BioMed Research International

Special Issue on
Bimodal Hearing

CALL FOR PAPERS

In recent years, the expansion of the candidacy criteria for cochlear implantation has resulted in a dramatic increase in the range of individuals with potential access to the benefits of bimodal hearing. Evidence establishes that bimodal hearing often provides a synergistic effect (i.e., bimodal benefit) on speech perception; however, there is also greater variability in this benefit. These two facts have resulted in a pressing need to increase understanding of how the implanted and aided ears detect and integrate important cues and to optimize the integration process to facilitate these bimodal benefits.

The presence of important low-frequency cues that may be conveyed by a hearing aid (HA), such as glimpsing, F0, voicing, and phonetic cues, has been tested as possible factors. However, the evidence supporting the idea of a consistent contributor to bimodal benefit is weak. It is suggested that bimodal benefit depends on the ability of bimodal users to detect relevant cues individually processed by a cochlear implant (CI) and a HA and integrate them. By investigating how bimodal benefit is related to the ability of the implanted and aided ears to detect spectral and temporal cues in current (successful and unsuccessful) bimodal users, we can create a profile of critical information regarding which specific cues must be processed in the ear with the HA to facilitate greater bimodal benefit for bimodal hearing candidates.

Another important issue is the selection of the ear best suited to continue the use of amplification for optimal bimodal benefit. That is, for a current bilateral HA user who will be receiving a CI on one side, which ear should be left with acoustic hearing and which ear should be implanted in order to receive the greatest bimodal benefit? The two principal criteria in considering bimodal hearing intervention, the degree of residual hearing and preoperative sentence recognition test scores, are not directly linked with bimodal benefit in speech perception.

The advancement of wireless technology brings forth another key issue: how to optimally coordinate input to and between two ears when one or both are electrically stimulated? For example, can matching the automatic gain control between a HA and a CI yield significant improvement in speech understanding in noise and listening comfort for bimodal users?

Despite the wealth of research on bimodal hearing, there is still a lack of knowledge regarding the underlying mechanisms of bimodal benefit, the peripheral and cortical integration process, optimization of advanced features of a CI and a HA, and much more. The purpose of this special issue is to publish high-quality research papers as well as review articles addressing recent advances in bimodal hearing. High-quality contributions that are not yet published or that are not currently under review by other journals or peer-reviewed conferences are desired.

Potential topics include but are not limited to the following:

- Underlying mechanisms of bimodal benefit
- Electrophysiological and neurological bases of bimodal hearing
- Psychoacoustic measures (especially temporal and spectral processing) in bimodal hearing
- Coordination of amplification and electric features across ears
- Development of better selection criteria for bimodal hearing
- The role of binaural fusion in bimodal hearing
- Binaural interaction
- Relationship between cue detection and cue integration in bimodal hearing
- Speech perception in bimodal hearing
- Sound localization in bimodal hearing
- Single-sided deafness
- Hybrid hearing

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/bmri/otolaryngology/bh/.

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