

Studies Update

The Beaver Dam Offspring Study (BOSS) is underway with its ten year follow-up and the Epidemiology of Hearing Loss Study's (EHLS) twenty-one year follow-up will conclude in 2016. Thank you to all of our participants!

We recently introduced two new, exciting instruments to collect your sensory information: the olfactometer and the optical coherence tomography imaging system. The olfactometer was used in the Epidemiology of Hearing Loss Study while optical coherence tomography is being used in the Beaver Dam Offspring Study.



The Olfactometer

The olfactometer, or OLFACT-RL, is an instrument that is used to determine odor threshold or sensitivity. Similar to the hearing threshold test where softer and louder tones are used to determine the softest sound a person can hear, the odor threshold test uses weaker and stronger odors to determine the weakest concentration of an odor a person can smell. Unlike the odor identification test that most participants are familiar with from previous examinations, participants don't have to identify an odor, just indicate which of two puffs of air smells stronger. Researchers will analyze the odor threshold results to determine if smell sensitivity changes with age and what health and lifestyle factors may be associated with smell sensitivity.

The Optical Coherence Tomography Imaging System

Optical coherence tomography, or OCT, uses infra-red light to scan the retina, which is in the back of your eye. The retina has many layers and each plays an important role in vision. We are measuring the macular ganglion cell/inner plexiform layer, or mGCIPL. This layer receives visual information from photoreceptor cells and sends that information to the brain. We want to see how thick the layer is and determine if there is a connection between its thickness and other age-related changes, like hearing loss or cognitive decline.



Fulbright Scholar applies knowledge gained from Beaver Dam Studies to the United Kingdom

Dr. Piers Dawes, a research fellow at the University of Manchester in England, was awarded a Fulbright Scholarship (a competitive grant allowing international exchange of learning) to spend a few months in 2014 with our research program learning about EHLS and BOSS. Dr. Dawes holds a Doctor of Philosophy in experimental psychology from Oxford and is currently a Lecturer in Audiology at the University of Manchester. His research focuses on the treatment and prevention of hearing loss as well as the cognitive aspect of hearing (i.e. how hearing and brain function work together). During his time with us, Dr. Dawes wrote a scientific article, published in the International Journal of Audiology, about hearing aid use and long term health outcomes using data collected from EHLS. The knowledge he gained from EHLS and BOSS will help Dr. Dawes as he studies hearing loss and cognitive changes in 50,000 subjects who contributed hearing data to the UK Biobank.

*Did you know
you can read
about some
of our
findings on
our website?*

Visit

[http://boss.](http://boss.wisc.edu)

[pophealth.](http://pophealth.wisc.edu)

wisc.edu

*BOSS exams
will continue
through the
summer of
2017.*



Beaver Dam Offspring Study & Epidemiology of Hearing Loss Study

Karen Cruickshanks, the principal investigator for both BOSS and EHLS, was invited to talk in Germany about the studies. German researchers are conducting a study very similar to BOSS called the Rhineland Study. This study will examine 30,000 people aged 30+ years and will study their hearing, cognition, and olfaction over their lifespan.

After your exam, our researchers work hard to analyze the information and data collected. Here are a few examples of the fascinating things you have helped us learn!



Atherosclerosis may be related to hearing loss!



During exams for the Beaver Dam Offspring Study, we did an ultrasound scan of the carotid arteries in your neck. The carotid artery is a blood vessel that carries blood to your brain, neck, and face. Those ultrasound images were analyzed in Madison where we looked inside the artery for plaque and measured the thickness of the artery walls. A person who has plaque inside of their arteries or thick arterial walls is said to have atherosclerosis.

We found that people who have subclinical atherosclerosis have a greater chance of developing hearing loss. More research needs to be done to find out why this relationship exists. One idea is that this might happen because a person with atherosclerosis has less blood flow to the body parts that play a role in hearing.

There are lots of risk factors for developing atherosclerosis. One of the stronger risk factors is a high cholesterol level. In the bigger picture, these findings could mean that it might be possible to prevent hearing loss by preventing atherosclerosis.



Why not stopping to smell the roses may help you smell them longer.



From studying the results from participants in our studies, we have found another potential benefit to exercise: reducing the risk of olfactory impairment, or in other words potentially lessen the loss of smell over time. You can add this result to a long list of benefits from exercise like: maintaining good health, potentially increasing your cognition in older age, and reducing your risk for cardiovascular disease, Alzheimer's disease, and dementia. We found the relationship between sense of smell and exercise from looking at data collected over ten years in EHLS.

We found that as people get older, more and more individuals start experiencing a decrease in their ability to smell. By comparing the individuals who did experience

olfactory (smell) impairment and those who did not, we found a factor associated with a decrease in the risk of impairment. That factor was exercising at least once or twice a week enough to generate a sweat. We found that those individuals who exercised at least once or twice were 13% less likely to experience olfactory impairment and those who exercised three or more times were an additional 14% less likely to experience it.

We can't guarantee that getting up, moving around, and working up a sweat will keep your nose in perfect condition but it may offer a chance to keep it lasting longer as a person ages. If you're the type of person who likes to stop in small parks during a nice evening stroll, maybe circle around the block a few more times before you take the time to stop and smell the roses.

For more information:



**800-253-0986
920-885-6823
608-890-0332**



boss@episense.wisc.edu

Beaver Dam Offspring Study &
Epidemiology of Hearing Loss Study
University of Wisconsin
School of Medicine & Public Health
610 Walnut Street, 10th Floor
Madison, WI 53726-2336

<http://boss.pophealth.wisc.edu>