

# Evidence-based assessment of foreign-accented speech

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## History

- Overall purpose of this research: Evidence-based practice of Evaluation and Therapy in Accent-modification
- My Background:
  - Speech science perspective,
  - bridging the theoretical & clinical fields;
  - change subjective/impression-based nature to objective, data-based, scientific

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## History & Background

- Early Groundwork:
  - Nationwide survey of accent-modification training/practice in SLP programs & clinics (Shah, 2005)
  - Results indicated paucity in all areas—and great demand for information, resources, and data:
    - Dearth of material,
    - no set methods,
    - some supervisors have taken workshops and that helps, but most, including students didn't know what to do.
    - Questions remain about evaluations, intervention, resources

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## Thus, I initiated work on several goals:

- Development of a comprehensive, objective, test battery
- Systematic protocols & procedures to do testing
- Normative data to base decisions on
  - Diagnostic and prognostic results that immediately tell you amt of problems in different areas, and priority of targeting those
  - Also, diagnosis of overall severity of accentedness, separate from intelligibility, and include measures of rate of speech and baseline intelligibility—that can be compared before and after therapy.

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## The modus operandi

- In order to build the necessary knowledge-base, I conducted a large study to collect data on assessment of foreign-accented speech.
- Aims in developing the test were to:
  - a) test the theoretical parameters
  - b) use quantitative information on areas to test, and
  - c) determine psychometric measures

## Today's agenda

### Objectives for today's session

- 1) Introduction of the test
- 2) Methodology on normative data-collection
- 3) Test administration procedures- demonstrations

### After completing this session, participants will be able to:

- Identify areas to assess in foreign-accented clients,
- Conduct accurate and reliable evaluations
  - what to test, what kind of stimuli, what to look for, how to tabulate results, and how to plan therapy
- become familiar with quantitative information and research data to base assessment protocols in foreign-accented clients

## CAAI: Comprehensive assessment of accentedness and intelligibility

### What is it? The Overview

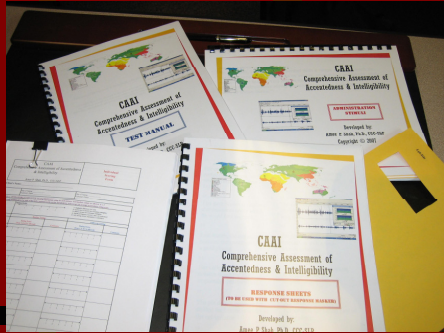
- Assesses regional dialectal and foreign accented variations
- Comprehensive testing in 22 areas
- Addresses speech and language components: Segmental, prosodic, articulatory, phonological, auditory discrimination, grammatical, semantic, and pragmatics
- perceived accentedness measures separated from problems of reduced intelligibility
- Provides diagnostic indicators: quantitative section scores and severity ratings,
- Prognostic indicators for therapy

SECTION NO.	SECTION TITLE (i.e. THE MEASURED AREA)	BROAD CATEGORIES
1	Intelligibility relative to accentedness	Baseline intelligibility and rate of speech
2	Intelligibility score & Rate of speech on narrative language	
3	Sentence-level intonation	
4	Word-level intonation	
5	Lexical stress in single words of varying syllabic length	Suprasegmental aspects of varying length (from syllables to sentences)
6	Derivative stress in multisyllabic words	
7	Contrastive lexical stress	
8	Emphasis	
9	Sentence phrasing	
10	Phrasing contrast in sentence pairs	
11	Consonant word list	Articulation of sounds (C, V, clusters)
12	Consonant clusters word list	
13a	Vowels word list: General words	
13b	Vowels word list: Specific words	Phonological processes
14	Phonological processes	
15a	Auditory Discrimination (paired contrasts)	Speech perception
15b	Auditory Discrimination (labeling of single words)	
16	Prepositions	Prepositions
17	Colloquial/idiomatic use of prepositions	
18	Containing idiomatic phrases: expression & comprehension	
19	Comprehension of idiomatic expressions	Idioms
20	Advanced vocabulary	
21	Conversational grammar & parts of speech (syntax, morphology, and semantics)	Vocabulary
22	Pragmatic problems	
		Grammatical and semantic skills
		Social-pragmatic skills (including nonverbal communication)

CAAI:  
22 Areas Assessed

## CAAI: What does it look like?

- The contents: 6 items



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## CAAI: Contents explained

### • Case history form

Elicits information on:

- 1) Demographic details
- 2) Language learning history
- 3) Acculturation indicators
- 4) Perceived difficulties, strategies, and goals

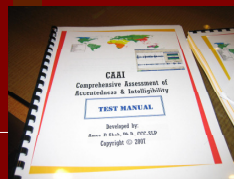
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## CAAI: Contents explained

### • Test Manual

Provides information on:

- 1) Orientation to material
- 2) Overview Table of test-sections
- 3) Theoretical rationale for each section
- 4) Detailed instructions for each section (quick instructions are provided in administration and scoring books)



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## CAAI: Contents explained

### Administration Stimuli

Includes:

- a) Orientation & Administration instructions: yellow highlights
- b) Verbatim client instructions: blue parentheses
- c) Examiner's elicitation cues in "Examiner's Sections"

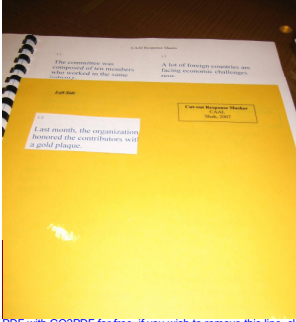
Response section: All stimuli, with reds, bold and underlined marks to help and re-prompt. Things to keep in mind, or qualitative comments

Each section separate—can be done, or all together.

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## CAAI: Contents explained

- Response sheets+ Response-masker

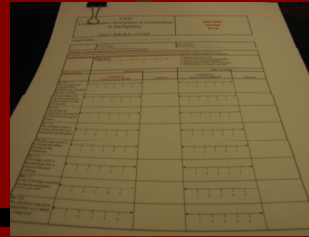


**Includes:**  
 -Material to be read by client  
 - Use with response-masker

**Laminated cut-out Response-Masker:** Used as a guide to control pace & prevent distractions from other items,

## CAAI: contents explained

- Individual Scoring Form + Diagnostic Profile



**Provides info on:**

- 1) Stimuli items
- 2) Quick scoring tips for on-line scoring
- 3) Expected Scores for each item
- 4) Pre- and post-comparisons (Baseline and follow-up scores)
- 5) Production errors grid
- 6) Grammar checklist
- 7) Pragmatic checklist
- 8) **Complete Diagnostic profile:** with baseline comparisons—and priority assignment—helps plan therapy, as well as debrief findings to clients (with examples of each section)

## Normative data-collection details Participants & Testers

- Examiners: Trained graduate, SLP students (n=8)
- Clients: 40 native and 45 nonnative
  - Native: Ages 18-55 (avg.=34 yrs.), 24 males,16 females, monolingual, English speakers from the Cleveland, Ohio area. Local regional dialect was permitted to allow capturing the range of deviation from SAE, to contrast with foreign-accent related deviations. Education level: typically undergraduate and graduate students (avg= 14 years of education)
  - Nonnative: Ages 22-52 (avg.=38 yrs.), gender-matched, education, recruited from the community: two streams, undergraduate and graduate students in Engineering, SPH, Psychology with a distinct accent, but sufficient fluency in English; and 2<sup>nd</sup> group of advanced speakers of English from the medical community (n=12 MDs from CCF).

## Normative data-collection details Methods: Testing Situation

- Setting:  
**Speech Acoustics & Perception Lab**

Sound-treated booth



## Normative data-collection details

### Methods

- Each examiner independently read the manual for initial orientation, and self-oriented to the test and its administration
- Practiced administration on 1-2 people, which was audio- and video-recorded, and was provided a debriefing session that corrected and provided feedback for problems with administration, if any.
- Once method of administration was mastered, the examiners collected data on all the native and nonnative clients.
- Audio and video recordings were made.

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## Normative data-collection details

### Methods: Testing Situation

- Video of administration (settings, seating recording)



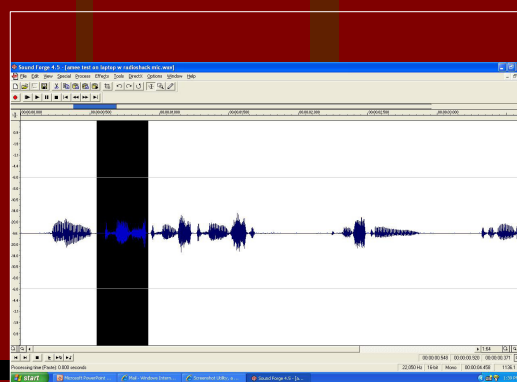
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## Normative data-collection details

### Methods

- Why recording? Audio for articulatory & phonological details, grammar etc. Video for pragmatics, occasional articulation errors.
- Instrumentation: All recorded in mini recorders, digitized, converted (.wav format) and then opened in a speech program
  - See screenshot of soundforge for wave-by-wave look

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## Methods

- Inter-rater reliability: All scoring done by two separate listeners; discrepant findings were discussed and a consensus rating was arrived at. Results showed 83% match across raters.
- Means were calculated for all participants' individual section scores. Native and nonnative means were compared across each section.
- All individual ratings were transferred onto diagnostic profile, and sent to participants

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Q & A....



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