ACT

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Hearing, Seeing and Breathing: Important recent ACT results

In the realm of Alzheimer's disease research, the ACT study is unique. Among its many distinguishing attributes, ACT's enduring study cohort and access to its members' Kaiser Permanente medical records have contributed significantly to recent groundbreaking research that has strong implications for maintaining sensory function, in addition to overall health, as they relate to the aging brain.

The relationship between **hearing** loss and dementia has been the focus of ACT-affiliated researcher, George Gates, a retired UW otolaryngologist and neuro-otologist, and former Director of the Bloedel Hearing Research Center. In the early years of ACT, he began a longitudinal study of more than 300 ACT volunteers, who received hearing tests not commonly administered during routine audiology exams, to determine whether those who were found to have a dysfunction known as Central Auditory Processing Disorder (CAPD) were at an above-average risk of developing Alzheimer's Disease (AD). The longevity of the ACT study population was crucial to making a strong case for the connection; after 20+ years of follow-up with these participants and many more cases of dementia, Gates and a UW undergraduate student recently published a paper demonstrating that the inability to hear speech *accurately* or distinguish it from other sounds in a noisy environment (CAPD), is a potential marker for AD in elderly people. This finding underscores the importance of central auditory processing in understanding the pathway to AD—it's not just hearing sound.

We've long known that **visual** impairment, especially if not corrected, has a relationship to *age-related* cognitive function, but one recent study explored whether cataract surgery might be associated with a lower risk of *disease-related* cognitive decline. Cecilia Lee, a UW assistant professor of Ophthalmology and clinician scientist, looked at both ACT study data and the pertinent health information that her team of chart abstractors pulled from the Kaiser medical records of 3719 ACT participants who had cataracts. The results of this research showed that participants who had their cataracts removed were less likely to become demented than those who did not have the surgery.

We know that, in general, air pollution is not good for our **breathing** and overall health, but less is known about how it affects the aging brain. Early studies relying on large administrative data sets in Canada and the UK suggested there might be a connection between air pollution and dementia risk, but they lacked precise information. A study led by ACT co-investigator Lianne Sheppard placed air quality monitors outside of ACT volunteers' homes, and mobile air quality-monitoring devices were driven around participants' Seattle neighborhoods. Over time, results confirmed that continued exposure to particulate matter 2.5 microns or less was associated with higher risk of dementia and cognitive decline. This study was published in the scientific journal that the US uses for environmental health guidance.

These findings demonstrate how the unique nature of ACT's longstanding cohort and its access to healthcare records provide an outstanding source of potentially actionable knowledge for promoting healthier brain aging.

Just for fun: Have you heard about the new restaurant on the moon? It's got great food but no atmosphere

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