Introduction

Questions:
1) What brain regions are recruited during code-blend comprehension?
2) What brain regions mediate the behavioral facilitation observed for code-blend comprehension?
   - Is facilitation associated with increased or decreased activation?

Methods
Participants:
13 hearing native ASL-English bilingual adults (6 female, mean age = 26.85)

Task & Procedure:
60 unique items (trials) per language per subject

Stimuli:
- 18 lists of 10 nouns (mean Celex frequency = 3.05, range = 0 - 6.41)
- Lists counterbalanced across subjects
- Baseline task: silent model at rest with dot on chin, ½ with audible tone

Each item filmed with hearing native signer producing:
- an ASL sign translation (ASL)
- an audiovisual English word (ENG)
- signed and spoken word simultaneously (code-blend, or CB)

MRI acquisition
- GE 3T, gradient echo echo-planar imaging
- TR = 2s; FOV = 240mm; 30 4.5mm contiguous sagittal slices

MRI Analysis
- General linear model, multiple regression using AFNI
- Mixed effects group ANOVA on individuals' beta weights

Results
Behavioral
Semantic decisions were:
- faster for code-blends than for ASL, p < .005
- faster for English than for ASL, p < .05
- equally fast for English and code-blends

Language vs. Baseline
ENG > Still
- L inferior frontal gyrus
- L premotor cortex
- L/R STG (anterior)

ASL > Still
- L/R inferior frontal gyrus
- L premotor cortex
- L/R STG (posterior)
- L Lingual gyrus

ENG vs. ASL
- L IFG (BA 44)
- R IFG (BA 19)
- L STG (BA 22)
- L precentral gyrus (BA 4/6)

Conclusions
- Decreased activity for code-blend comprehension in frontal language and posterior visual regions may reflect reduced effort when ASL comprehension is aided by redundant cues from English.
- Similarly, in left STG the trend toward decreased activity during code-blend perception may reflect reduced effort when English comprehension is aided by redundant cues from ASL.

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