Listeners' experience with face-accent (in)congruencies modulates speaker identity effects in native-and foreign-accent

Carla Fernandez[1] & Janet G. van Hell[2]
Duke University, The Pennsylvania State University

Background

Previous research has shown that listening to foreign-accented speech is more effortful than listening to native accented speech.

Neurocognitive studies of FAS have found that listeners tend to process syntactic errors differently for non-accented foreign accented speech[1,2,3,4]. Most of these studies have presented listeners with sentences devoid of any visual/facial cues .

Studies that have used facial cues have found that they can affect language processing according to whether they are congruent or incongruent with the type of accent[5]. However, most of these studies have been conducted on monolingual listeners of the majority race.

This effect has been termed Reverse Linguistic Stereotyping[6], which posits that we tend to form expectations regarding what a speaker will sound like based on how they look (race/ethnicity). In the current auditory EEG study, we combined both lines of research to answer the following question:

- What is the role of listener experience in the processing of visual and linguistic cues?

Methods

Materials: 480 sentences, produced by 2 non-accented and 2 Chinese-accented speakers. Sentences could contain semantic or grammatic errors, in addition to control sentences. Each sentence was paired with either a congruent (e.g. Caucasian face-no accent) or incongruent (e.g. Caucasian face-Chinese accent) picture.

Participants: 25 Chinese-Americans, with a lot of experience with face-accent incongruencies and varying degrees of experience with foreign-accented speech.

Tasks: Participants were presented with a picture of the speaker's face 350 ms prior to to listening to sentences while auditory ERPs were recorded .

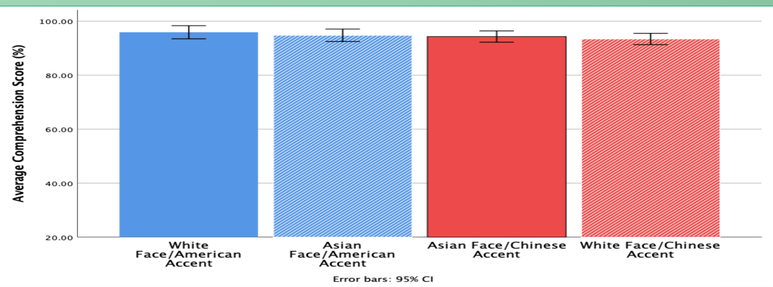
Comprehension questions to ¼ stimuli.

Participants also completed a language history questionnaire and cognitive tasks.

Type	Correct	Incorrect
Semantic	John wrote a scientific **article** about pollution last year.	John wrote a scientific **coconut** about pollution last year.
Syntax	John went to bed late because **he** did not have class in the morning.	John went to bed late because **she** did not did not have class in the morning

Results: Behavioral Measures

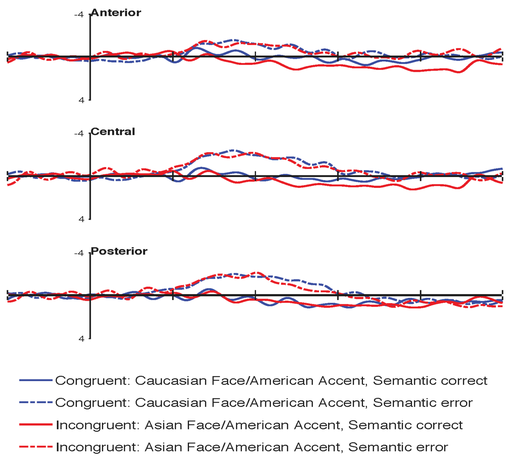
25 native English speakers Age=19.12 (1.2)



Results: Auditory ERPs

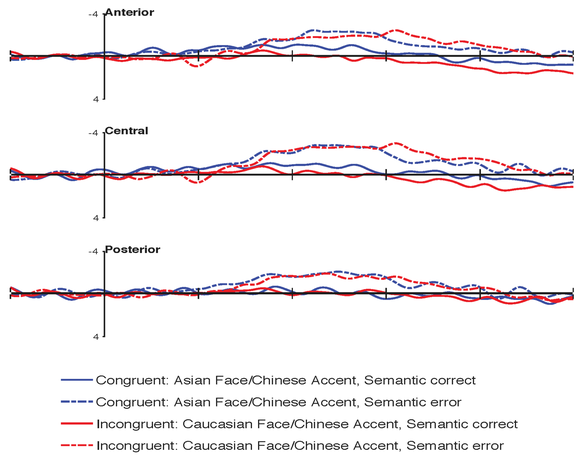
American Accent

Semantic



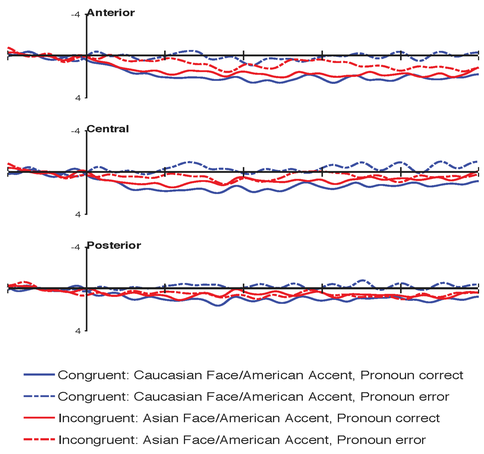
Chinese Accent

Semantic



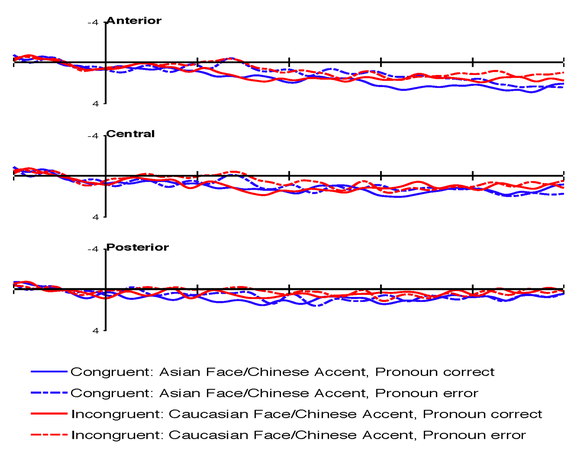
American Accent

Syntax



Chinese-Accent

Syntax



Summary

Condition	Face	Accent	Semantics	Syntax
1	White	American	N400	Nref
2	Asian	American	N400	Nref
3	Asian	Chinese	N400	Nref
4	White	Chinese	N400	Nref

Conclusions

What is the role of listener experience in the processing of visual and linguistic cues?

Listener experience with face-accent "incongruencies" modulates the effects of the RLS phenomenon.

Unlike their White monolingual peers, Chinese-Americans did not rely on facial cues to determine the likelihood of hearing a particular accent.

Importantly, there were no effects of congruency in either behavioral nor ERP results.

Future analysis will explore the effect of individual differences in cognitive and language measures on native and foreign-accented sentence processing.

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