Abstract

The present study investigated the age related changes in psychophysical abilities, speech perception in noise and working memory. The relationship among age, psychophysical abilities, speech perception in noise and working memory was also assessed. A cross-sectional research design was used and a total of 210 participants were selected for the study. Participants in the age range of 10-85 years were equally divided into seven cross-sectional age groups. The effect of age was studied on processing of all three main domains of sound: frequency, intensity and duration. Frequency and intensity processing was investigated through frequency difference limen and intensity difference limen. Temporal processing skills were assessed through duration discrimination thresholds, gap detection thresholds, backward masking, modulation detection thresholds and duration pattern scores. Speech perception in noise was assessed through quick speech perception in noise test in Kannada. Working memory assessment involved operation span test, reading span test and auditory sequencing and digit span measures (forward, backward, ascending and descending digit span). The results showed that the younger participants performed significantly better in most of the psychophysical measures, speech perception in noise and working memory. Working memory measures had significant relationship with the psychophysical measures and speech perception in noise. Structural equation modeling revealed that direct effect of age on speech perception in noise was negligible. However, age had significant indirect effect on speech perception through its effect on temporal and frequency processing skills. Direct effect of age on working memory skills was also small and negligible. However, age had significant indirect effect on working memory skills through temporal and frequency processing. Temporal processing, frequency processing and intensity processing skills significantly affected working memory skills and speech perception in noise.

Key words: Frequency processing, intensity processing, temporal processing, operation span, reading span