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| 論文表題 | **Sound lateralization ability of elderly individuals in three onset conditions** | | | | |
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# Sound lateralization ability of elderly individuals in three onset conditions


Kazumoto Morita, Moeko Shiroki and Takeshi Toi



Abstract

Previous studies have indicated that older persons may experience difficulties perceiving the initial phase of auditory stimuli. To advance the scope of this research, the present study introduced variations in the sound conditions during the onset phase. Specifically, three different conditions were employed. (1) A condition characterized by the absence of auditory stimuli during the initial phase of the delayed ear side. (2) A condition involving the presentation of auditory stimuli during the initial phase of the delayed ear side. (3) A condition where silence was introduced solely during the initial phase of the delayed ear, without any temporal delay in the ongoing phase. Twenty-three older participants and 22 young adults were exposed to two sound frequencies, specifically 1 kHz and 500 Hz. Various interaural time differences (ITDs) were shown individually to each ear, including values of 0.2, 0.4, 0.6, and 0.8 milliseconds. Additionally, a condition of zero ITD was also included for both ears. A test stimulus sound was administered after presenting the reference sound during the experimental trials. Participants were then required to indicate the perceived direction of the sound by selecting one of three response options: 'Right,' 'Left,' or 'Same,' about the reference sound. The findings from condition (3) indicated that the older individuals exhibited a diminished ability to detect the initial segment of auditory stimuli compared to their younger counterparts.



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