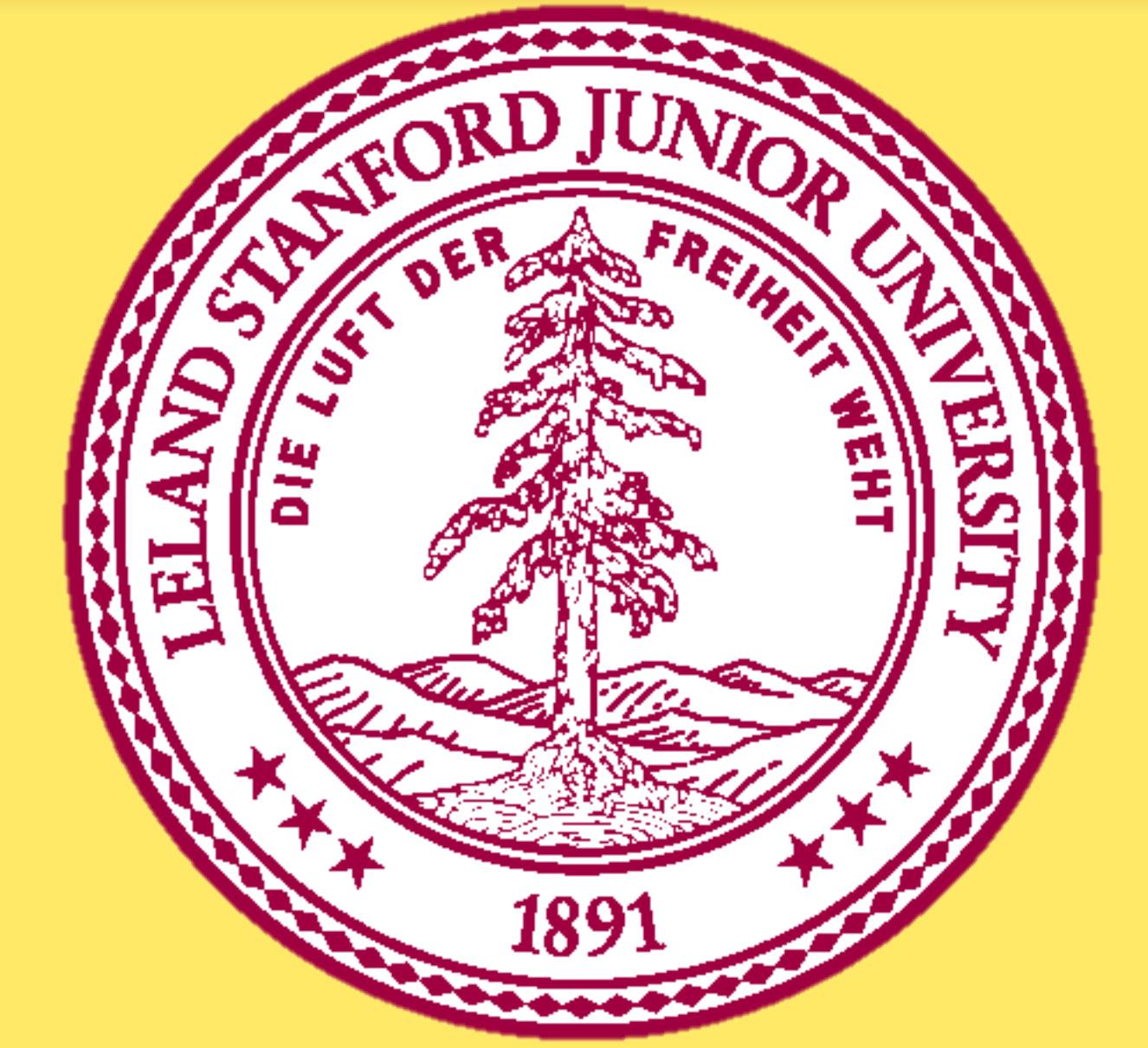# An Earlier Detection of Language Attrition
Measuring language attrition with the Bilingual Language Profile and the HALA project

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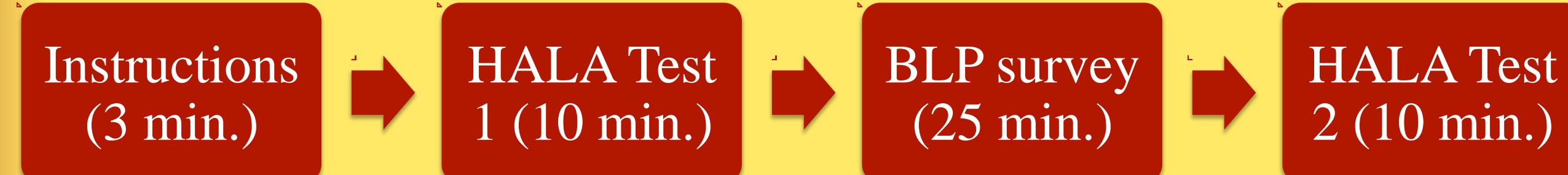*Department of Linguistics, Stanford University*

Introduction

- Early detection of language attrition among bilingual speakers is vital for language planning and development.

- In recent years, two tools were independently created to effectively measure relative language dominance among multilingual speakers.

- The Bilingual Language Profile (BLP) is a questionnaire, where by answering questions regarding language history, use, proficiency and attitudes, speakers are given a continuous, relative dominance score.

- The Hawai'i Assessment of Language Access (HALA) project has developed a body-part naming task that gives a comparable gauge of relative language strength by measuring the speed with which bilingual speakers access lexical items in their two languages.

Method

Participants. HALA (n=99) BLP+ (n=818) Subgroup (n=45). Forty-five participants were randomly selected to include five Youth (<18), Adults (19-44) and Older Adults (45+) who reside in villages (pop < 1000), towns (regional centers) or cities (Cheboksary, Novocheboksarsk) in Chuvashia, Russia.
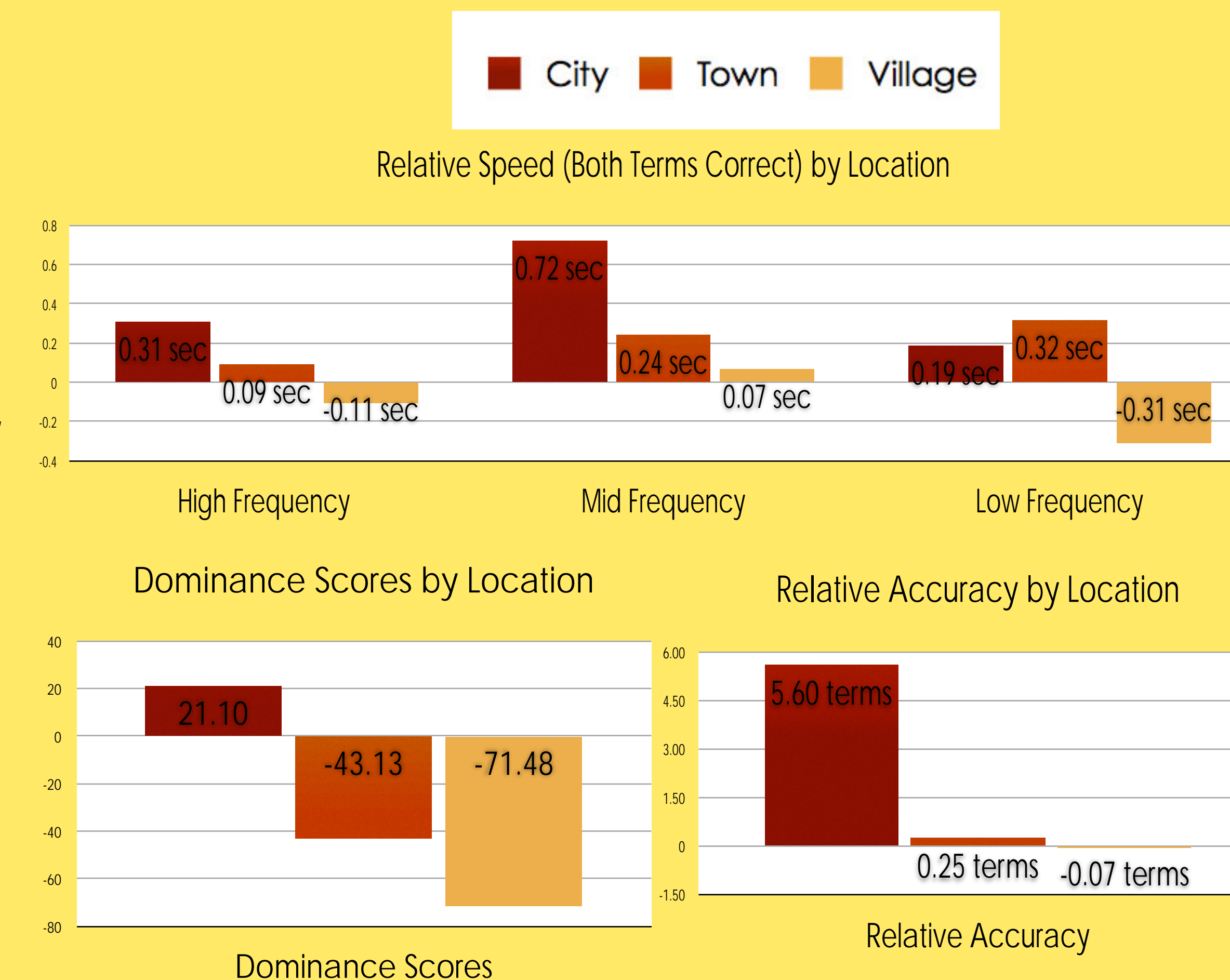
Materials. HALA: quiet room, laptop, Order 1 & Order 2 video files, condenser mic, recorder BLP: an electronic and paper version of the survey in both languages.

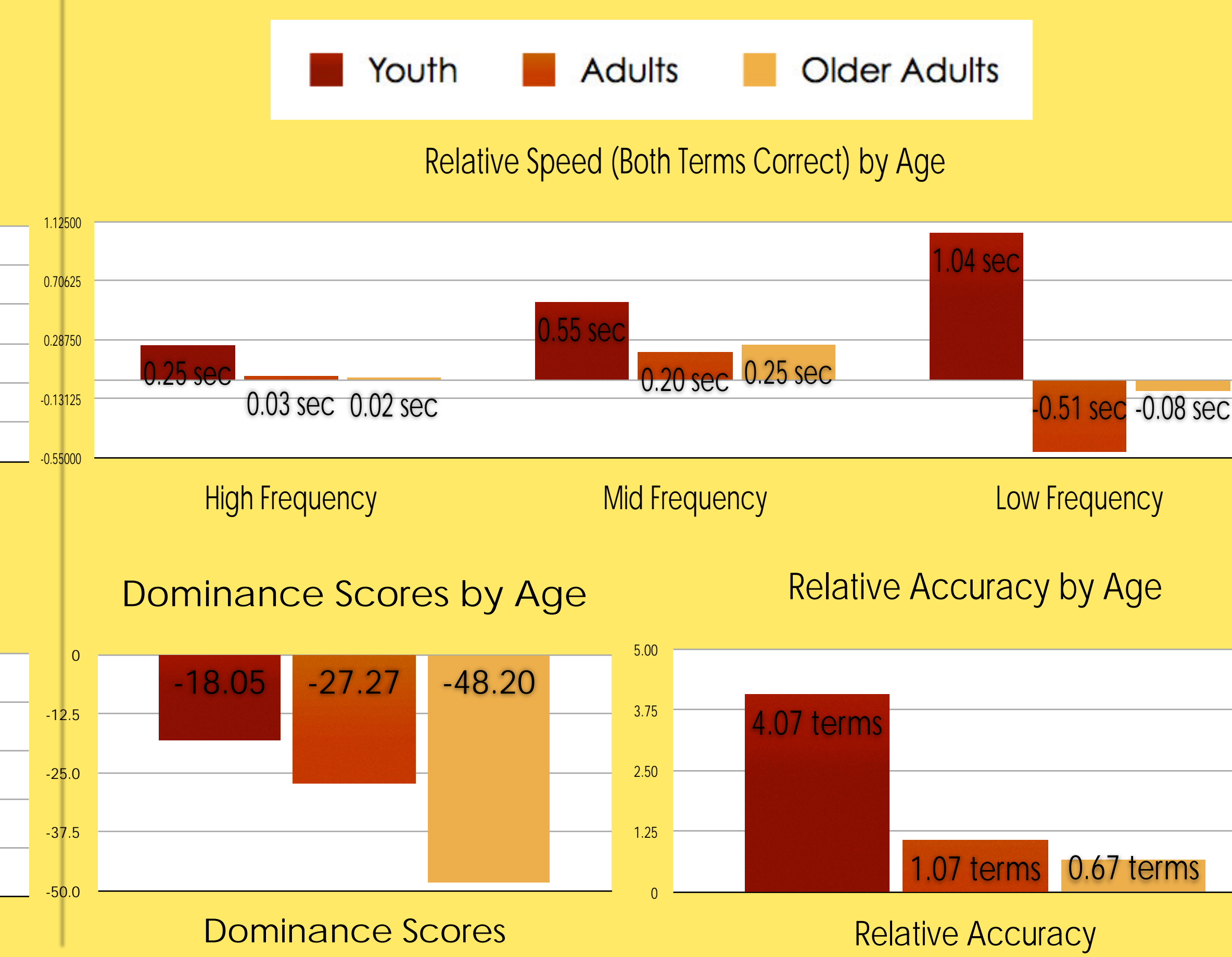Instructions (3 min.) → HALA Test 1 (10 min.) → BLP survey (25 min.) → HALA Test 2 (10 min.)

Procedure. The speaker is given instructions on how to complete the test. Five minutes in the testing language are allotted before testing. Speakers name 31 lexical items as quickly as possible in one of their languages, and then the other. Between the two tests, participants are orally guided through the BLP+ survey. Once both tests are recorded, speech-onset times are measured in milliseconds and compared between languages. Only lexical items answered correctly are measured and compared.

The BLP survey (19 Q) is scored on a scale of +218 to -218, where positive shows Russian dominance, negative shows Chuvash dominance and zero indicates balanced bilingualism.
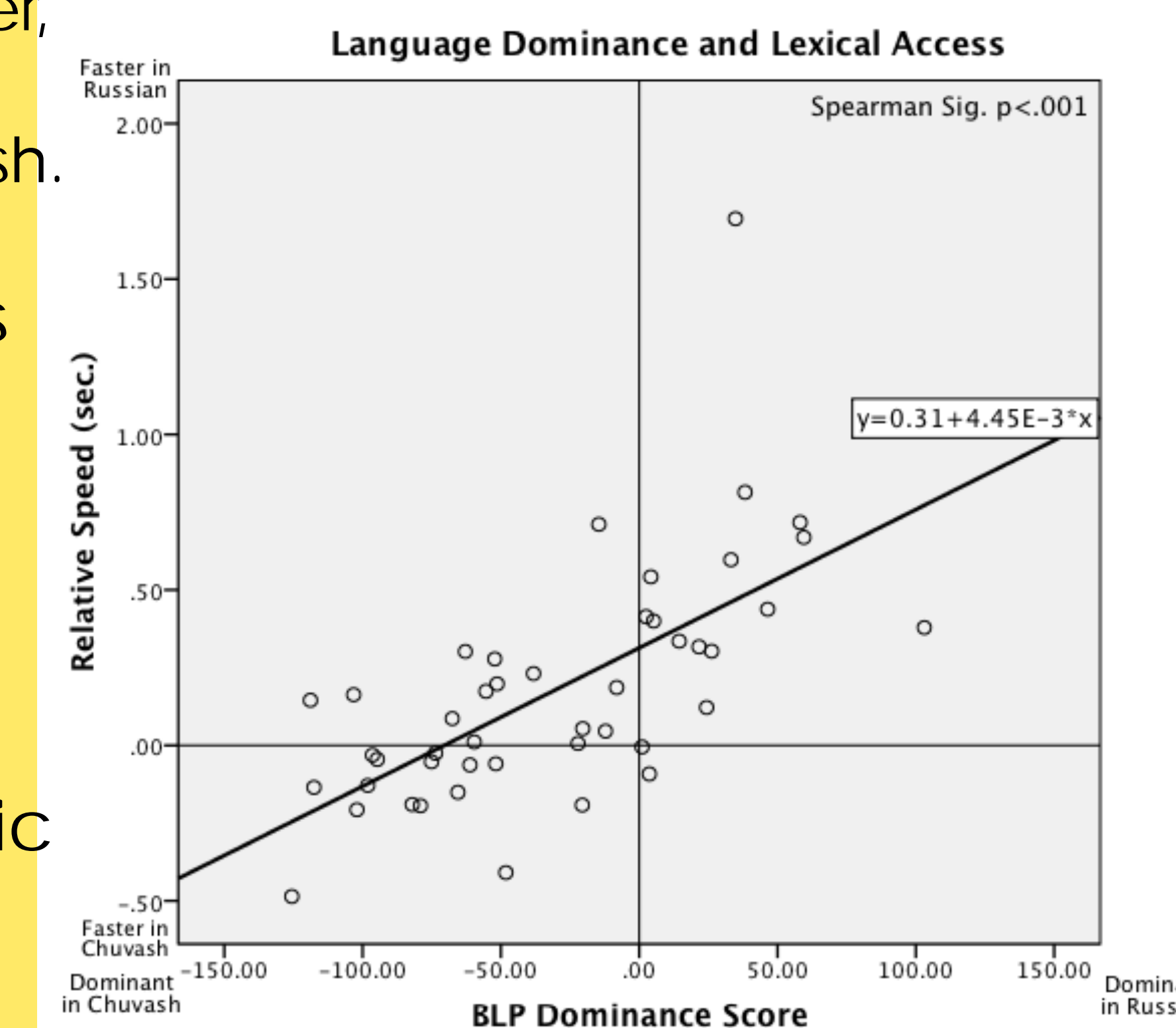
Results by Location

City   Town   Village

Relative Speed (Both Terms Correct) by Location

High Frequency: 0.31 sec, 0.09 sec, -0.11 sec
Mid Frequency: 0.72 sec, 0.24 sec, 0.07 sec
Low Frequency: 0.19 sec, 0.32 sec, -0.31 sec

Dominance Scores by Location
21.10, -43.13, -71.48

Relative Accuracy by Location
5.60 terms, 0.25 terms, -0.07 terms

Results by Age

Youth   Adults   Older Adults

Relative Speed (Both Terms Correct) by Age

High Frequency: 0.26 sec, 0.03 sec, 0.02 sec
Mid Frequency: 0.55 sec, 0.20 sec, 0.25 sec
Low Frequency: 1.04 sec, -0.51 sec, -0.08 sec

Dominance Scores by Age
-18.05, -27.27, -48.20

Relative Accuracy by Age
4.07 terms, 1.07 terms, 0.67 terms

- Pearson correlation analysis revealed a significant relationship between relative reaction time (HALA) and Dominance Score (BLP) ($p<0.001$).
- Recorded reaction time is most significantly correlated with Language Use score, but also shows significant relationships with Language History and Language Attitudes (ps< 0.001) and much less so with Language Proficiency (p=0.017).
- Correlation analysis showed a significant relationship between relative speed and location ($p<0.001$), as well as age (p=0.021), where youth and urban speakers are answering faster in Russian than in Chuvash. However, while mean comparison analysis shows significant differences in reaction times between locations, no such significance was noted between Youth, Adults and Older Adults, indicating that children are likely to receive similar scores to their parents, not their urban counterparts.
- Analysis of the dominance scores across different locations revealed significant differences between village, town, and cities (all p<0.001). However, an ANOVA analysis revealed no significant difference in dominance scores between generations ($F(4,44)=1.173$ p=0.319).
- Across the board, tested city speakers acquire Chuvash later, use Chuvash less often, have lower perceived proficiency levels in Chuvash and lower attitude scores towards Chuvash.

- Plotting both the HALA speeds and BLP scores on axes (right) shows an interesting phenomenon. Speakers in Quadrant II replied that they felt they were Chuvash dominant on the BLP, but the HALA showed Russian dominance. With further analysis, this may prove that the psycholinguistic tool (HALA) truly is able to detect language shift earlier than the traditional sociolinguistic tool (BLP).

Language Dominance and Lexical Access

Spearman Sig. p<.001
y=0.31+4.45E−3*x

Relative Speed (sec.) — Faster in Russian / Faster in Chuvash
BLP Dominance Score — Dominant in Chuvash / Dominant in Russian

Discussion

- Modifications
  - Additional Attitude Questions on BLP
  - Five minute "Language Switch" before HALA
  - Less time between HALA tests
    - Test 2 is answered on average 6 ms faster
  - Recalculated frequency for HALA test items
  - Rewrote HALA scripts for accuracy & consistency
- Proposed Modifications
  - Questions regarding language future on BLP
  - More flexibility with term choice/order on HALA
  - Sample analysis worksheet for HALA for ease-of-use
  - HALA survey to code speakers by lg. acquisition,
- Challenges
  - HALA
    - Age of acquisition, cross-linguistic frequency, word structure variables
  - BLP
    - Validity limitations (self-report)

Selected References

Alòs i Font, Hèctor. 2012a. "Языковой Сдвиг В Чебоксарах: Предварительные Результаты Опроса Старшеклассников": 1–10.

Birdsong, David, Libby Gertken, and Mark Amengual, eds. 2012. Bilingual Language Profile: an Easy-to-Use Instrument to Assess Bilingualism. COERLL, University of Texas at Austin. https://sites.la.utexas.edu/bilingual/.

O'Grady, William, Amy Schafer, Jawee Perla, On-Soon Lee, and Julia Wieting. 2009. "A Psycholinguistic Tool for the Assessment of Language Loss: the HALA Project." Language Documentation & Conservation 3 (1) (June): 100–112.

Acknowledgments

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BLP test materials, go to: http://sites.la.utexas.edu/bilingual
HALA test materials, go to: http://www.ling.hawaii.edu/research/hala.html