Behavioral and Electrophysiologic Binaural Interactions in Listeners with Hearing Loss

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INTRODUCTION

The advantages of binaural hearing are well-established in the literature and include improved phonetic understanding in quiet and in background noise, a larger audible sound field, improved hearing in reverberation, presence with binaural hearing loss, freedom, typically associated with bilateral hearing aids (Phielix & Gerhard-Herman, 1991). However, the majority of the literature supports binaural amplification for individuals with symmetrical hearing loss. Several studies have reported benefits of binaural amplification for listeners with non-symmetrical hearing loss (e.g., Johnson & Kuk, 1998), but most studies suggest that amplification is not beneficial for listeners with asymmetric hearing loss (e.g., Chag, & Stephenson, 1996; Kolarer et al., 2001). A recent study by Strouse & Wilson (1999) found that the advantages of binaural hearing were smaller for listeners with asymmetrical hearing loss, which may be problematic for 25% of listeners with hearing loss. Thus, it is important to know if a binaural aid used for identifying monaural sources can improve speech perception in binaural listeners with hearing loss.

METHODOLOGY

METHODS

Subjects

Thirty-two subjects enrolled in the study. The subjects were 10 listeners with normal hearing (mean age = 25 ± 2 years) including two males and eight females and 20 listeners with hearing loss (mean age = 39 ± 4 years) including 10 males and 10 females. The lower graph shows the performance for all subjects. The upper graph shows the performance for individual subjects with normal hearing. The dotted line represents the line of regression. The dotted line on the upper graph shows the performance for individual subjects with bilateral hearing loss.

RESULTS AND DISCUSSION

The purpose of the present study was to determine the extent to which behavioral measures of binaural processing were related to electrophysiological measures of binaural processing in listeners with symmetrical and asymmetrical hearing loss.

REFERENCES


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CONCLUSIONS

The purpose of the current study was to determine the extent to which behavioral measures of binaural processing were related to electrophysiological measures of binaural processing in listeners with symmetrical hearing loss and in listeners with asymmetrical hearing loss. The upper graph shows the performance for individual subjects with normal hearing. The dotted line represents the line of regression. The dotted line on the upper graph shows the performance for individual subjects with bilateral hearing loss.

The results of the current study suggest that behavioral and electrophysiological measures of binaural processing may provide different information about the effectiveness of a binaural aid for listeners with hearing loss. The upper graph shows the performance for individual subjects with normal hearing. The dotted line represents the line of regression. The dotted line on the upper graph shows the performance for individual subjects with bilateral hearing loss.

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