), modelling correct response and No Feedback across six students. All found to be effective.
- Fabrizio and Pahl (2007) examined Word Supply and Discrimination e/c with one girl with ASD. Found Word Supply was more effective in improving oral learning.

Conclusion…

- Error corrections are necessary for learning.
- Different types of e/c procedures.
- The most effective e/c procedure will depend on the needs of the student and should be individualized.

Two Types of Error Corrections

- Modified Mathetics Error Corrections
  - "I don't know" or no response
- Discrimination Error Correction
  - consistent incorrect answer

Sight Words

- Student is learning 5 different sight words (e.g., in, little, make, am, like)
- Student consistently does not respond to *"little"*

MODIFIED MATHETICS ERROR CORRECTION

Modified Mathetics Error Correction

If incorrect at any step, return to step 1

1. Model — Present cue and models correct response
2. Test — Represent the cue
3. Extend — Test with novel example
4. Extend — Test another novel example
5. Return to curriculum

Applying to the "Little" Problem

1. Model — My turn "*little*"
2. Test — T: Your turn, "what word?" S: "*little*"
3. Extend — Test with novel example
4. Extend — Test another novel example
5. Return to curriculum

little

Little

LITTLE

Expressive Labelling

- Discrimination e/c
- Student is learning 5 different labels (e.g. cow, horse, pig, chicken, sheep)
- Student consistently says *"cow"* when he sees *"horse"*

Discrimination Error Correction

"horse"

For the answer you want ...

If incorrect at any step, return to step 1

1. Model — Present cue and models correct response
2. Test — Represent the cue
3. Extend — Test with novel example
4. Extend — Test another novel example

Discrimination Error Correction

"cow"

For the answer you got ...

If incorrect at any step, return to step 1

1. Model — Present cue and models correct response
2. Test — Represent the cue
3. Extend — Test with novel example
4. Extend — Test another novel example

Discrimination Error Correction

Answer you want:		Answer you got:
1. Model	Present cue and models correct response	1. Model
2. Test	Represent the cue	2. Test
3. Extend	Test with novel example	3. Extend
4. Extend	Test with another novel example	4. Extend

5. Juxtapose the two
6. Return to curriculum

Discrimination Error Correction



1. Model
2. Test
3. Extend
4. Extend



5. Juxtapose the two
6. Return to curriculum

Test Your Knowledge

- Student always says mom's name when asked "what's your dad's name?" Which error correction should you use?

DISCRIMINATION ERROR CORRECTION !!

Test Your Knowledge

- Student looks away when you present the target. Which error correction do you use?

MODIFIED MATHETICS ERROR CORRECTION !!

Test Your Knowledge

- When teaching a new label, the student shows inconsistent errors. Which error correction should you use?

MODIFIED MATHETICS ERROR CORRECTION !!

Test Your Knowledge

- Tommy guesses the answers when you introduce a new set of math facts. Which error correction procedure should you use?

MODIFIED MATHETICS ERROR CORRECTION !!

Test Your Knowledge

- You're teaching Sally the lyrics to wheels on the bus. When you get to "all through the town", you pause and wait for Sally to say the last word. Sally says "down" instead of "town". Which error correction procedure should you use?

DISCRIMINATION ERROR CORRECTION !!

Using Behavioural Skills Training to Teach Staff Two Error Correction Procedures

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Purpose

- To teach staff to implement two error correction procedures using a Behavioural Skills Training (BST) package.
- To measure staff acceptability of the BST package designed to increase job skills.

Method

- Participants -
  - Four Behaviour Interventionists with no prior history of similar error correction training.
  - All had a minimum of one year and a maximum of four years of experience.
- Definition - number of correct steps implemented in the task analysis for each type of error correction.
- Data Collection - percentage of correct steps implemented correctly (number of correct steps over total number of possible steps).

Experimental Design and Condition

- AB Design with Follow-up -
  - Baseline
  - Training
  - Post-Training/Maintenance - 2 and 4 week probes
- Acceptability Measure - A 10 question survey using a 5-point Likert scale to assess the usefulness, enjoyably, and feasibility of the training procedures

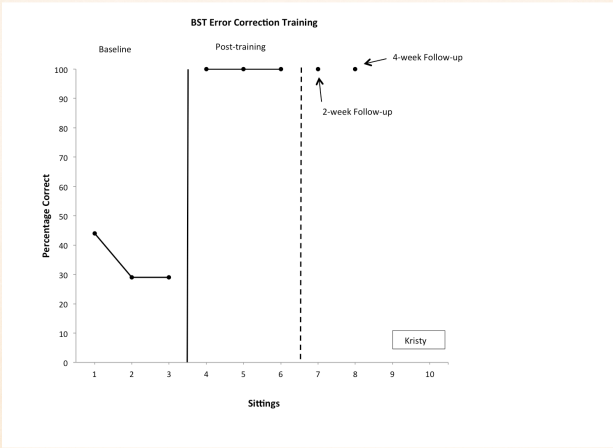
BST Training Package

- Rationale and Instructions
- Modeling
- Role-play
- Mastery criterion -
  - 3 error corrections at 80% or above

Results

- During baseline- no participant performed at the mastery criterion of 80% of correct responses on three consecutive error corrections
- Training- All participants met mastery criterion following implementation of the BST package
- Three of four participants completed at least one follow-up, results maintained at criterion.

Results



Discussion

- Procedure was effective and efficient (e.g., all participants met criterion in 2.5 hours of training).
- Future research could measure client behaviour to assess effectiveness of the error correction procedures.
- All participants rated procedure as highly acceptable and recommended to other staff.

Closing Remarks..

- Effective e/c take practice, so just try them
- An effective e/c - under 2 min
- Different procedures will be effective for different learners
- Thank you! Questions?

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