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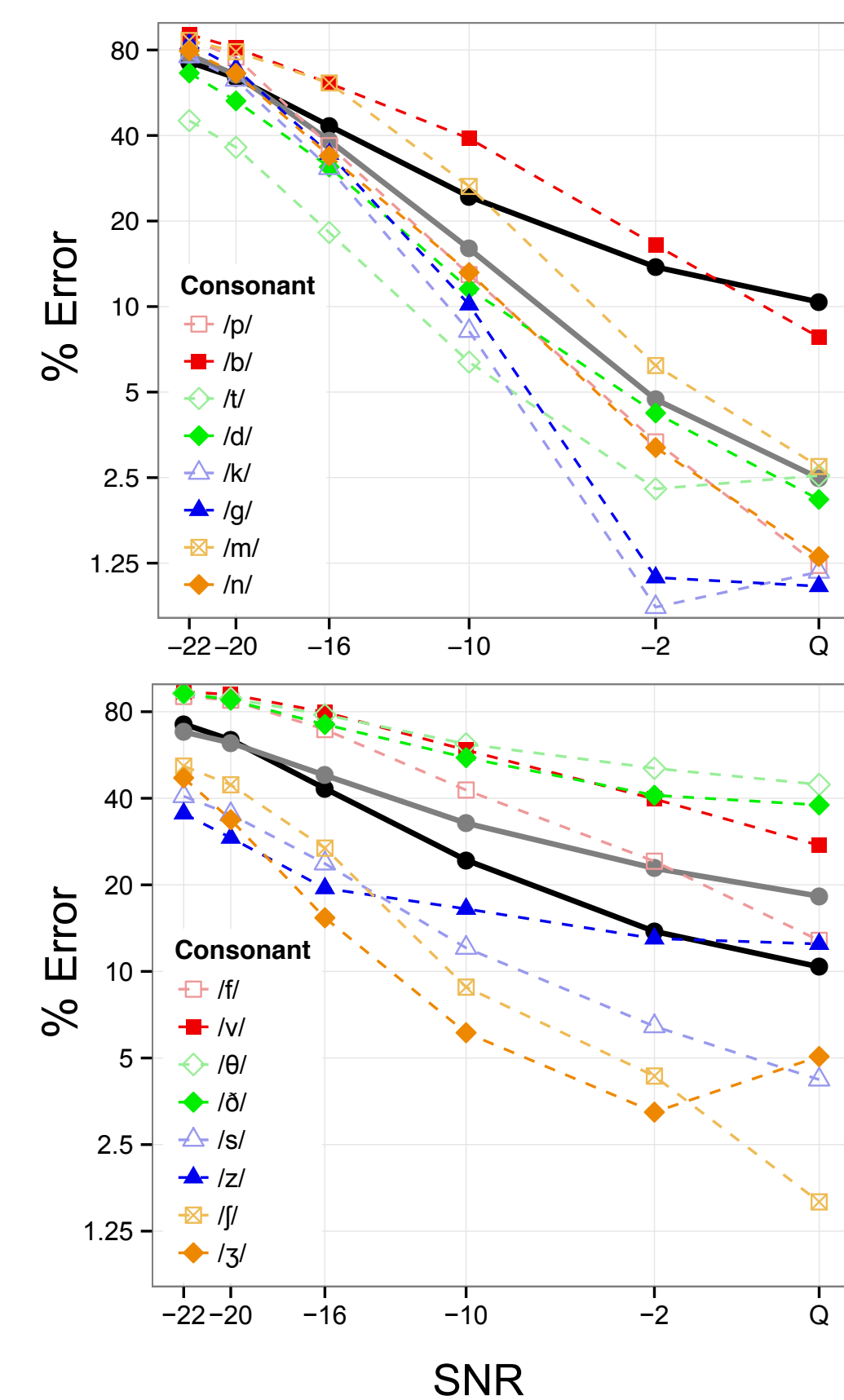
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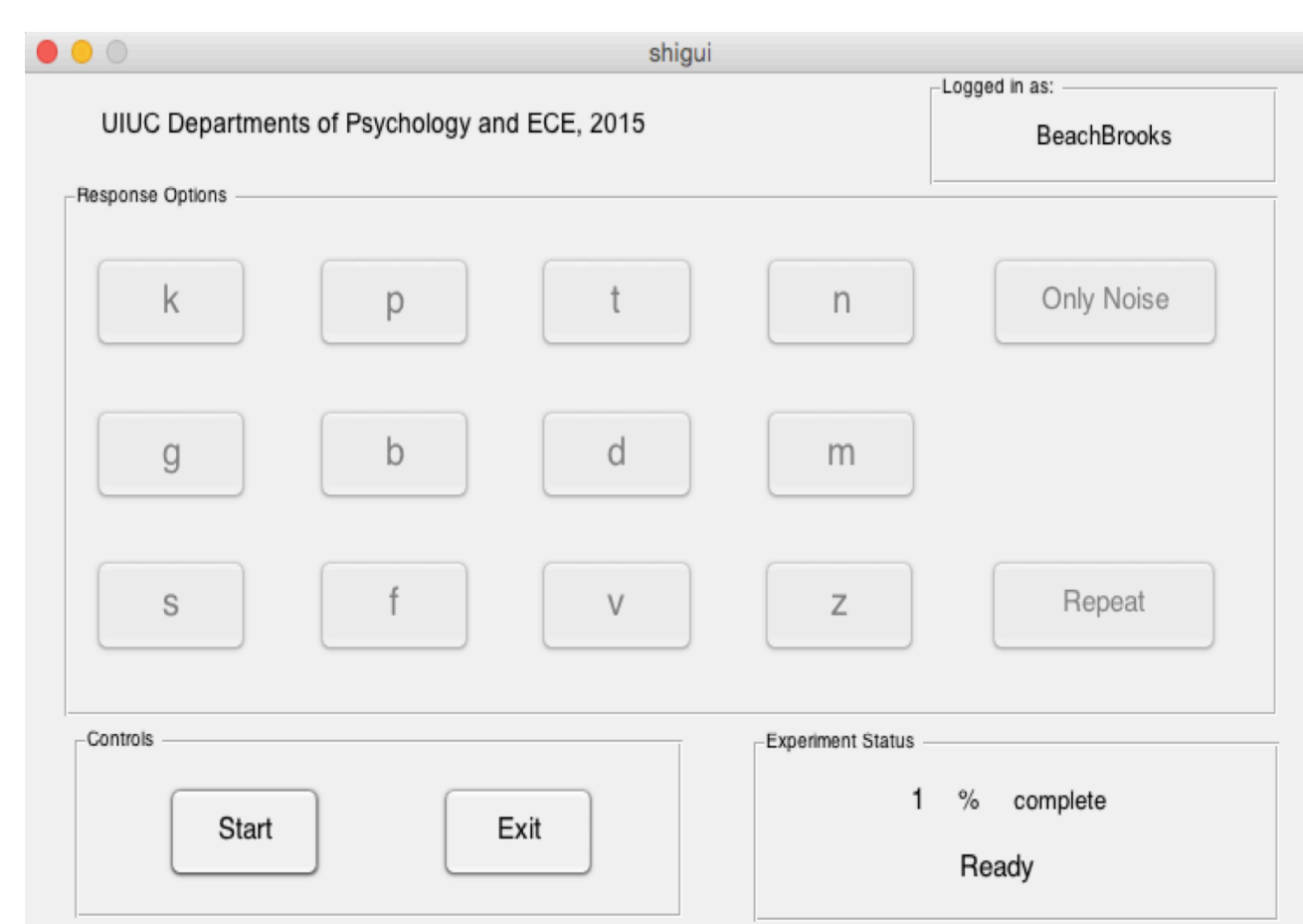
INTRODUCTION

- Speech testing offers a potentially useful diagnostic tool for assessing hearing loss
- Existing tests use isolated syllables (Humes et al., 1986; Dobie, 2011), words (Wilson et al., 2007), or spoken sentences (Nilsson et al., 1994; Killion et al., 2004)
- However, speech tests have been largely unsuccessful
- Possible reasons:
 - Speech sounds have consonant- (Trevino & Allen, 2013) and token-dependent (Toscano & Allen, 2014) errors
 - Differences account for more variance in responses than signal-to-noise ratio (SNR)
 - Suggests that speech tests should use stimuli that control for token-level differences in error thresholds
- We compared a token-specific test with listeners' audiograms to assess this approach



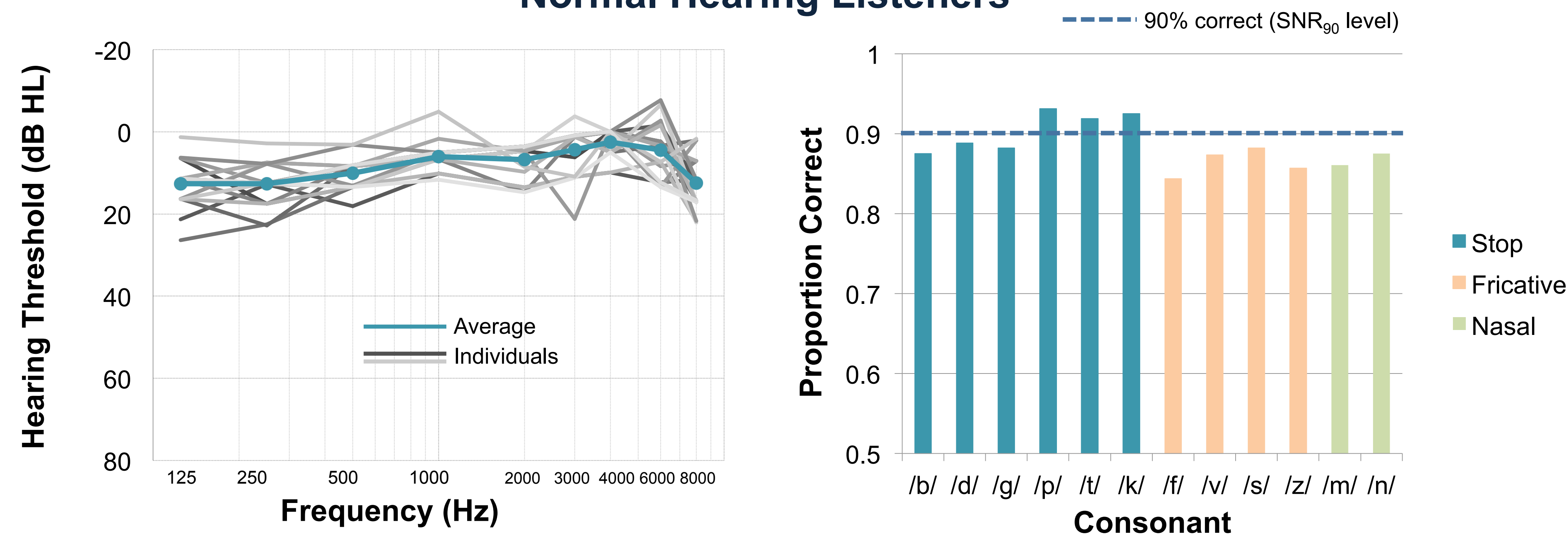
METHOD

- Participants heard 48 consonant-vowel pairs; 2 repetitions each (4 tokens dropped from analysis due to incorrect SNR thresholds)
- Stimuli balanced by talker (12 talkers; 6 female) and vowel context (4 vowels)
- Listeners indicated which consonant they heard (/b,d,g,p,t,k,f,v,s,z,m,n/)
- Stimuli were presented at token-specific SNRs, such that normal-hearing listeners should select the correct consonant 90% of the time
- Participants also completed a computerized pure-tone audiometry test, as well as a self-report hearing difficulty questionnaire

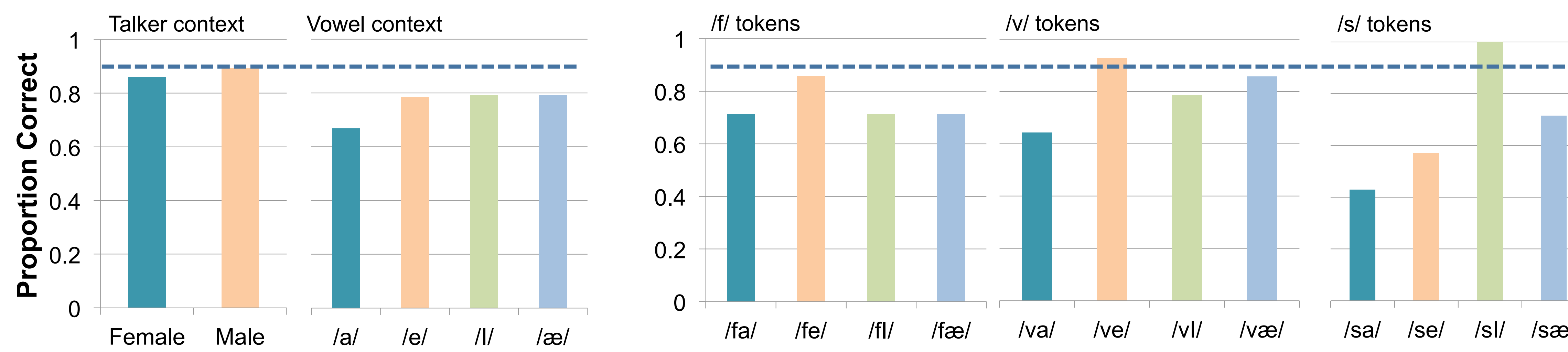
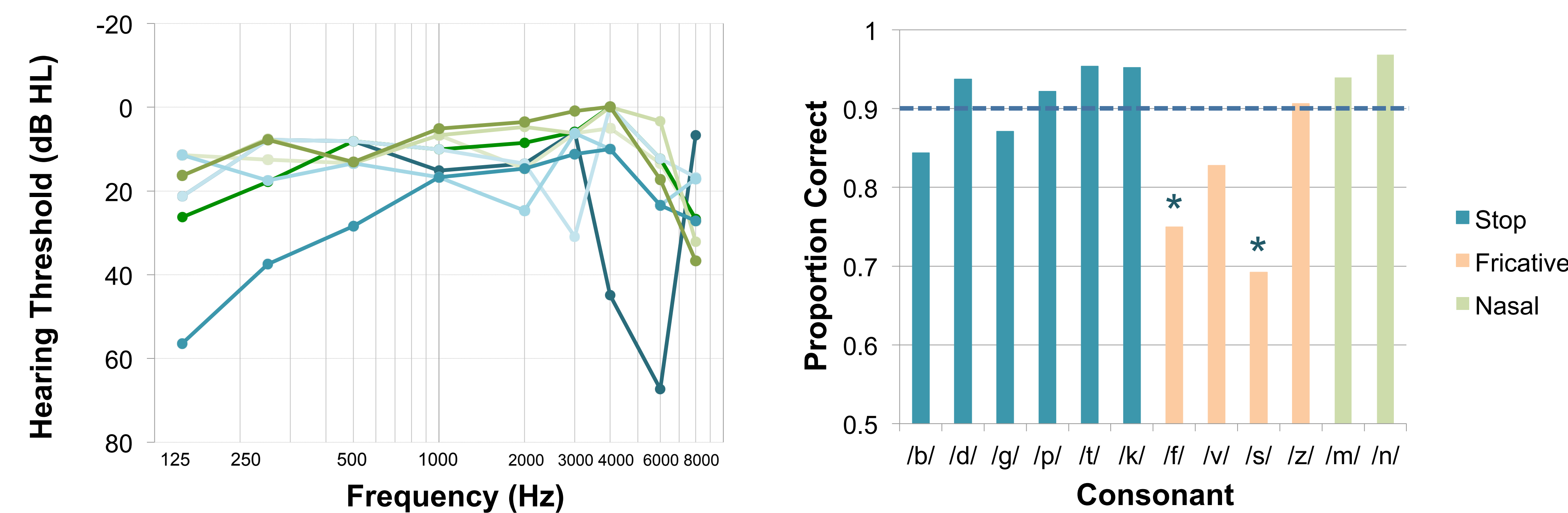


RESULTS

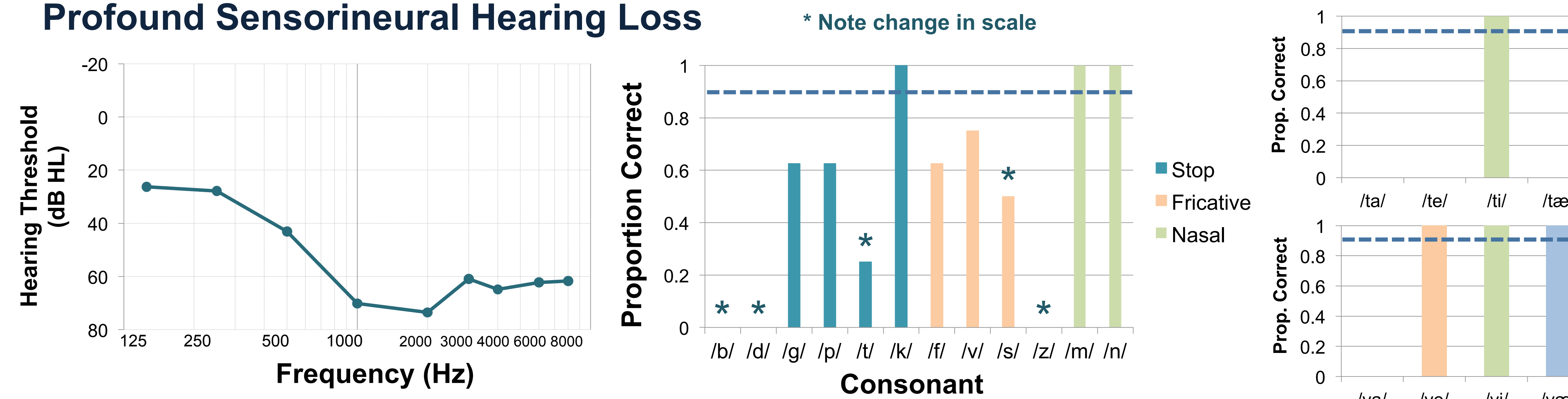
Normal Hearing Listeners



Mild to Moderate Hearing Loss



Profound Sensorineural Hearing Loss



DISCUSSION

- Listeners' average performance obscures consonant-specific deficits
- Performance on individual consonants spanned a wide range
- Listeners with higher thresholds at high frequencies made errors on specific consonants (/f,s,v/), suggesting that they are missing critical high-frequency acoustic cues for these sounds
- Listener with profound sensorineural hearing loss made errors, but correctly identified robust consonants (e.g., /k/)
- Overall, results indicate that speech tests using tokens with well-defined thresholds can reveal specific deficits corresponding to higher hearing thresholds at certain frequencies

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