

Ear-to-Ear Lateralization of Auditory Image in Stutterers and Normals*

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The study is comprised of 12 normals and 10 stutterers. All the subjects of this study were right handers and they had normal hearing in both the ears. Their age ranged from 16 years to 30 years. Ear-to-ear lateralization test was administered for all the subjects using recorded CV syllables [pa, ba, ka, ga, ta and da] and Western music as follows :

At first the stimulus was presented simultaneously to both the ears at 20 dB above SRT. The intensities of right ear and left ear were controlled by channel 1 and channel 2 respectively. Let the dial readings of right ear be X_1 and Y_1 dB respectively (20 dB above SRT). At this time the subject heard the stimulus centrally. Now the intensity of right ear was raised in 1 dB steps (keeping the intensity constant in left ear at Y_1 dB) until the subject heard the stimulus in the right ear. The dial reading of the right ear was noted down. Let it be X_2 dB. Now the intensity of left ear was raised in 1 dB steps (keeping the intensity constant in the right ear at X_2 dB) until the subject lateralized the image in his left ear. The dial reading of left ear was noted down. Let it be Y_2 dB. The intensity required to shift the fused image from right ear to left ear $I_{R-L} = (Y_2 - Y_1)$ dB was found out.

Similarly the intensity required to shift the fused auditory image from left ear to right ear was also found out, *i.e.*, stimulus was initially presented at 20 dB above SRT in both the ears. The dial reading of right ear (assumed X_1) and left ear (assumed Y_1) were noted down. Now intensity was raised in left ear keeping the right ear intensity (X_1) constant, until the image shifted to left ear. Let the dial reading of left ear be Y_2 dB. Next, the intensity in the right ear (which was at X_1 dB) was raised keeping the left ear's dial Y_2 constant. This intensity was raised until the subject indicated that the auditory image had shifted from left ear to right ear. Let the dial reading of right ear be X_2 dB. The intensity required to shift the fused image from the left ear to right ear (I_{L-R}) was calculated as $(X_2 - X_1)$ dB.

This test was done using two types of stimuli namely, CV syllables and Western music. Each test was repeated in order to check the reliability of responses. The average score was considered.

Conclusions

The following conclusions were drawn from this study :

- (1) There was no significant difference between the intensity required to shift the fused auditory image from

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right ear to left ear (CV syllables) and left ear to right ear (CV syllables) in normals.

- (2) There was no significant difference between intensity required to shift the fused auditory image from right ear to left ear (music) and left ear to right ear (music) in normals.
- (3) Normal subjects required significantly lesser intensity to shift the fused auditory image from right ear to left ear for CV syllables than the intensity required to shift the fused auditory image from right ear to left ear for music.
- (4) Normal subjects required significantly lesser intensity to shift the fused auditory image from left ear to right ear for CV syllables than the intensity required to shift the fused auditory image from left ear to right ear for music.
- (5) There was no significant difference between the intensity required to shift the fused auditory image from right ear to left ear (CV syllables) and left ear to right ear (CV syllables) in stutterers.
- (6) There was no significant difference between the intensity required to shift the fused auditory image from right ear to left ear (music) and left ear to right ear (music) in stutterers.
- (7) In stutterers there was no significant difference between the intensity required to shift the fused auditory image from right ear to left ear for

CV syllables and intensity required to shift the fused auditory image from right ear to left ear for music.

- (8) In stutterers there was no significant difference between the intensity required to shift the fused auditory image from left ear to right ear for CV syllables and intensity required to shift the fused auditory image from left ear to right ear for music.
- (9) Normals required significantly lesser intensity than the stutterers to shift the fused auditory image from right ear to left ear for CV syllables.
- (10) There was no significant difference in intensity required to shift the fused auditory image from left ear to right ear for CV syllables between normals and stutterers.
- (11) There was no significant difference in intensity required to shift the fused auditory image from right ear to left ear for music between normals and stutterers.
- (12) There was no significant difference in intensity required to shift the fused auditory image from left ear to right ear for music between normals and stutterers.

Limitations

- (1) The present study was done on ten stutterers only.
- (2) Left handers were not included in the present study.

Recommendations

- (1) It may be worthwhile to study the performance of subjects having central auditory dysfunction on the ear-to-ear lateralization test.
- (2) As the present study has revealed individual difference in stutterers,

more number of stutterers differing in the onset of stuttering may be tested.

- (3) The finding that the stutterers require greater intensity for shifting the fused image from one ear to another ear, should be confirmed by testing a large number of stutterers.