

The Peripheral Hearing and Central Auditory Processing Skills of Individuals with Subjective Cognitive Decline

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Abstract

Purpose: With more than 47 million people living with dementia worldwide in 2015 and it is considered a growing global epidemic in older adults. Alzheimer's disease (AD) is the most common cause of dementia in older adults accounting for 60% to 80% of the dementia. Current evidence suggest that subjectively experienced decline in memory or other cognitive functions in the presence of normal performance on neuropsychological measures is associated with an increased risk for future cognitive decline and AD dementia. The purpose of this study was to compare the central auditory assessment scores those with pre-clinical Alzheimer's disease-subjective cognitive decline (SCD) and no subjective cognitive decline (non-SCD). It was hypothesized that the SCD group will perform significantly poorer on tests of central auditory skills compared to participants with non-SCD.

Methods: A total of 95 participants were recruited from the larger Western Australia Memory Study and were classified as SCD (N = 61; 20 males and 41 females, mean age 71.47 +7.18 years) and control (N = 34; 10 males, 24 females, mean age 68.85 + 7.69 years) All participants completed a peripheral hearing assessment, a central auditor processing assessment test battery (Dichotic Digits, Duration Pattern Test, Dichotic Sentence Identification, Synthetic Sentence Identification with Ipsilateral Competing Message and the Quick-SIN) and a comprehensive neuropsychological assessment.

Results: The SCD group performed significantly poorer than the control group on Synthetic Sentence Identification with Ipsilateral Competing Message -10dB SNR and -20 dB SNR conditions. No significant differences were found between the two groups on the peripheral hearing thresholds.

Conclusions: The trends in the data suggest individuals with SCD perform poorly in central hearing assessments in comparison to the normal population which may result in greater cost to their finite pool of cognitive resources. The results of this study suggest that CAP skills, as compared to peripheral threshold measures, are impaired in SCD populations, providing yet another biomarker support that SCDs are representing changes in brain functions.

Longitudinal follow up of individuals with SCD and decreased CAP abilities should inform whether this group is at higher risk of developing dementia as compared to non-SCD and also SCD without CAP deficits.

