
Transcription as a data analysis tool: How valid is it?

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Collaborators

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Why a talk about transcription?

- Technology has changed, but have we?
 - 1960s-70s: cheap portable technology for making audio recordings
 - 1990s: inexpensive digital technology for recording and analysis.
- We continue to rely on transcription of elicited single words in the majority of studies.

Dual purposes of transcription

1. Phonemic: Is the child's production correct or incorrect?
2. Phonetic: Error analysis – what sound did the child produce?
 - Aren't these two purposes contradictory?

Dual uses of transcription

- **Phonemic: Is production correct or incorrect?**
 - Requires a fairly naïve transcriber.
 - Transcriber should not look at spectrogram, etc.
 - Transcriber should not transcribe too much of any one child.
- **Phonetic: What sound did the child produce?**
 - Transcriber should be a trained phonetician
 - Transcriber should examine spectrogram, etc.
- Usually – the same person does both...

Advantages of transcription

- Ecologically valid
- Time-efficient
- Results easy to understand and to explain to others

Problems with transcription

- Listener expectations:
 - Listener judgments are influenced by factors other than the acoustic signal.
- Children's productions do not always progress directly and categorically from incorrect to correct productions.
 - Existence of covert contrast
 - Other types of intermediate productions

Purpose of this talk

- Use the παιδολογος data base to consider some of the problems with transcription.
- Suggest some alternatives to improve validity of transcription.

Outline of talk

- Introduction to παιδολογος project
- Examples of both problems with transcription
 1. Listener expectations: Native-speaker bias
 2. Non-categorical development: Intermediate productions
- Discussion of what we can do to improve transcription as a data analysis tool

The παιδολογος project:

Cross-linguistic research on phonological acquisition

- Acquisition of word-initial lingual obstruents across 6 languages — Cantonese, English, Greek, Korean, Japanese, Mandarin.
- Participants:
 - 100 2- to 5-year-olds, 20 adults for each language.
- Procedure:
 - a picture and a digitized recording of each stimulus were presented simultaneously (word repetition task). 
- Database: single word repetitions of obstruent-initial real words and nonwords.

Examples of stimuli



English



Greek



Japanese



Cantonese



Transcription analysis

- Transcription

- Trained native-speaker phonetician
- Initial consonants transcribed as correct or incorrect
- Errors transcribed as:

- Within-inventory substitutions

- /kha:55thoN55phi:n35/ (*cartoon*) – [t^h] for /k^h/  

- Outside-inventory substitution

- /sinefo/ (*cloud*) – [tʃ] (alveolopalatal affricate) for /s/  

- Intermediate between two sounds

- *tube* – /tj/ or [kj] 

- Distortion

- *gumdrops* 

- Deletion

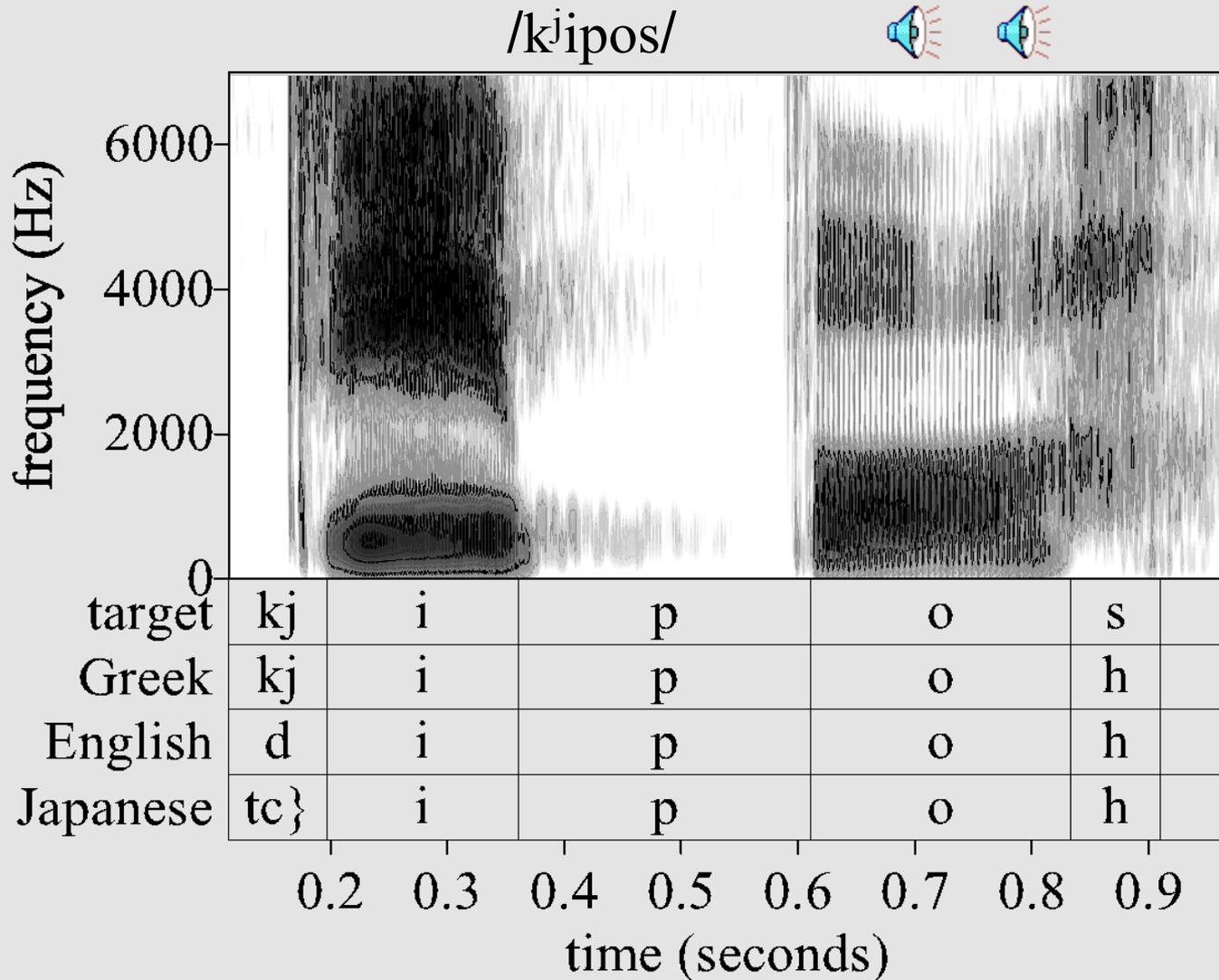
- *sister* 

Examples of transcription problems from παιδολογος database

- I. Influence of listener expectations
 - A. Cross-linguistic differences in perception

- II. Non-categorical nature of development
 - A. Intermediate productions

I. Cross-linguistic differences: front /k/ in Greek vs English

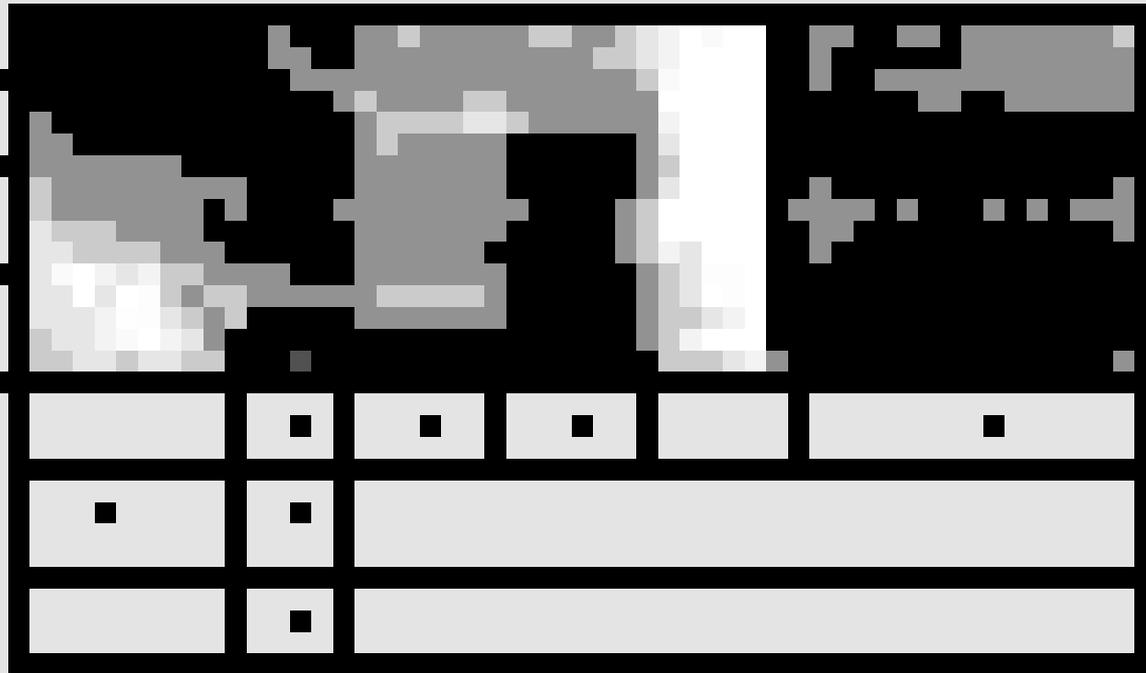


/k/ before front vowels in Greek:

- Greek speakers mostly hear correct /k/
- English speakers mostly hear [t] substitution
- Japanese mostly hear [t \int] substitution

I. Cross-linguistic differences: /s/ in English and Japanese

/senaka/



/s/ in /senaka/

- transcribed as [ɰ] for /s/ substitution by Japanese speakers.
- judged as correct /s/ by English speakers.

II. Non-categorical nature of development: Intermediate productions

- Children do not always progress directly from incorrect to correct productions.
- Some productions are intermediate between two sounds.
- Examples:
 - English: [k] or [g] 
 - [f] or [T] 
 - Greek: [k] or [t] 
 - [s] or [T] 

II. Intermediate productions

- Inter-rater reliability may be lower for intermediate productions (Pye et al., 1988)
- Clinical importance of intermediate productions (Tyler, 1995)
- Separate transcription category (Stoel-Gammon, 2001)

II. Intermediate productions

- Perception experiment with intermediate productions (Schellinger, 2008)
- Two questions:
 - Are intermediate productions a valid transcription category?
 - Are intermediate productions more susceptible to listener bias?

II. Intermediate productions

- Stimuli:

- CV sequences

- correct /s/



- [s] for /T/



- intermediate



- [T] for /s/



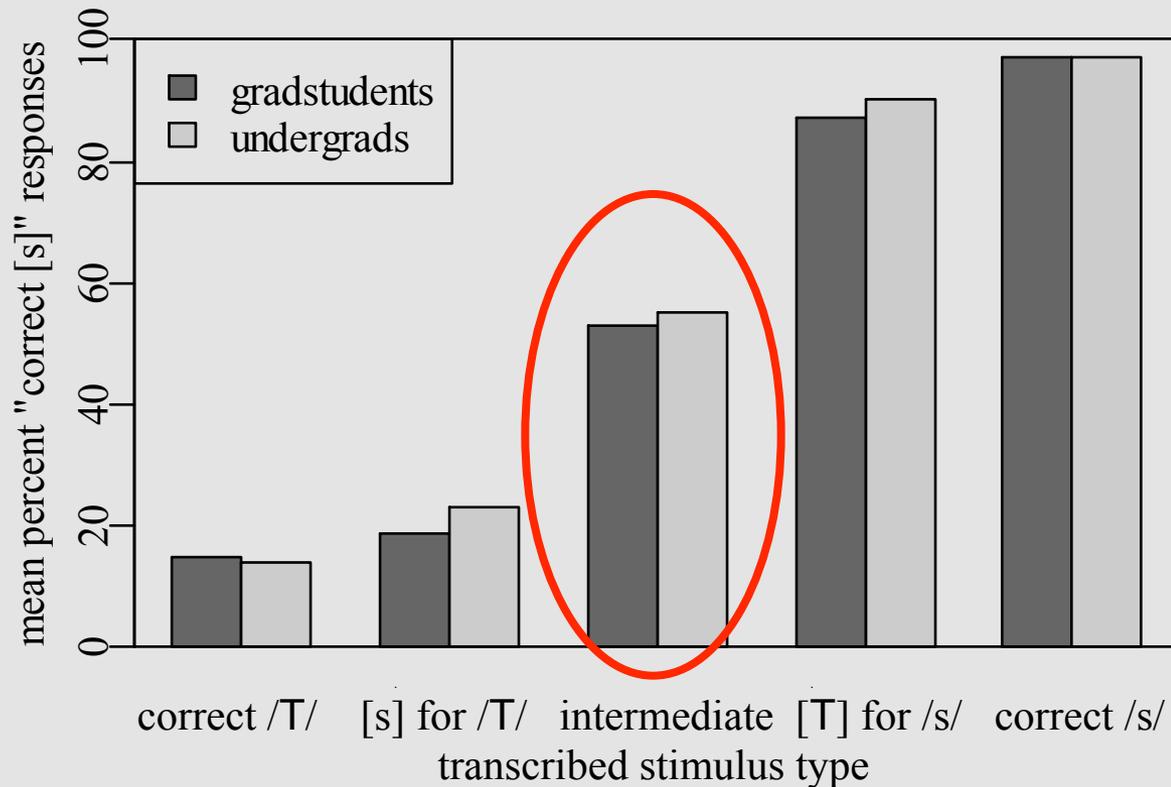
- correct /T/



II. Intermediate productions

- Participants:
 - 30 naïve listeners
 - 15 undergraduates
 - 15 clinical master's students
- Task:
 - Is it a correct /s/?

II. Intermediate productions



- Significant effect of transcription category.
- No effect of experience.

Discussion

- There are problems with transcription, but...
- Transcription as a data analysis tool is here to stay 😊
- Can we improve it?
 - Supplement with acoustic analysis
 - Supplement with naïve listener judgments
 - Add *intermediate* as a transcription category

谢谢

ありがとう

감사합니다

Ευχαριστώ πολύ

Thank you!!!

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