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Comprehensive Assessment of Foreign-Accented
Speech: Test Battery and Model for Assessment

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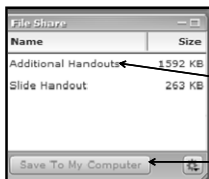


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Comprehensive Assessment of Foreign-accented Speech: Test Battery and Model for Assessment

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Speech Acoustics & Perception Laboratory

Today's agenda

The following major sections will be covered today:

- ☐ What is an SLP's role with accents and dialects?
- ☐ Knowledge of basic terms and concepts
- ☐ Understanding the theoretical background to assessment
- ☐ Broad goals of assessment of foreign-accented speech
- ☐ Areas of assessment of foreign-accented speech, and methods to assess each area
- ☐ Methods to score and record results in each area of assessment
- ☐ Creating a Diagnostic Profile of Scores, with degree of **severity** in each assessed area
- ☐ Learning to prioritize goals with the help of the Diagnostic Profile.

What is an SLP's role with accents & dialects?

Accent Modification as Evidence-Based Practice

Speech-Language Pathology & Accent Modification

- ASHA introduced dialect- and accent-related concerns in the scope of practice in 1983 (see ASHA 1983, 1985, 2007).
- Incidence in population (recent census data → nearly 43% of diversity in national population, and growing by 1.5 million every year!! (Camarota, 2001)
- All speech-language pathologists will encounter referral due to dialect and accent-related communication concerns; proportion and frequency in the caseload may vary (Shah, 2005).
- Dialect- and Accent-related concerns need to be better understood, studied, researched, and addressed in evidence-based manner

Accent-modification: EBP?

- **Nationwide Survey (Shah, 2005)**
 - Based on results of 237 accredited graduate programs surveyed, results indicated poor representation of information, resources, and data in the literature to help clinicians with EBP in accent-modification
 - Lack of statistically-validated assessment tools
 - Lack of proven assessment methods
 - Lack of proven therapy "Implementation" approaches
 - Limited literature; mostly theoretical
 - Questions remain about evaluations, intervention, resources
- **Shah, A. P. Research Program (2005-present): Evidence-based practice of Evaluation and Implementation (Therapy) in Accent-modification.**
 - Speech science perspective,
 - Bridging the theoretical & clinical fields
 - Change subjective/impression-based nature to objective, data-based, scientific

Recent work on evidence-based research in accent-modification from my research laboratory:

- Development of a comprehensive, objective, test battery (CAAI, Shah 2007)
- Assessment Model: Systematic protocols & procedures to do testing (Shah, 2007a, 2009a)
- Standardization studies: Reliability Measures (Shah, 2009b)
- Normative data to base decisions on (in progress; Shah, 2009e)
- Case studies as working models (Shah, 2009c; 2009d).

**Existing assessment tools used typically by SLPs,
based on reports of the Shah (2005) survey.**

Speech/Articulation:

- Phonological Assessment of foreign accent (Compton, 2002)
- Proficiency in Oral English Communication (POEC: Sikorski, 2002)
- Psycholinguistic Aspects of foreign accent approach (Dato, 1986)
- Fisher-Logemann Test of Articulation Competence (Fisher & Logemann, 1971)
- Goldman-Fristoe Articulation Test (GFTA, Goldman & Fristoe, 2000)
- Khan-Lewis Phonological Assessment (Khan & Lewis, 2002)
- Photo Articulation Test (Lippke et al., 1997)
- Speaking Proficiency English Assessment Kit (SPEAK: Educational Testing Services ETS).
- Assessment of Intelligibility of Dysarthric Speech (Yorkston, Beukelman, & Traynor, 1984)
- Sentence Intelligibility Test (Yorkston, Beukelman, & Tice, 1996)

Language:

- Proficiency in Oral English Communication (POEC: Sikorski, 2002)
- Psycholinguistic Aspects of foreign accent approach (Dato, 1986)
- Phonological Assessment of foreign accent (Compton, 2002)
- **Limitations of these tests:**
 - Not evidence-based, normed, or statistically-tested for use.
 - Not sufficiently comprehensive
 - Most of these are not developed directly for use with accent/dialect related problems (e.g., Goldman-Fristoe); clinicians simply adapted their use for accent/dialect conditions
- **Response to Need:**
Comprehensive Assessment of Accentedness & Intelligibility (CAAI: Shah, 2007).

**Knowledge of basic terms &
concepts**

Understanding basic terms & concepts

- Accent Modification (versus “reduction”, “correction”, “improvement”, and such).
- Pathology-related terms not applicable→ replaced by:
 - Clients versus patients
 - Therapy/ Treatment versus Implementation (Shah, 2010)

Accented-speech: Types, severity, proficiency

- **Dialect versus accent**
- **Accent Types:**
 - Regional-accented (e.g., Southern-accented American English)
 - Foreign-accented, native: e.g., British-accented English
 - Foreign-accented, nonnative: e.g., Chinese-accented English
- **Severity:** Mild, Moderate, Strong
- **Accentedness versus Intelligibility**
- **Proficiency:** Knowledge of English + Severity of accentedness+ Intelligibility (e.g., newly-immigrated international student versus long-residing medical doctor)
 - See next slide with contrasting audio samples to understand these concepts

Putting it all together: Proficiency, Severity, Intelligibility, Accentedness

Let's compare two foreign-accented samples in the variables discussed in the previous slide

Conclusions

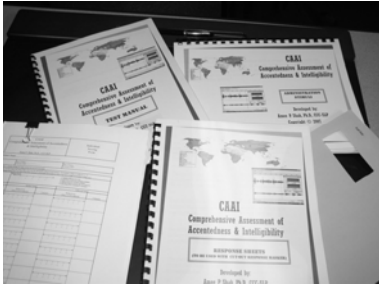
- **Sample A:**
 - Low proficiency (words appear to be unknown to her)
 - Low intelligibility (no. of words unintelligible)
 - Strong accent (C, V, Prosody including stress, intonation, slow rate)
- **Sample B:**
 - High proficiency
 - High intelligibility & fluency
 - Moderate accent (more of prosodic issues than segmental ones)

The CAAI ASSESSMENT TOOL & MODEL FOR ACCENTED SPEECH

The Assessment Tool Comprehensive Assessment of Accentedness & Intelligibility (CAAI)

Developed and published by Amee P. Shah, 2007.

CAAI: What does it look like?



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Unique Aspects of the Test

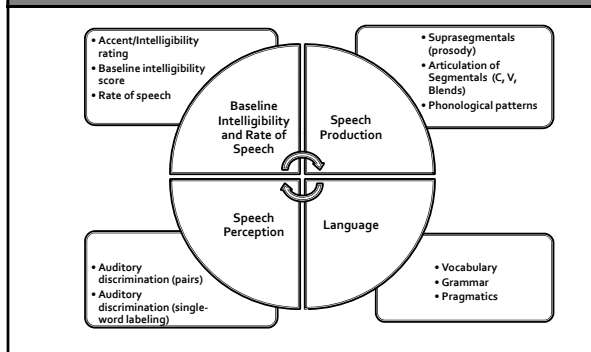
- Comprehensive
- Assesses prosody at all levels
- Assesses auditory discrimination
- Detailed grammar guide
- Distinguishes between accentedness and intelligibility
- Includes examples of specific errors patterns associated with accents
- Individual, customized predictions of phonetic errors and grammatical errors within specific language types (e.g., Asian, Indian, East European, French, German, etc.)
- Diagnostic: Quantitative (scores and severity) and qualitative assessment (accent or intelligibility)
- Prognostic
- Helps sets Implementation (therapy) goals in a numerically-guided manner
- Helps measure success: pre- and post-score comparison
- STANDARDIZATION & NORMATIVE DATA

THE CAAI ASSESSMENT MODEL Shah, A. P. (2009).

The premise of the model

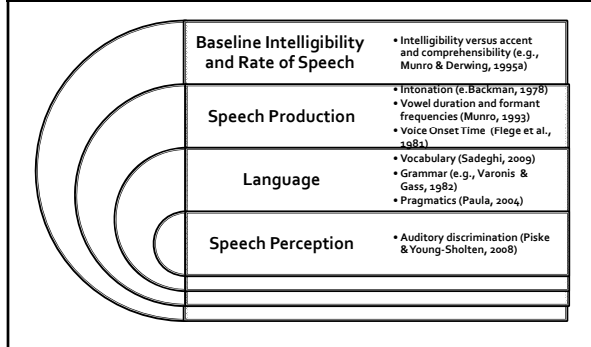
- What to assess?
- Why assess those areas?
 - Theoretical justification
- How to assess?
- How to track scores?
- How to develop diagnostic labels?
- How to prioritize goals in Implementation (therapy) based on assessment scores?

Figure 1: CAAI Assessment Model



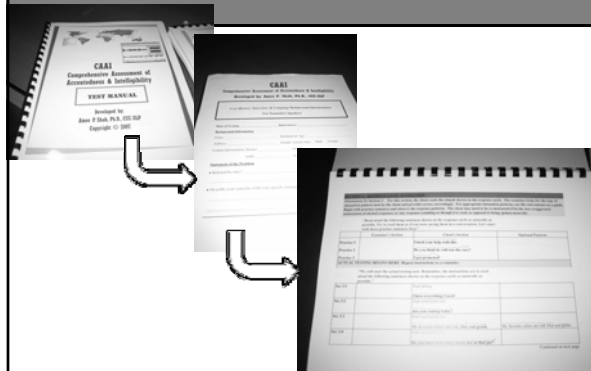
Understanding theoretical background to assessment of accented speech

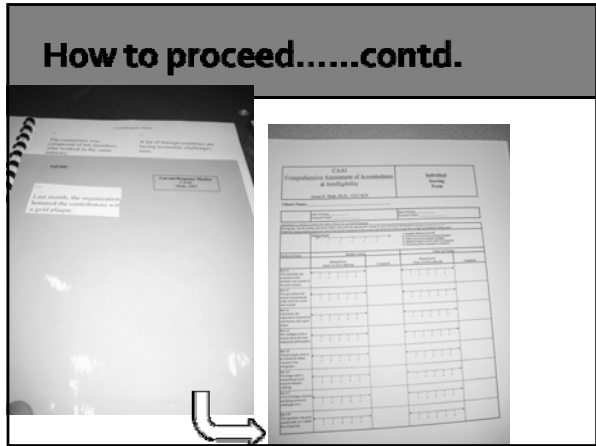
Figure 2: Theoretical Justification



How to assess:
Section-by-section methodology
& Scoring procedures

How to proceed: Layout of the material





Specific Areas to Assess	CAAI Section Title/ Communication area to test	Example	Scoring
	SECTION 1: INTELLIGIBILITY RELATIVE TO ACCENTEDNESS	"The committee was composed of ten members..."	<div><div>12345</div><div>1= Negligible difference from SAE 2= Some trace of accent but completely intelligible 3= Distinct accent but completely intelligible 4= Significant degree of accent, often not understood 5= Very strong accent, impossible to understand</div></div>
	SECTION 2: INTELLIGIBILITY SCORE & RATE OF SPEECH ON NARRATIVE PASSAGE	Rainbow Passage	Percentage; total no. of words correctly understood Rate: Syllables per Minute
	SECTION 3: SENTENCE LEVEL INTONATION	"Are you coming today?"	Correct (1) or incorrect (0)
	SECTION 4: WORD LEVEL INTONATION	"I passed the test!" "Good!"	Pitch changes as correct or incorrect (one syllable, pitch drop)

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Contd....

Specific Areas to Assess	CAAI Section Title/ Communication area to test	Example	Scoring
	SECTION 5: LEXICAL STRESS IN SINGLE, MULTISYLLABIC WORDS	"Re <u>pent</u> lent."	1 or 0; mark stressed syllable.
	SECTION 6: DERIVATIVE STRESS IN MULTISYLLABIC WORDS	"de <u>m</u> ocracy/dem <u>o</u> cratic"	1 if underlined syllable stressed & phonological change made
	SECTION 7: CONTRASTIVE LEXICAL STRESS	"I have a birthday <u>pre</u> sent for you." / <u>pre</u> sent	1 if underlined syllable stressed
	SECTION 8: EMPHASIS	"Which one was it?" "I made the <u>pump</u> kin pie."	Loudness and pitch change on underlined word
	SECTION 9: SENTENCE PHRASING	"I need milk, eggs, and bread from the market."	Pause and pitch drop at boundaries

Specific Areas to Assess	CAAI Section Title/ Communication area to test	Example	Scoring
	SECTION 10: CONTRASTING SENTENCE PAIRS	"Ben would never leave Woody/would he?"	Pause and/or pitch change as shown

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Contd....		
CAAI Section Title/ Communication area to test	Example	Scoring
SECTION 11: CONSONANTS WORD LIST	Initial position /p/ in 'gan.' (n=65)	1 or 0, error type, non-target errors to be noted (fill grid)
SECTION 12: CONSONANT CLUSTERS WORD LIST	/r/ blend in "brush." (n=60)	same
SECTION 13a: VOWEL WORD LIST	/i/ in "meat." (n=17)	Same
SECTION 13b: VOWEL WORD LIST	Souvenirs Typical error patterns: /r/ → /l/ / /u/ → /o/, /r/ → /l/ / /u/ → /o/	1 or 0, identify pattern

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Contd....		
CAAI Section Title/ Communication area to test	Example	Scoring
SECTION 14: PHONOLOGICAL PROCESSES	Adding a schwa: e.g., price→ "price", film→ "filum" or please→ "pelace"	Score: 1 if process is detected; (n=11 processes)
SECTION 15a: AUDITORY DISCRIMINATION	Hearing the difference between pairs e.g., /tiff/-/tip/	1 or 0
SECTION 15b: AUDITORY DISCRIMINATION (groups of contrasts e.g., /h/-/B/-/ #B/-/dʒ/-/ʒ/-/ʃ/	Writing down the exact word heard (e.g., while or vile)	1 if correct target phoneme; spelling errors disregarded
SECTION 16: PREPOSITIONS	"I live ____ Ohio." (in)	1 or 0
SECTION 17: COLLOQUIAL/IDIOMATIC USE OF PREPOSITIONS	Are we still on _____ tonight? (for)	1 or 0

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Contd....		
CAAI Section Title/ Communication area to test	Example	Scoring
SECTION 18: CONTRASTING IDIOMATIC PHRASES	"hold on" vs. "hold out."	1 or 0; note patterns
	sentence fill-in (comprehension of phrases)	1 or 0
SECTION 20: ADVANCED VOCABULARY	Defining a word given four choices.	1 or 0
SECTION 21: CONVERSATIONAL GRAMMAR	e.g., omitting final "s" in "...two apples"	Qualitative scoring following details in Grammar Guide
SECTION 22: PRAGMATIC PROBLEMS	e.g., problems with voice loudness, eye contact, conversation etc.	Indicate presence of any pragmatic issues

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Creating a Diagnostic Profile

Diagnosis:

- Individual Diagnostic Profile (see table on next slide)
- Quantitative scores translated to degree of severity in each
- Diagnosis should include degree of severity, accentedness rating, and degree of intelligibility; e.g., "Mild-moderate foreign accent with moderate intelligibility."

Learning to Prioritize Goals with the Help of the Diagnostic Profile

Setting goals for Implementation (therapy)

- ❖ Numeric scores taken from the Diagnostic Profile help to establish a hierarchy of severity across the different communication areas
 - Currently, no research base to determine what goals to work on, and in what order, however long-term experience and intuition can be brought into the decision-making.
- I recommend the following:**
 - Moderate areas as the highest priority, as lend well to change (compared to severe ones), and directly influence intelligibility (compared to mild ones)
 - Working on severe ones can be frustrating to client as progress will be slow
 - Consider client's preference, experience, and need in determining priority of goals for implementation

Conclusions: Evidence-based assessment

- Evidence-based assessment tool and model: **Reliability tested and proven** (Shah, 2009b)
 - **High Sensitivity & Specificity**
 - **Strong Interrater reliability:** Correlation coefficients ranged between 0.68-1.00
 - **Strong Inter-item reliability** (internal consistency): Cronbach's alpha correlation ranged between 0.70-0.90
 - **Test-retest reliability:** Pearson Correlation Coefficient ranged between 0.75-1.00

Further Information

- **ASHA web seminar:**
 - Working title "Comprehensive Assessment of Foreign-Accented Speech"; A national web seminar, upon invitation from the national office, American Speech & Hearing Association's Professional Development office, offered for ASHA CEUs.
 - Detailed step-by-step with lots of auditory examples; a client model from case history, assessment, diagnostic profile, and complete implementation work-up. Measuring progress, transfer and generalization.
 - Presentation will be recorded at the national office, and the recorded presentation will be available in ASHA bookstores and advertised in ASHA catalogs. See www.asha.org/profdev.
- **Questions , feedback , and additional information:** Contact Amee P. Shah a.shah101@csuohio.edu
Website: http://academic.csuohio.edu/shah_a/

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**Thank you for your
attention!**



And now....

Q & A....
