SPEECH INTELLIGIBILITY IN NOISE AND CHILDREN WITH BILATERAL CIs: THE EFFECT OF BILATERAL EXPERIENCE

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METHODS

Simul: (1) Bilateral CI+HA vs. CI+CI for same subject, paired t-tests. (2) Bilateral CI+CI vs. CI+CI for same subject, paired t-tests. (3) CI+CI vs. CI+CI for deaf children, unpaired t-tests. (4) CI+CI vs. CI+CI for children, unpaired t-tests.

RESULTS

1. Bilateral CI+CI vs. CI+CI (N=3) showed no significant difference in SRTs for the Quiet condition (t[2]=0.501, two-tailed, p=0.646). Significant differences were found for the Front (t[2]=2.924, two-tailed, p=0.050) and Near (t[2]=2.924, two-tailed, p=0.050) conditions.

2. CI+CI vs. CI+CI (N=3) showed no significant difference in SRTs for the Quiet condition (t[2]=0.501, two-tailed, p=0.646). Significant differences were found for the Front (t[2]=2.924, two-tailed, p=0.050) and Near (t[2]=2.924, two-tailed, p=0.050) conditions.

3. CI+CI vs. CI+CI (N=3) showed no significant difference in SRTs for the Quiet condition (t[2]=0.501, two-tailed, p=0.646). Significant differences were found for the Front (t[2]=2.924, two-tailed, p=0.050) and Near (t[2]=2.924, two-tailed, p=0.050) conditions.

CONCLUSIONS

1. In children who received two CIs in sequential procedures, when listening with bilateral CIs, SRTs generally improved as a function of the number of months post-activation of the 2nd CI. This suggests that the brain undergoes a period of adjustment that results in novel stimulation, and that over time the children learn to develop listener strategies that incorporate information from the two ears. The extent to which they are actually sensitive to binaural information per se remains to be determined.

2. When the bilateral children were tested 3 months post-activation of the second CI, most performed significantly better than the group with CI+CI group. The greatest change occurred over the first 12 months, after which the interferer was placed near the second CI. This suggests that the children grew accustomed to their second CI and were better able to utilize the “head shadow” effect.

3. A “bilateral advantage”, defined as improvement in SRTs with bilateral devices compared with a CI alone, was measured only in the children with CI+CI, but not in the children with CI+HA.

4. Spatial release from masking (SRM), defined as the advantage (improved SRTs) when the target and interfering speech are spatially separated, was measured in both groups of children (CI+CI and CI+HA).

5. Children who were first tested with CI+HA and subsequently with CI+CI (N=2) showed improvement due to the 2nd CI on word- recognition scores (at negative SNRs) up to 3 months post-activation of the 2nd CI, suggesting that they adapt to bilateral stimulation very rapidly.

REFERENCES


