Using Motor Learning Principles to Train Speech: Motor Learning Guided Approach  
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Principles of Motor Learning (Duffy, 1995)

- Drill is essential
- Initial instruction and cueing matters
- Self-learning is valuable
- Specificity of training
- Practice schedule
  - Blocked
  - Random
- Type of feedback
  - Knowledge of Performance (KP)
  - Knowledge of Response (KR)
- Goal: Automaticity!

Motor Learning would be indicated IF ________________________________.

Take home message:

- Motor Learning Principles can be applied in speech treatment (depends on goal)
  - Selecting targets (specificity)
  - Practice schedule (blocked / random)
  - Amount and type of feedback (KR / KP)
- Examples:
  - Motor Learning Guided
  - Script Training

References:
Fountain, Lasker, & Stierwalt. (2007). Improving speech production in profound apraxia using MLG and AAC. A poster session presented at the ASHA Annual Convention, Boston, MA.


Stierwalt, Hageman & LaPointe. (2004). The motor learning guided approach to apraxia of speech. Symposium conducted at the meeting of the World Congress of the International Association of Logopedics and Phoniatrics, Brisbane, Australia.


Approach #1: Motor Learning Guided (Stierwalt, Hageman & LaPointe, 2004)

- Goal of Treatment: __________________________________________

- Therefore, stimuli should be ____________________________________

- What happens during 4 second “wait”? ____________________________

Step 1: Say together, then
   a. Client repeats once immediately, waits 4 sec
   b-d. Client repeats 3 times, with 4 second pauses between
      Clinician says it, waits 4 seconds, provides # correct out of 4 attempts.

Step 2: (random order) Clinician will verbally read card, wait 4 seconds, give client card to read
   a. Client repeats once immediately, waits 4 sec
   b-d. Client repeats 3 times, with 4 second pauses between
      Clinician says it, waits 4 seconds, provides # correct out of 4 attempts.

Step 3: (random order) Client will read card aloud (Clinician prompts him if wrong)
   a. Client repeats once immediately, waits 4 sec
   b-d. Client repeats 3 times, with 4 second pauses between
      Clinician says it, waits 4 seconds, provides # correct out of 4 attempts.
      * Client will say it again without looking at card.
      * Client will say it in response to a questions.

Step 4: Repeat steps 1-3 with a different set of 5 stimulus cards

Step 5: Using both sets of cards (10 stimuli total) in random order, client will read aloud:
   a. Client repeats once, immediately, waits 4 sec
   b-d. Client repeats 3 times, with 4 second pauses between
      Clinician says it, waits 4 seconds, provides # correct out of 4 attempts.

11 Accurate and immediate (minimal distortion ok)
10 Delayed less than 2 seconds
 9 Delay with groping/posturing

8 Not readily accurate (you have to consider for intelligibility), but acceptable approximation
7 Not readily accurate, but acceptable, AND delayed more than 2 seconds

6 Needs stimuli repeated
5 Self-corrects

4 Incomplete. Similar characteristics (e.g., # syllables) but not the target
3 Error
2 Error AND 2+ second delay
1 Perseveration (produces previous response)
0 No response
<table>
<thead>
<tr>
<th>Tell me about __</th>
<th>Sponge Bob Square Pants</th>
<th>Barbie Dolls</th>
<th>Wizard of Oz</th>
<th>Freaky Friday</th>
</tr>
</thead>
</table>

### Step 1: In unison
- a.
- b.
- c.
- d.

### Step 2: clinician, 4 seconds, then client
- a.
- b.
- c.
- d.

### Step 3: client read card
- a.
- b.
- c.
- d.

### In response to question
- a.
- a.
- a.
**Approach #2: Script Training (Youmans, Holland, Munoz & Bourgeois, 2005)**

**Overall Procedure:**
1. Client-generated, relevant topics
2. Client and clinician write short scripts
3. **Scripts divided into word/short phrases for training***
   4. 45-minute sessions, 2 times per week
   5. Practice with tape recording at home 2 times per day, for at least 15 minutes per practice session
   6. Script phrases were trained using a cuing hierarchy
   7. 3 Scripts were practiced in a cumulative fashion

*Training each word/phrase: (can move on to next phrase if ~90% accurate)*

**PART A: Acquisition (Blocked practice)**
1. Clinician modeled word/phrase
2. Client produced phrase in unison with clinician many times
3. Clinician gradually faded participation
4. Client independently produced phrase with cue card in place, 5-10 times.
5. Client produced phrase independently without cue card 5-10 times.
6. Conversation breaks were taken throughout session

**PART B: Maintenance when phrase is ~90% accurate (Random Practice)**
1. Elicit phrases in random order
2. Practice in conversation

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Please reference as: