Speech Teaching

Critical skills, sequences, and procedures to improve vocal responding

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SPEECH 101

MUSCLE

MOVEMENT

Reinforcing value of those speech sounds increases

Speech sounds produced

It sounds "right"

Observes sound

Stimulus Stimulus Pairing Procedure
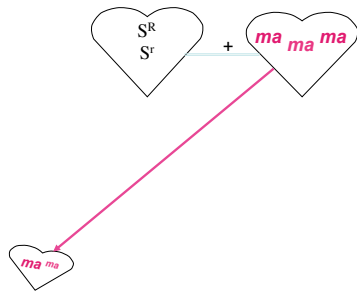
$$S^R$$
$$S^r$$
$$+ \quad ma \;\; ma \;\; ma$$

$$ma \;\; ma$$

Video

Speech training
Where to start?

① **Establish preference**
For people
For voices

Increase vocalizations
Frequency
Loudness (dB)
Variability

② **Train Verbal Skills**
(discriminated vocalizations)
Mand
Tact
Echoic
Intraverbal

Slide 1

Early speech learners | **Sophisticated talkers**

Non-algorithmic
VB problem solving
math word probs, remembering

Intraverbal

Tact

Complex
language

Elem ops

Mands
(vocal)

1

Echoic

| Echoic | — | Self-echoic |

Operants

Slide 2

Typical beginning sound-making

Imperfect, but lots of "raw material"

Reinforced

Varied forms (lots of different sounds)
Easy to shape
Fluency leads to rapid speech

ECHOIC → tact
ECHOIC → intraverbal
ECHOIC → mand

Slide 3
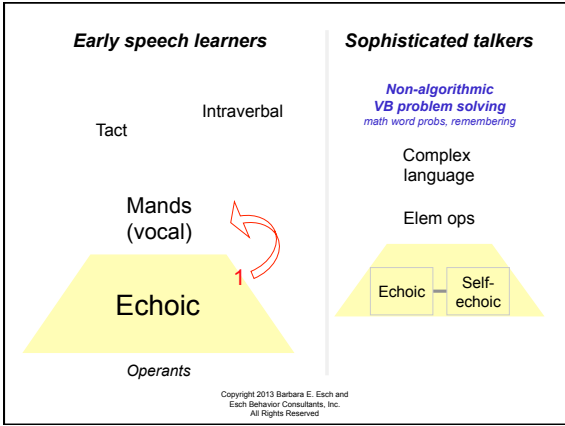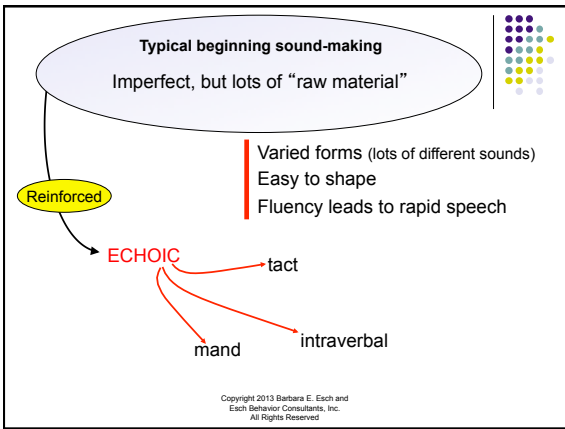
Video

The Verbal Behavior Milestones Assessment
and Placement Program (*VB-MAPP*)

Mark L. Sundberg, Ph.D.
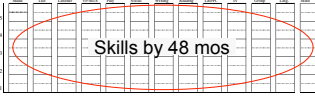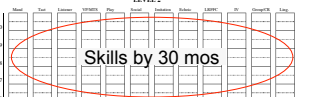

VB-MAPP Milestones

Echoic

Vocal

Imitation

Play

Social

Request

Label

Listener, early & advc'd

Answer/ask questions

Group/class routines

Linguistic

VP/MTS

Reading, Writing, Math

Skills by 48 mos

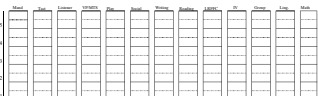LEVEL 2

Skills by 30 mos

LEVEL 1

Skills by 18 mos

Skills by 30 mos

LEVEL 2

"Baby talk"

Skills by 18 mos

LEVEL 1

Vocal practice

ECHOIC

Video

Skills by 48 mos
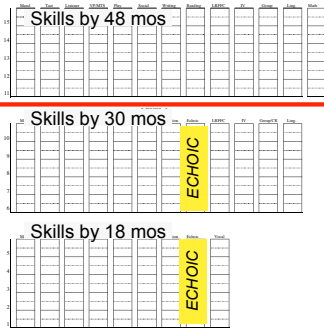
Conversation

Speech phrases
True words
Jargon "baby talk"
Connected strings
Multi-syllables
Varied syllables
Repeated syllables
Simple syllables
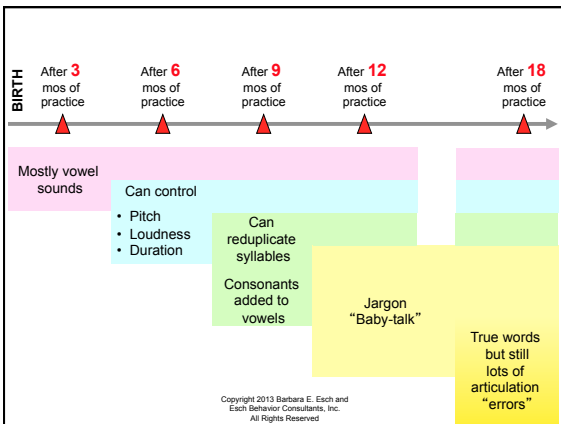Varied loudness
Varied pitch
Varied duration
Vowels

Skills by 30 mos

ECHOIC

Skills by 18 mos

ECHOIC

BIRTH

After **3** mos of practice

After **6** mos of practice

After **9** mos of practice

After **12** mos of practice

After **18** mos of practice

Mostly vowel sounds

Can control
- Pitch
- Loudness
- Duration

Can reduplicate syllables

Consonants added to vowels

Jargon "Baby-talk"

True words but still lots of articulation "errors"

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Video

Speech teaching issues

No real speech	✧ Need more vocals to work with
Few vocals	
No echoic	*Informal* — Play activities that pair adult speech with fun (look-at-me activities like Peek-a-boo) / *Formal* — SSP, Voc Variability Track voc baseline (freq & topography)

Some weak speech	✧ Reinforce current form as mand
But not under VB control	✧ Improve form through echoic

Speech under VB control	✧ Improve form through echoic
But artic is unclear	

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What's the speech requirement for...

Echoic — Precision.

Vocal Mand — Intelligibility.

If weak, shape.

This allows you to reinforce precision.

If weak, reinforce current "best."
Or model an easier response & reinforce.
Continue echoic work.

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SPEECH 201

[wɛlkəm tu ðʌ wɝkʃɑp]

[glæd ju kʊd kʌm təde]

[lɛts hæv sʌm fʌn wɪθ fənɛtɪks]

Phonetics Cue Card

Handout

Practice

Handout

Starting a speech program

- ❑ Identify available sounds
- ❑ Test ECH of available sounds
- ❑ List potential reinforcers
- ❑ Identify speech targets
- ❑ Program a high # of daily ECH trials *and*
- ❑ Program a high # of daily MAND trials
- ❑ Modify (upgrade) targets

Starting a speech program

- ❑ Identify available sounds (several options for how to)

Vocalization Baseline
Sample Form

Handout

Speech Target Selection Worksheet
Sample Form

Handout

Starting a speech program

❑ Test ECH of available sounds

The Early Echoic Skills Assessment (EESA)

Group 1	Simple and reduplicated syllables
Group 2	2-syllable combinations
Group 3	3-syllable combinations
Group 4	Prosody in phrases
Group 5	Prosody: pitch, loudness, duration

1st Priority

Vocalizations	Vowels & Diphthongs
Duration Loudness Pitch	/a/ /i/ /u/

2nd Priority

Simple syllables	Syllables w/ blends
ba ba - ba ba - bi	st- sk- sp-
mi mi - mi ma - mi	-nt -lt -st
reduplicated alternated	

3rd Priority

Voice-Voiceless distinctions

Sequence source: Ling, D. (1976)

EESA

Early Echoic Skills Assessment (EESA) scoring form

Starting a speech program

❑ List potential reinforcers

---

go

up

juice

daddy

bubbles

Speech Target Selection Worksheet

Available sounds				Hi Pref Items	Possible targets (refer to v-c chart)
c	**v**	**c**	**v**		
b		b		chips	
	ee		ee	juice	
p?					
t		t		music	
	oo		oo		

Starting a speech program

❑ Identify speech target syllables

Syllables	
Words	
Sentences	

	Syllables	Sounds	Words

Starting a speech program

❑ Identify speech targets

> Match potential reinforcers with
>
> syllables under ECH control

If syllables aren't yet under ECH control:
- select _____
- use procedures to increase overall voc frequencies (e.g., SSP)

For possible targets, refer to:

- *SAS* Checklist
- Vowel-consonant charts

Then write bottom-to-top teaching formats

(If you need help, consult an SLP for specific targets)

One possible hierarchy* for teaching "shoe"

sh-oo

soo

too

Start here   oo

English Phonemes	Phonetic symbol	Sounds like
Plosives	p b	
	t d	
	k g	
Continuous, restricted airflow	s z	
	f v	
	θ ð	
	ʃ ʒ	shoe
	tʃ dʒ	

Starting a speech program

❑ Program a high number of daily ECH trials

and

❑ Program a high number of daily MAND trials

Echoic-to-Mand Card
Sample Form

Handout

Starting a speech program

❑ Modify (upgrade) targets

> As new reinforcers are ID'd
>
> As speech skills are acquired

Speech Acquisition Sequence Checklist

Handout

Speech Acquisition Sequence (*SAS*)

1 **Vocalizations**

2 **Vowels**

3 **Consonants** 1-syll combos

4 **Consonants** 2-syll combos

5 **Consonant blends** 1-syll combos

Q: Why teach vowels first?

Consonants: correct
Vowels: wrong

Consonants: wrong
Vowels: correct

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Vowel *"Neighborhoods"*

Handout

Vowel-Consonant Card

Handout

Echoic Phrases List

Handout

Video

SPEECH 301

Present?

Correct?

Priority
Neighborhood
Alt
Any

Establish
syllable(s) as
VB

Decision Worksheet

Handout

Shaping: reinforce the best "available" sounds

puzzle

Child can't make target response

Reinforce "steps"
  (easier responses)

puh

	k æ t	**Target syllable**
	t ʌ t	*Current syllable - "tuht"*
Vowel	Wrong	

fiss for **fish**	*oos* for **juice**	*ih* for **chip**
f ɪ ʃ	dʒ u s	tʃ ɪ p
f ɪ s	☐ u s	☐ ɪ ☐

back — k, g / ŋ / r / ʃ tʃ dʒ / t d l n / s z / p, b f, v m th w

Analyzing errors to select targets

Says "uh" for /dɔg/

d ɔ g

☐ ʌ ☐

Says "uh" for /dɔg/

Is vowel correct?

No   Yes

Is consonant correct?

No

	(4) Shape unvoiced /k/ to voiced /g/
	(3) Shape /d/ from /b/
	(2) Add next missing consonant *placeholder*
	(1) Vowel in place; add consonant(s)

Speech instruction "errors"

- Disconnecting phrase components
  - I. Want. Cookie.
    - If they can't repeat the *phrase syllable #,* you need easier mand approximations & work on echoic syllables

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- Echoic model too-high or unnatural pitch
- Overemphasis on consonant precision (distorts the signal)

  Dog-guh   *"k-dy"* ('candy')   mmmmmm-ah

- Unnatural separation of sounds

  buh-loo (blue)   *chuh-air* (chair)

- Repeating phonemes & reinforcing non-functional segments

  C-c-c-c-candy   buhhh-uh-uh-bles

- ECH drill, without a plan for mand application

- Multiple speech teachers

- Setting specific ECH targets too early

  – a range of targets might contact reinforcement more easily

BEYOND SPEECH 301

water   "*wadder*"

Ice cream

aɪ s k r i m

---

aɪ s k r i m

aɪ w a n t aɪ s k r i m p l i z

Mommy and Daddy

m ɑ m i ɛ n d æ d ɪ

m ɑ m i ɛ n k e d ɪ

Mommy and Katie

Co-articulation

Mommy and Daddy

m ɑ m i ɛ **n d** æ d ɪ

| back of tongue | k | n d | front tongue tip |

m ɑ m i ɛ **n k** e d ɪ

Mommy and Katie

Tongue placement *to produce any sound is **affected by** requirements of **adjacent phoneme** positions*

Co-articulation

Mike᾽s cat may not stay

m ɑɪ **k s k** æ t m e n ɑ **t s t** e

| back of tongue | k | s | s t | front tongue tip |

Early speech training
Summary

If low vocal frequency, low variability, weak or no echoic

Select temporary response mode
Big 5 criteria

Develop strong MO for people & things

Increase vocals
Frequency & Variability
SSP & Voc Var
In play, fun interactions

If consistent echoic responses occur (even if topographically weak)

Do mand training
1. Reinforce all early vocal mand attempts
2. Set 1st targets at "low bar" - raise bar as sequential targets are M᾽d
3. Reinforce any vocals near current target

Shape echoics (precision)
to support mand training