Abstract:
Transient evoked otoacoustic emissions (TEOAEs) are usually evoked with air conduction (AC) stimuli. Only a few reports exist about OAEs where stimuli have been delivered using bone conduction (BC) by placing a bone conductor on the forehead or the mastoid. The aims of the present study were to improve the test performance of BC-TEOAEs by using a nonlinear stimulation protocol and to find out, whether this technique can be applied in newborn hearing screening. BC-TEOAEs were measured binaurally in ten normal hearing adults and in ten infants. For measurements in infants, miniaturized probes without loudspeakers were constructed to allow a complete insertion of the probe in the infant's ear canal. It could be shown that robust and valid BC-TEOAEs can be elicited using a nonlinear stimulation protocol. Findings in adults indicated that BC-TEOAEs can be measured with properties similar to AC-TEOAEs. However, mean BC-TEOAE levels were reduced by 0.8-3.7 dB depending on frequency. In view of test time, this is compensated by performing binaural recordings. Measurements in infants indicated that the screening performance of BC-TEOAEs and AC-TEOAEs may be comparable. Further studies have to investigate, whether BC-TEOAEs are more robust than AC-TEOAEs against small conductive hearing loss.