Auditory Training

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- Auditory Training Goal

- To develop their ability to:

1) Recognize speech using the auditory signal
2) Interpret auditory experiences

- Training help HI to use their residual hearing to their max. capability.
- During Training (No watching for mouth movements)
- HI should be fitted with (amplification) *before* starting auditory training program (ATP)

- Hearing aid
- Cochlear implant

- To enhance a person's ability to utilize whatever sound is available.

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Candidacy For Auditory Training

- AT provided to:

- Children who are prelingually deafened

prelingually or profound HL may have

no memory of how speech sounds —> can't draw in memory

limited language skills or world knowledge —> can't interpreting auditory signal

During auditory training —-> learn to attend to auditory speech signal —> learn to relate the auditory signal to their vocabulary.

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- Children who are postlingually deafened

larger vocabulary
greater familiarity with grammar
better able to deduce meaning from auditory speech signal

- more residual hearing (mid & high frequencies) —> good progress in auditory skill development (could begin with more difficult tasks)
- less common for *adult to receive auditory training.

* those who have experienced a recent change in hearing status.

- Speech through listening devices may sound different from how they remember it, and they must learn to interpret what they hear.

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Four Design Principles

- These principles are followed in developing and ordering training objectives. (in auditory training curricula)

A. Auditory Skill

B. Stimuli

C. Activity Type

D. Difficulty Level

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Auditory Skill Level

- Results from an *audiological assessment* used to assign a student to <u>one of the four auditory skill level</u>.

- Sound awareness

- Sound discrimination

- Identification

- Comprehension

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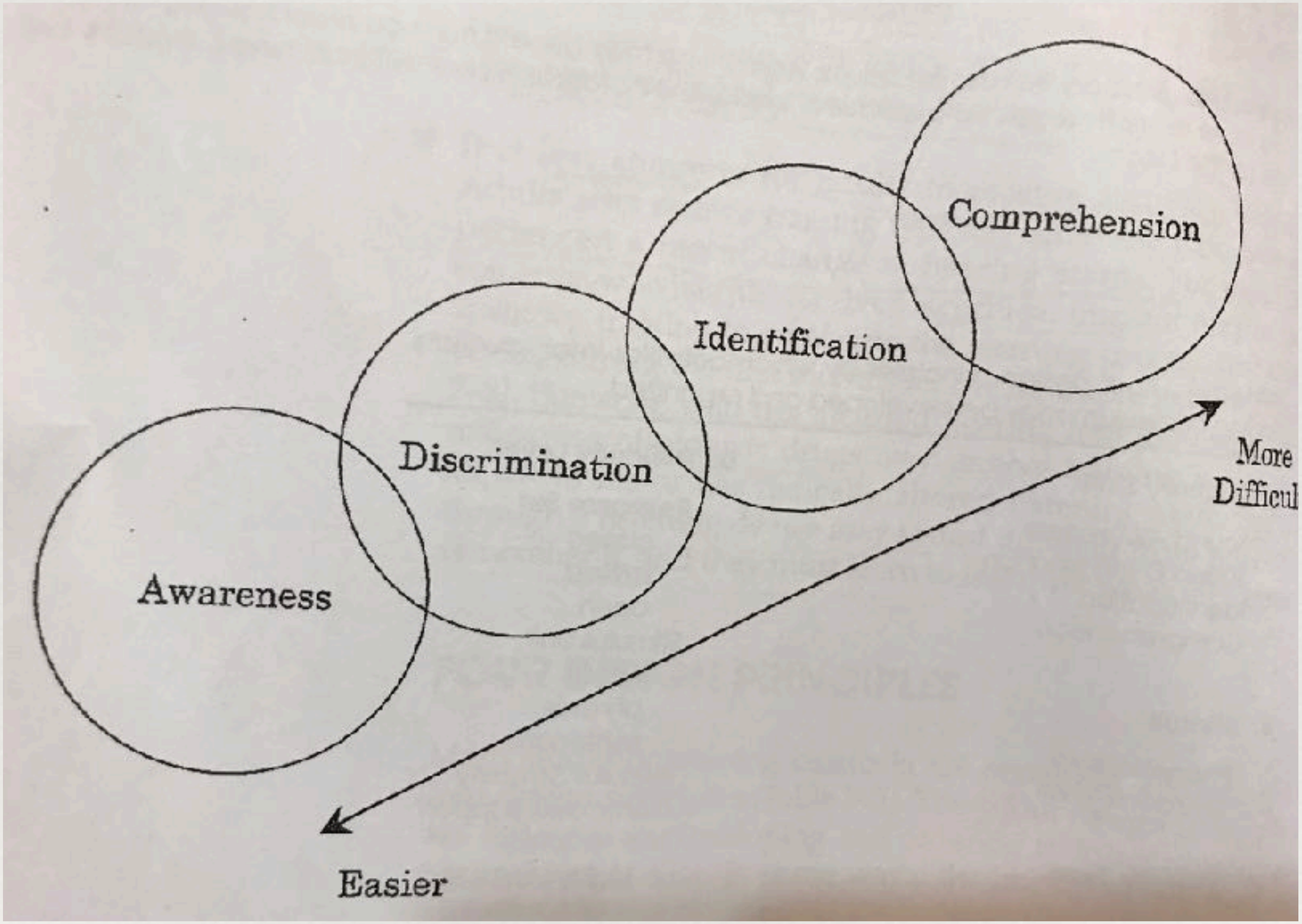

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- Levels are not discrete benchmarks in auditory development (represent a continuum of skills)
- Sound awareness: is the most basic auditory skill level, awareness of when a sound is present and when it is not (absent).
- Sound discrimination: is a basic auditory skill level in which the listener is able to till weather two sounds are different or the same.
- Identification: is a basic auditory skill level in which the listener is able to label some auditory stimuli.
- Comprehension: is a higher auditory skill level in which the listener is able to understand the meaning of spoken massage.

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		Hearing Impairment	
HI-1	أن يقوم المراجع بإدراك الأصوات البيئية	Client will detect sound (environmental).	HI-1
HI-2	أن يقوم المراجع بإدراك/ مقطع /إسم /كلمة	Client will detect sound (syllables/words).	HI-2
HI-3	أن يقوم المراجع بإدراك أصوات لنغ الستة	Client will detect sound (six Ling sounds).	HI-3
HI-4	أن يقوم المراجع بإدراك توقف الصوت بيئي/كلام	Client will detect cessation of sound (speech/environmental).	HI-4
HI-5	أن يقوم المراجع بالتمييز بين الكلام /اصوات بيئية /ربط بالمعنى	Client will discriminate speech vs. Environmental sounds.	HI-5
HI-6	أن يقوم المراجع بتحديد إتجاه مصدر الصوت	Client will localize source of sound.	HI-6
HI-7	أن يقوم المراجع بتمييز مدة الصوت (أصوات تعلم الإستماع)	Client will discriminate sound duration (learning to listen sounds).	HI-7
HI-8	أن يقوم المراجع بتمييز مدة الصوت باستخدام أصوات العلة	Client will discriminate sound duration (vowels).	HI-8
HI-9	أن يقوم المراجع بتمييز مدة الصوت باستخدام كلمات تختلف بعدد المقاطع	Client will discriminate sound duration (words that differ in number of syllables).	HI-9
HI-10	أن يقوم المراجع بتمييز مدة الصوت باستخدام ثنائيات دنيا تختلف بطول صوت العلة فقط	Client will discriminate sound duration (minimal pairs that differ in vowel duration).	HI-10
HI-11	أن يقوم المراجع بتمييز ثلاث مستويات لشدة الصوت	Client will discriminate vocal intensity (3 levels).	HI-11
HI-12	أن يقوم المراجع بتمييز خمس مستويات لشدة الصوت	Client will discriminate sound intensity (5 levels).	HI-12
HI-13	أن يقوم المراجع بتمييز طبقات الصوت	Client will discriminate voice pitches.	HI-13
HI-14	أن يقوم المراجع بتمييز النبر على مستوى الكلمة	Client will discriminate stress at the word level.	HI-14
HI-15	أن يقوم المراجع بتمييز النمط التنغيمي وربطه بأنواع الكلام	Client will discriminate among intonational patterns.	HI-15
HI-16	أن يقوم المراجع بالتمييز بين كلمات مكونة منمقطع واحد تختلف بكل الأصوات	Client will discriminate among monosyllabic words that differ in all sounds.	HI-16
HI-17	أن يقوم المراجع بالتمييز بين كلمات تتكون من مقطع واحد تختلف بأصوات العلة	Client will discriminate among vowels in monosyallabic words (differ in place of articulation).	HI-17

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HI-18	أن يقوم المراجع بالتمييز بين أصوات كلامية منفصلة تختلف بالجهر وطريقة ومكان خروج الصوت	Client will auditorily discriminate among consonants that differ in place, manner and voicing in isolation.	HI-18
HI-19	أن يقوم المراجع بالتمييز بين أصوات كلامية تختلف بالجهر وطريقة ومكان خروج الصوت باستخدام الثنائيات الدنيا	Client will auditorily discriminate among consonant sounds that differ in place, manner and voicing using minimal pairs.	HI-19
HI-20	أن يقوم المراجع بالتمييز بين أصوات كلامية منفصلة تختلف بالجهر وطريقة خروج الصوت فقط	Client will auditorily discriminate among consonants that differ in manner and voicing in isolation.	HI-20
HI-21	أن يقوم المراجع بالتمييز بين أصوات كلامية تختلف بالجهر وطريقة خروج الصوت باستخدام الثنائيات الدنيا	Client will auditorily discriminate among consonants that differ in manner and voicing using minimal pairs	HI-21
HI-22	أن يقوم المراجع بالتمييز بين أصوات كلامية منفصلة تختلف بالجهر ومكان خروج الصوت فقط	Client will auditorily discriminate among consonants that differ in place and voicing in isolation.	HI-22
HI-23	أن يقوم المراجع بالتمييز بين أصوات كلامية تختلف بالجهر ومكان خروج الصوت باستخدام الثنائيات الدنيا	Client will auditorily discriminate among consonants that differ in place and voicing using minimal pairs.	HI-23
HI-24	أن يقوم المراجع بالتمييز بين أصوات كلامية منفصلة تختلف بالجهر فقط	Client will auditorily discriminate among consonants that differ in voicing in isolation.	HI-24
HI-25	أن يقوم المراجع بالتمييز بين أصوات كلامية تختلف بالجهر فقط باستخدام الثنائيات الدنيا	Client will auditorily discriminate among consonants that differ in voicing using minimal pairs.	HI-25
HI-26	أن يقوم المراجع بالتمييز بين أصوات كلامية منفصلة تختلف بالتفخيم فقط	Client will auditorily discriminate among consonants that differ in emphasis in isolation.	HI-26
HI-27	أن يقوم المراجع بالتمييز بين أصوات كلامية تختلف بالتفخيم فقط باستخدام الثنائيات الدنيا	Client will auditorily discriminate among consonants that differ in emphasis using minimal pairs.	HI-27
HI-28	أن يقوم المراجع بالتمييز بين أصوات العلة المتشابهة بمكان خروج الصوت باستخدام الثنائيات الدنيا	Client will auditorily discriminate among vowels (same place of articulation) using words.	HI-28
HI-29	أن يقوم المراجع بتكرار مقطع واحد سمعياً للأصوات التي يستطيع نطقه	Client will auditorily repeat one syllable (for sounds he/she can produce).	HI-29
HI-30	أن يقوم المراجع بتكرار سلسلة من مقطعين سمعياً للأصوات التي يستطيع نطقها	Client will auditorily repeat a series of two syllables (for sounds he/she can produce)	HI-30

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HI-31	أن يقوم المراجع بتكرار سلسلة من ثلاثة مقاطع سمعياً للأصوات التي يستطيع نطقه	Client will auditorily repeat a series of three syllables (for sounds he/she can produce).	HI-31
HI-32	أن يقوم المراجع بتنفيذ أمر مكون من خطوة واحدة بمتغير واحد في نهاية الجملة	Client will auditorily perform one step directions with one variable at the end of the sentence.	HI-32
HI-33	أن يقوم المراجع بتنفيذ أمر مكون من خطوة واحدة بمتغير واحد في وسط الجملة	Client will auditorily perform one step directions with one variable in the middle of the sentence.	HI-33
HI-34	أن يقوم المراجع بتنفيذ أمر مكون من خطوة واحدة واحدة بمتغيرين	Client will auditorily perform one step directions with two variable.	HI-34
HI-35	أن يقوم المراجع بتنفيذ سلسلة من أمرين بمتغير واحد لكل أمر	Client will auditorily perform two step directions with one variable each.	HI-35
HI-36	أن يقوم المراجع بتنفيذ سلسلة من أمرين بمتغيرين على الأقل لكل أمر	Client will auditorily perform two step directions with at least 2 variables each.	HI-36
HI-37	أن يقوم المراجع بالتعرف على أشياء تنتمي لمجموعات معنوية مختلفة عن طريق الوصف	Client will auditorily identify items by description (different semantic categories).	HI-37
HI-38	أن يقوم المراجع بالتعرف على أشياء تنتمي لنفس المجموعات المعنوية عن طريق الوصف	Client will auditorily identify items by description (same semantic category).	HI-38
HI-39	أن يقوم المراجع بتنفيذ أمر مكون من خطوة واحدة واحدة يتضمن الاستعانة بالوصف	Client will auditorily perform one step directions that involve description.	HI-39
HI-40	أن يقوم المراجع بإجابة أسئلة باستخدام الصور	Client will auditorily answer questions using pictures.	HI-40
HI-41	أن يقوم المراجع بإعادة جمل لغاية 3 كلمات باستخدام الصور	Client will auditorily repeat up to 3 words utterances using pictures.	HI-41
HI-42	أن يقوم المراجع بأن يقوم المريض بإجابة أسئلة تتعلق بموضوع باستخدام صور	Client will auditorily answer questions pertaining to a novel topic using pictures.	HI-42
HI-43	أن يقوم المراجع بإجابة أسئلة تتعلق بموضوع بدون استخدام صور	Client will auditorily answer questions pertaining to a novel topic without pictures.	HI-43
HI-44	أن يقوم المراجع بإتباع أوامر مدرسية تتكون من خطوة واحدة	Client will auditorily perform one step classroom directions.	HI-44

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HI-45	أن يقوم المراجع بإتباع سلسلة أوامر مدرسية مكونة من خطوتين	Client will auditorily perform two step classroom directions.	HI-45
HI-46	أن يقوم المراجع بإتباع سلسلة أوامر مدرسية مكونة من ثلاث خطوات	Client will auditorily perform multi step classroom directions.	HI-46
HI-47	أن يقوم المراجع بتكرار جمل تتكون من 3-4 كلمات باستخدام أسلوب التتبع السمعي	Client will perform auditory Speech Tracking in spoken language (3-4 words).	HI-47
HI-48	أن يقوم المراجع بتكرار جمل تتكون من 5-6 كلمات باستخدام أسلوب التتبع السمعي	Client will perform auditory Speech Tracking in spoken language (5-6 words).	HI-48
HI-49	أن يقوم المراجع بتكرار جمل مقروءة/بالفصحى تتكون من 3-4 كلمات باستخدام أسلوب التتبع السمعي	Client will perform auditory speech tracking in classical/written language (3-4 words).	HI-49
HI-50	أن يقوم المراجع بتكرار جمل مقروءة/بالفصحى تتكون من 5-6 كلمات باستخدام أسلوب التتبع السمعي	Client will perform auditory Speech Tracking in classical/written language (5-6 words).	HI-50
HI-51	أن يقوم المراجع بالتتبع السمعي للصوت الصادر من الأجهزة (مسجل/ هاتف	Client will perform auditory Speech Tracking using multimedia.	HI-51
HI-52	أن يقوم المراجع بالتتبع السمعي للصوت بوجود الضجيج خفيف	Client will perform auditory Speech Tracking with noisy background.	HI-52

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DASL
Developmental Approach to Successful Listening

- An example of auditory training curricula for children
- To determine if AT program will *begin* from sound awareness *or* from more advanced listening task.
- Examples of DASL's Sound awareness level :

- Drum (low frequency environmental sounds)

- Speech in structured setting , (/ba/)

- Environmental sound stimuli (noise maker) p. 167

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Stimulus Unit

- Pertains to the stimuli used in the training activity.
- Most auditory training curricula includes two of training activities:

- **Analytic** (focused on segments of speech signal; e.i, phonemes or syllables)—> emphasis on utilizing acoustic cues (presence or absence of voicing in the word)

goat vs. coat

- No focus on gaining meaning from the speech signal

- Presumably < ability to recognize segments in isolation —> will carry over to real-world comm. tasks —–> allowing them to recognize connected discourse better>.

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- **synthetic** (individuals learn to recognize the meaning of an utterance, even if they do not recognize every sound or word)

- It is continuum b/n analytic and synthetic

- In the same lesson, a student might perform analytic training activities and then switch to synthetic activities.

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Activity Kind

- Component activities organized in regards “to the nature of the training activity” to formal or informal
- Formal training activities

- Occur during designated times of the day

- In one-on-one lesson (ct. and c/n)

- or in small group of students

- Highly structured

- May involve drill.

- Ct. may receive reinforcements

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- Informal training activity:

- Occurs as part of the daily routine

- Often incorporated into other activities (conv. or academic learning)

- The optimal auditory training program includes both formal & informal training activities.

- Very young children should receive —> informal training primarily (functional).

- Programs for adults tend to include more —> formal than informal activities.

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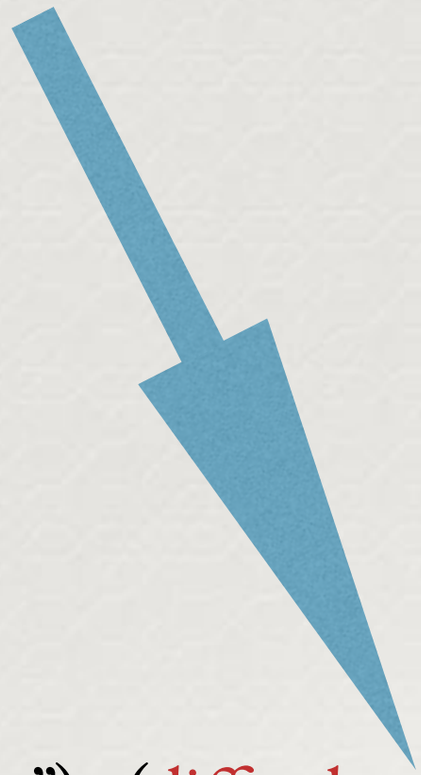
Hierarchy Of Listening Tasks

- For a child who has reached the comprehension stage:

- Familiar expressions/ common phrases (easier stimuli)
- Single direction/two directions
- Classroom instructions
- Sequencing three directions
- Multielements directions
- Sequencing three events in a story
- Answering questions about a story (closed vs open)
- Comprehension activities/exercises in noisy environment
- Onomatopoeic words (used as interjections “Buzz”, “Boom”) (difficult stimuli)



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المحاكاة الصوتية أو حكاية الصوت (من حكى الشيء أي أتى بمثله وحكي القول أي نقله)، هي مشابهة بين الصوت الناتج عن لفظ بعض **الكلمات** والأصوات المسموعة في الطبيعة، مثل الضوضاء أو أصوات الحيوانات، أي أن صوت كلمة ما مأخوذ من صوت حقيقي لحدث طبيعي. ... أصوات الحيوان: صهيل الخيل

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swoosh 	bzzzzzz 	crack 
squish 	ring 	quack 
boink 	bam 	moooo 
rrrrrrrr 	aaahh 	wooof 

ink saving Eco

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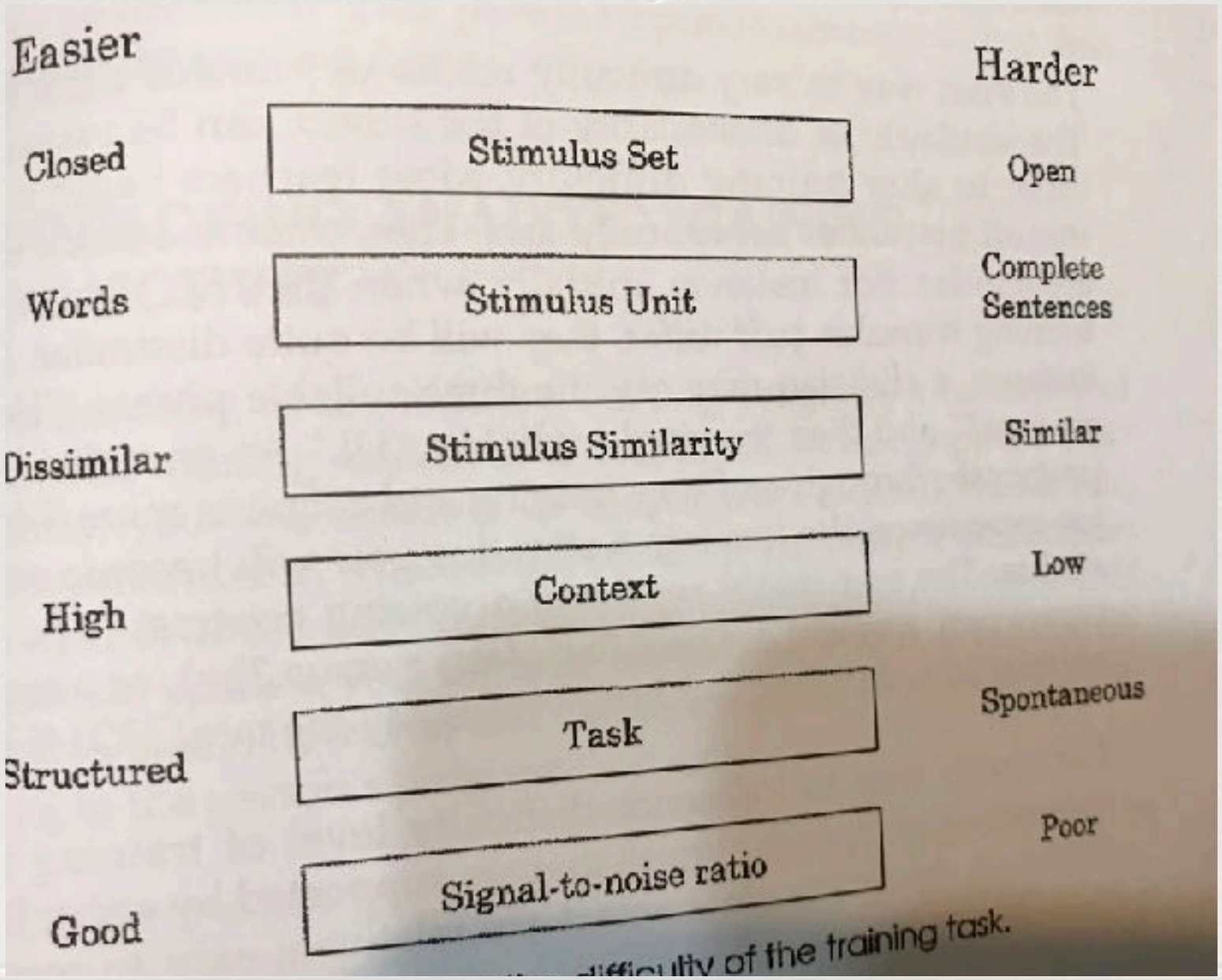
Difficulty Level



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Difficulty Level

- There is at least six ways to *vary* training difficulty and advance students from one skill level to the next.

- **Stimuli size**

close (limited set of known choices 'numbers')

limited (Halloween words)

open (wide assortment of words)

- **Stimulus unit** (from words vs. from sentences)

- **Stimulus similarity** (from similar to dissimilar voicing, vowel, stress contrast)

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Difficulty Level cont.

- **Context** (speech stimuli supported by linguistic or environmental context)

- **Task** (structured vs. spontaneous)

- **Signal-to-noise ratio** (listening environment or presentation)

noise background

speaking softly vs. less softly

moving closer vs. farther from student

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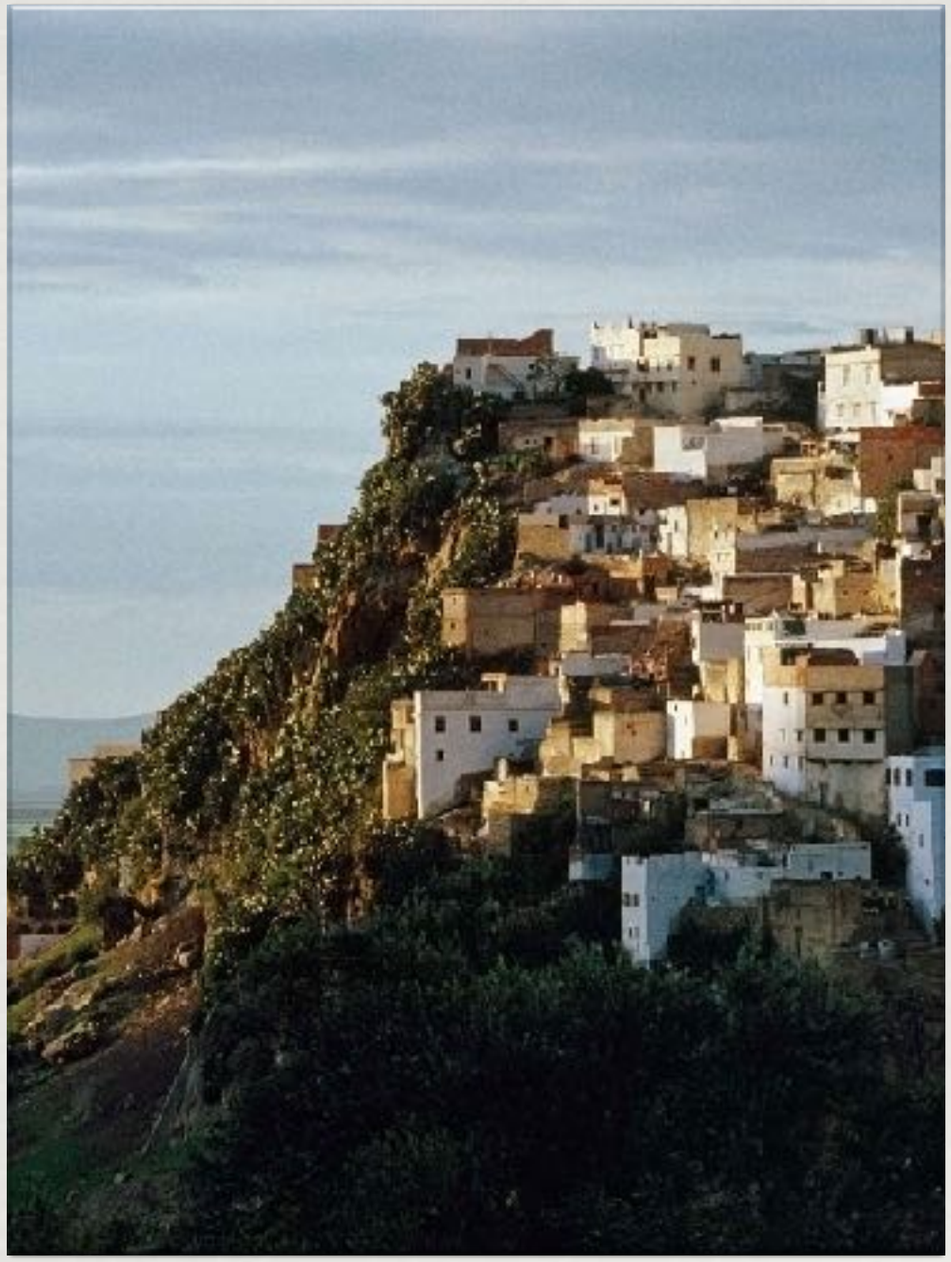
Developing Analytic Training Objectives



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- At the onset of an auditory training program, a hierarchy of specific training objectives is developed.
- Can be modified over time, according to the person's progress.
- If has a few auditory skills —> begins with developing an awareness.
- Awareness —> gross discrimination (loudness, pitch, rate)
- Start with nonspeech stimuli (table 7-3) —> discrimination (environmental) —> analytic & synthetic training

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- Two kinds of training objectives targeted with **analytic** training: vowels (more intense, more energy) and consonants

1. Vowels
   - More intensity in lower frequencies, thus more audible to most
   - Vowel formants: back, front, central, high, mid, low
2. Consonants
   - Focus on place, manner and voicing characteristics

- Consider/ review acoustic properties for both V and Cons. to design training *objectives* and *materials*

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Table 7-3. Objects that may teach children about the relationship between action and sound. Developing the concept that sound has meaning and action often results in sound production. A young child who has had little experience with the auditory signal may need to develop these concepts before moving on to more challenging auditory tasks. By manipulating such items as listed in this table, the youngster may develop these important concepts.

- Hammer and peg toy
- Toy drum
- Piano
- Vacuum cleaner
- Computerized game
- Water faucet
- Hair dryer
- Whistle

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- Loudness: Strike a xylophone (soft vs loud)
- Pitch: play rising octave (ask: going up?, or gaining down?)
- Rate: Strike a rapid series of notes (slow vs. fast)

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Vowel Auditory Training Objectives

- Why we train? To contrast vowels that have different formants.
- **Vowel formants** are resonances in the vocal tract that cause some frequencies to have more energy than other frequencies.
- The way you shape your mouth when you speak a vowel determines the vowel formants.
- Each vowel can be distinguished by at least two characteristic formants (first and second formants)
- The combination of the two formants —> cause each vowel to sound different from every other vowel.

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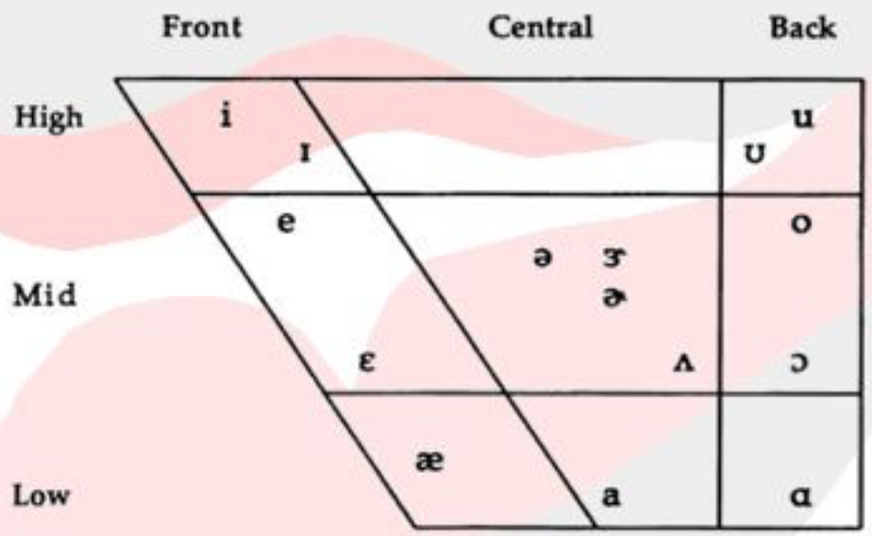
Analytic Vowel Training

- Initial training of highly contrastive features
  - i u a
  - Differ in BOTH formant structure and on the mouth
  - Back vs front vowels
    - I i e ae front vowels
    - u U o back vowels



Every vowel in English has a unique articulatory position based on the combination of tongue height, tongue advancement, and lip rounding.

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- Two conditions affect the formants:

- How wide you open your mouth *determines* the first formant. (vowel that has a high-frequency first format)

* The vowel /a/ *w* open mouth —> produce high frequency first formant (/sod/).

* The vowel /u/ *w* more closed mouth —> produce low-frequency first formant (/blu/.

- The tongue body position (forward vs. backward) *determines* the second formant.

* The vowel /i/ *w* tongue more forward —> produce higher frequency second formant (/seed/)

* The vowel /u/ *w* tongue more backward —> produce lower frequency second formant

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Table 7–4. Typical first and second formant frequency values for the vowels of English, spoken by an adult male talker.

Vowel	Example	First Formant (Hz)	Second Formant (Hz)
/i/	heat	270	2290
/ɪ/	hit	390	1990
/ɛ/	head	530	1840
/æ/	hat	660	1720
/a/	hot	730	1090
/ɔ/	hall	570	840
/ʊ/	hook	440	1020
/u/	who	300	870
/ʌ/	hut	640	1190
/ə/	hurt	490	1350

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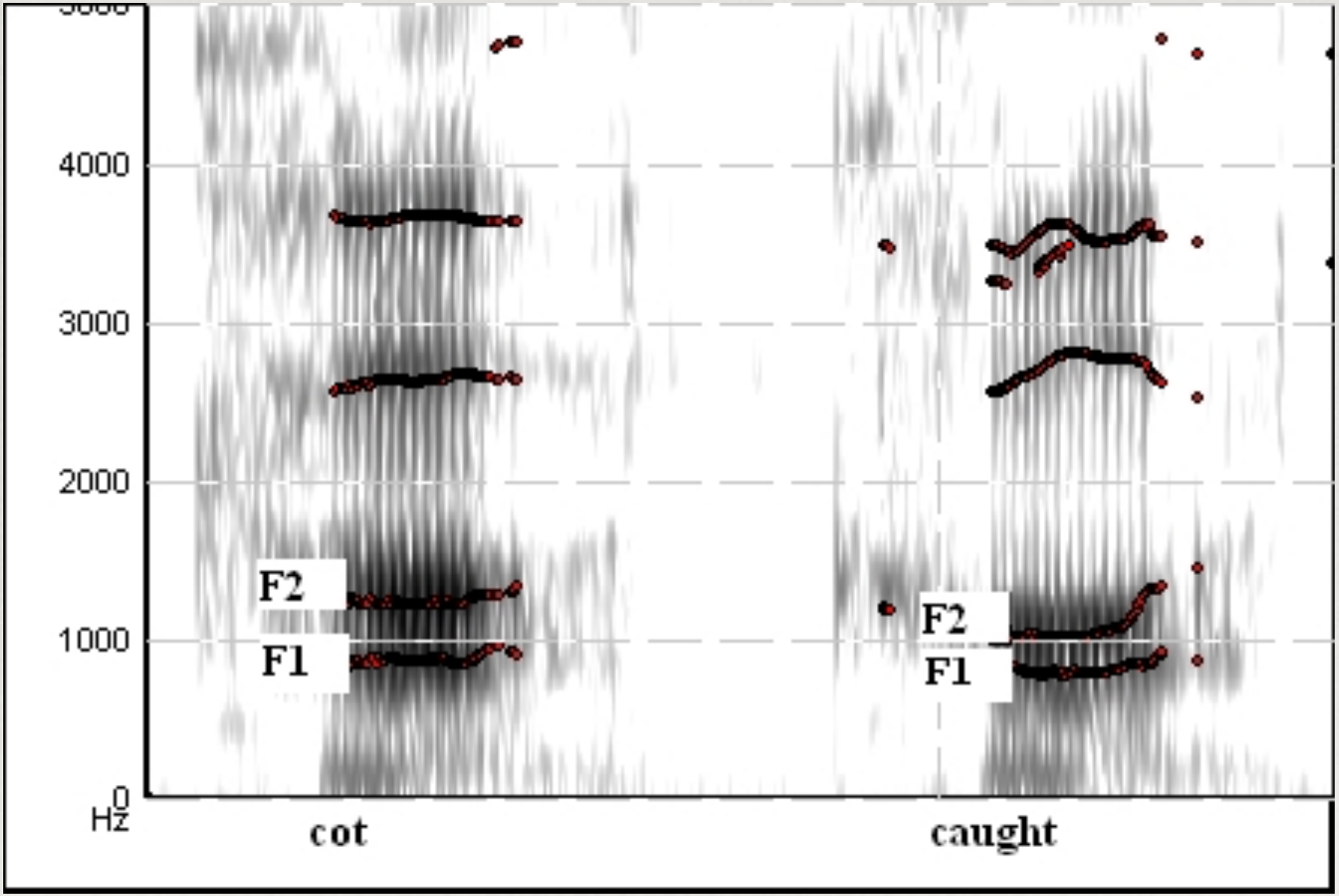

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- Training may begin with developing vowel awareness.
- Toys: farm animals (cow: mooo, lamb: baaah)

- Awareness —> discrimination —> identification

1) Discriminate/contrast b/n vowels differ in first formant information (/meet/ vs. /mat/)

- Most HL have residual hearing in the low frequencies than high frequencies —> first formant contrast more perceptually salient (notable) **than** contrast includes vowels differing in their second formants.

2) Later in the training, students can discriminate & identify vowel stimuli differ in second formant information (/bee/ vs /boo/)

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Analytic

- Will discriminate vowels that differ in first formant information
- Will discriminate vowels that differ in second formant information (e.g. beet, bit; boot, but)
- Will discriminate words that have vowels with similar first and second formant information (e.g., “meet, mat”; boot, bought)
- Will identify words with different vowels, using a four-item response set (e.g., beet from beet, boot, bat, and bet)
- Will identify words with different vowels, from an open set of vocabulary

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Vowel Analytic Training Objectives--Some Examples

1. The student will *discriminate* words with /i/ and /u/
   - *me from moo, geese from goose, she from shoe*
2. The student will *discriminate* words with /i/ and /a/
   - *heat from hot, keep from cop, seed from sock, cheap from chop*
3. The student will *identify* words with /i/, /u/, and /a/, using a four-item and then six-item response set
   - *bean from bean, pot, pit, and pool*
4. The student will *identify* words with /u/, /i/, and /a/ from an open set of familiar vocabulary

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- Sample objectives for child who uses a CI & demonstrated consistent sound awareness.

Table 7-5. A sample hierarchy of vowel training objectives.

The student:

1. Will discriminate vowels that differ in first formant information, using a two-item response set; for example, *meat* from *mat*.
2. Will discriminate vowels that differ in second formant information, using a two-item response set; for example, *bee* from *boo*.
3. Will discriminate words that have vowels with similar first and second formant information, using a two-item response set; for example, *mate* from *mit*.
4. Will identify words with different vowels, using a four-item response set; for example, *beet* from the response set of: *beet*, *boot*, *bat*, and *bet*.
5. Will identify words with different vowels, from an open set of vocabulary.

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video

https://www.youtube.com/watch?v=AhJycJVLf-Y

https://youtu.be/GtJKSv206oY (measuring vowel formants)

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Vowel contrasts	Minimal pairs
/i/ – /e/	bico – beco
/i/ – /ɛ/	vila – vela
/i/ – /a/	pipa – papa
/i/ – /ɔ/	chique – choque
/i/ – /o/	figo – fogo
/i/ – /u/	lixo – luxo
/e/ – /ɛ/	feira – fera
/e/ – /a/	pera – para
/e/ – /ɔ/	feira – fora
/e/ – /o/	seco – soco
/e/ – /u/	seco – suco
/ɛ/ – /a/	berro – barro
/ɛ/ – /ɔ/	cheque – choque
/ɛ/ – /o/	beca – boca
/ɛ/ – /u/	fera – fura
/a/ – /ɔ/	bala – bola
/a/ – /o/	saco – soco
/a/ – /u/	lava – luva
/ɔ/ – /o/	toca – touca
/ɔ/ – /u/	coca – cuca
/o/ – /u/	soco – suco

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Consonant Auditory Training Objectives

- Why we train? To contrast three features of articulation: place, voicing, and manner.
- *Place* of articulation: classification of speech sound according to where in the vocal tract it is produced

- Billabilal, labiodental, linguadentals, alveolar, palatal, velar

- Voicing: classification of speech sound according to whether it is produced with or without voice (/b/ vs /p/)
- Manner of articulation: classification of speech sound as a function of how it is produced in the oral cavity

- Stops, nasals, fricatives, affricates, glides (nasals tend to have high energy in LF)

keys: green grouped together in training, orange louder than _, purple soft sounds

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- The *easiest* features to distinguish are: voicing and manner (that signal nasal vs non-nasal)
- The most *difficult* cue is the place feature. Why?

- Place cues are conveyed by mid-and high- frequency information.

- Early auditory training exercises includes cons. stimuli that differ in the three features (P,V,M)
- Later exercises: to identify cons. that differ in P but share V, and M (bag, tag, and gag)

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1. Will discriminate nasal versus non-nasal unvoiced consonants that differ in place of production; for example, *mean* from *teen*.
2. Will discriminate nasal versus non-nasal voiced consonants that differ in place of production; for example, *map* from *gap*.
3. Will discriminate unvoiced fricatives versus voiced stops that differ in place of production; for example, *son* from *gun*.
4. Will discriminate unvoiced fricatives versus unvoiced stops that differ in place of production; for example, *sea* from *key*.
5. Will identify words in which the consonants share manner of production from a four-item and then six-item response set; for example, *sat* from the response set of: *sat*, *fat*, *shot*, and *van*.
6. Will identify words in which the consonants are all either voiced or unvoiced from a four-item and then six-item response set; for example, *cat* from the response set of: *cat*, *pat*, *tap*, and *sack*.
7. Will identify words in which the consonants share place of production from a four-item and then six-item response set; for example, *pat* from the response set of: *pat*, *mat*, *bat*, and *fat*.
8. Will identify words in an open-set format, where the words are familiar vocabulary words.

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Table 7-9. Consonant and word pairs that can be used for achieving the first four analytic auditory training objectives.

Objective 1: The student will discriminate nasal versus non-nasal unvoiced consonants that differ in place of production.

Consonant pairs:

/m/ versus /ʃ, s, t, k, tʃ, h, f/
/n/ versus /p, k, f, h, ʃ/

Word pairs:

meat/seat	milk/silk	near/fear
net/pet	news/shoes	no/so
man/fan	neat/feet	might/fight
may/say	no/toe	nap/tap

Objective 2: The student will discriminate nasal versus non-nasal voiced consonants that differ in place of production.

Consonant pairs:

/m/ versus /d, g, l, w, r/
/n/ versus /b, g, w, r/

Word pairs:

nail/rail	nine/wine	note/goat
mail/whale	mice/dice	kneel/deal
make/rake	knot/dot	make/lake
nail/bail	mow/dough	nap/lap

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Cycling

- Cycling: coming back to a training objective that has been achieved with some success in order to provide reinforcement and additional learning.
- Cycling is a potent means to build listening skills and is effective in helping students overcome a plateau in their listening performance.

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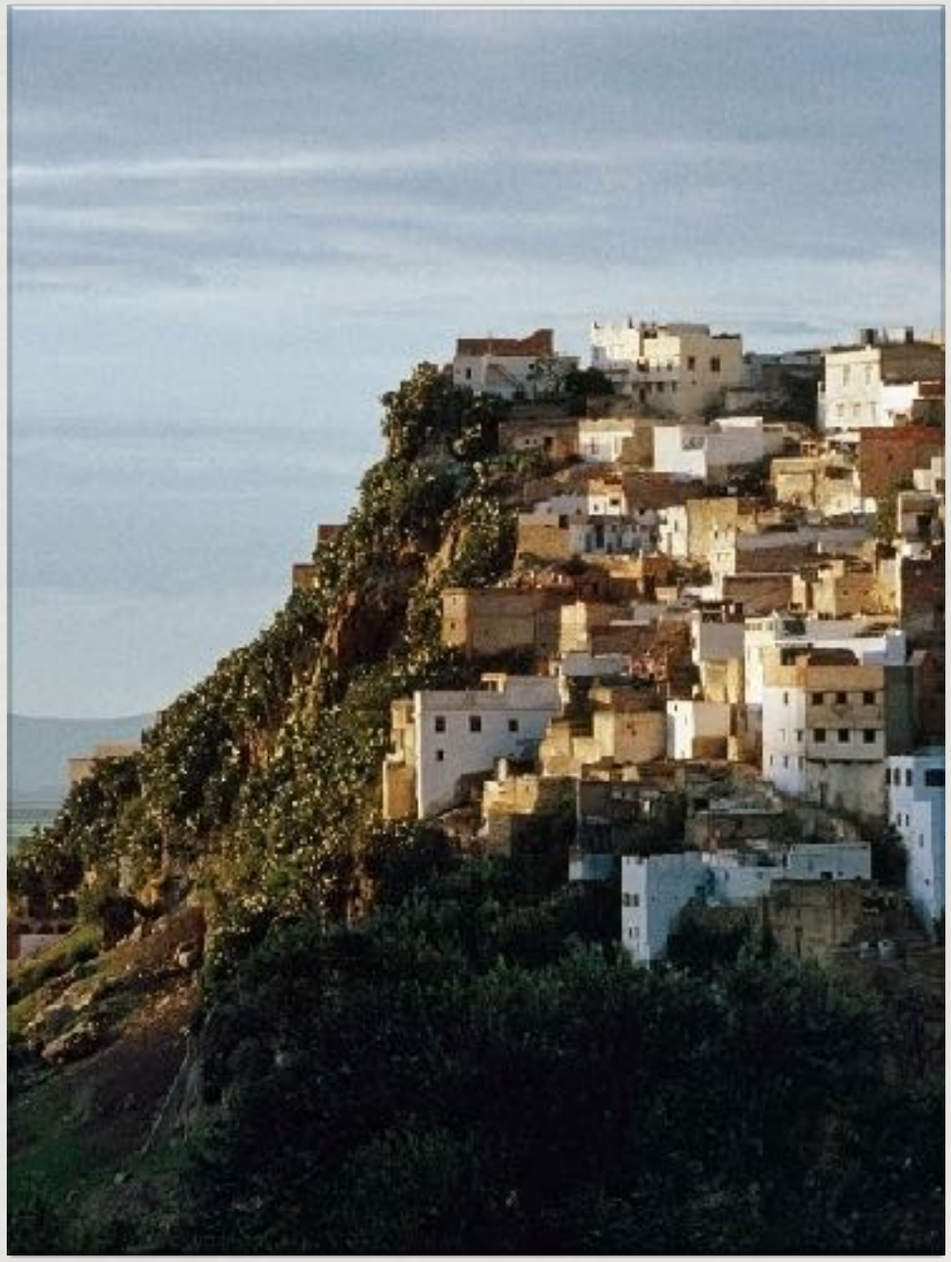
Developing Synthetic Training Objectives



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- Begin with very simple discrimination activities (suprasegmental aspects of speech)
- **Suprasegmentals** are *prosodic aspects* of speech, including variation in pitch, rate, intensity, and duration, that are superimposed on phonemes and words. (e.g ask for imitation after naming softly and loudly for two students)
- Discrimination ——> identification

- (e.g, home vs i'm going home)

- info. about # of syllables in the phrase is needed.

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1. Will discriminate multiword utterances from single-word utterances, using a closed response set; for example, *How are you today?* from *Hi!* Later, he or she can be asked to discriminate long words from short words; for example, *Halloween* from *cat.*
2. Will discriminate a spondee from a one-syllable word; for example, *ice cream* from *shoe.* Later, he or she can be asked to discriminate a spondee from a two-syllable word; for example, *There's a toothbrush* from *There's a pony.*
3. Will discriminate between words having the same number of syllables; for example, *That's my cat* from *That's my dog.*
4. Will identify simple words from a four-item and then a six-item response set; for example, *cat* from the response set of *cat, dog, elephant,* and *camel.*
5. Will identify picture illustrations from a closed-set, after hearing one-sentence descriptions.
6. Will follow simple directions and answer simple questions, using a closed response set.
7. Will listen to two related sentences, and then draw a picture about them; for example, he or she might draw a picture after hearing, *The boy is playing. He has a ball.*

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Table 7-11. Long and short training pairs that can be used for achieving the first synthetic auditory training objectives listed in Table 7–10.

The student will discriminate multiword utterances from single-word utterances:	
■ How are you/Hi	■ Beat the drum/clap
■ See you later/Bye	■ The cat in the hat/dog
■ Santa Claus/tree	■ Give me the crayon/draw
■ Motorcycle/car	■ A box of cookies/milk

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Table 7-12. Examples of word pairs that can be used for the second objective listed in Table 7–10 for synthetic auditory training.

The student will discriminate a two-syllable from a one-syllable word:
Airplane/pop
Milkshake/cup
Flashlight/cake
Hotdog/bun
Pancake/plate
Snowball/ice
Toothbrush/teeth
Popcorn/bowl
Sandwich/gum

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- Next step in training: to identify simple words from a closed set of choices

- The size of response set can be increased from 4 to 6 choices (as skills progresses)

- Comprehension activities begin with closed-set format —> to a more open-set format

- (e.g, show me your nose —> pick up a red crayon, then draw a circle, then put a fish in the circle)

- For adults: listening to a recorded passage —> answer written questions —> listening again while read (to check answers accuracy) table 7-13, p183

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Formal And Informal Auditory Training

- In the **formal** auditory training: the activities should meet the student's age, gender, language skills, and everyday experiences. (soccer vs. news events)

- Auditory training should be done with no more than 1 to 3 students. The optimal distance 6-12 inches.

- Reinforcement is essential.

- For adults: home training and self instruction procedure.

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- In the informal auditory training: listening practice occurs in the context of meaningful comm. and situational context.

- For children students: corporate informal listening practice into academic curriculum. (e.g, tell me what today is? or what day was yesterday?)

- instruction with visible face " Go to the chalkboard" —> student face the chalkboard —> " write number 7"

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- Auditory training could be provided in conjunction with speechreading training

- Two reasons:

1) The child awareness of oral representation may relate to the child ability to identify the words auditorily.

2) the child may realized that one purpose of learning to listen is to learn how to utilize auditory info. to enhance speech production.

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