



Sensory Update

Study participation update:

Thank you to the 2,700 people who participated in the study between June 2005 and January 2008.

Your involvement is so important! There is still time to take part; participants will be seen through the end of June. If you will not return to Beaver Dam, you can still participate by completing the study questionnaire.

Thank you for helping reach the goal of 4,500 people seen!

Results from Beaver Dam Offspring Study and Epidemiology of Hearing Loss Study to be presented at National Meetings

With the end of the Beaver Dam Offspring Study (BOSS) examination phase approaching, the exciting work of making sense of all the data begins. As the BOSS enters the final months of data collection, study investigators and staff are preparing to present preliminary results of the study, as well as data from the Epidemiology of Hearing Loss Study (EHLS), at scientific meetings throughout the US. This spring some study staff will attend the Society for Epidemiologic Research annual meeting. The meeting, held in Chicago this year, allows an opportunity to present some of the first data to come out of the BOSS. Some of the findings to be presented include the prevalence of hypertension (high blood pressure) and the prevalence of obesity in BOSS participants and how that compares with results from the Beaver Dam Eye Study and Epidemiology of Hearing Loss Study (EHLS). *ANYTHING AT AAS?*

Some early data on visual acuity will be presented at the annual meeting of the Association for Research in Vision and Ophthalmology, held in Fort Lauderdale, Fla. When the International Symposium on Taste and Smell convenes this summer in San Francisco, Dr. Karen J. Cruickshanks, principal investigator of the BOSS, and Carla Schubert, an epidemiologist with the study, will discuss the challenges of measuring the sense of taste and smell in population-based studies.

This summer, blood samples collected at both the BOSS and the EHLS will be sent to Boston University for DNA analyses. Also, co-investigators at the University of Minnesota will begin to evaluate the genetic component of hearing loss.

Study researchers will be busy analyzing the information collected from BOSS participants and comparing it to what we know about their parents.

More than 2,700 offspring of the original Beaver Dam Studies' participants have already participated in the BOSS. Your participation is very important to the success of the study. If you have not yet completed your study examination and you will be in the Beaver Dam area anytime through this June, we would be happy to schedule an appointment time that accommodates your schedule.

If you will not be in the Beaver Dam area, we would like to offer the opportunity for you to participate in the study by completing a study questionnaire. The questionnaire can be completed online, on paper forms we will mail to you or as a telephone interview.

Tell Me about My Senses

★ Smell

The sense of smell is considered one of the chemosenses. Nerve cells in our nose detect the microscopic molecules that are released from substances in our environment, such as foods, chemicals or plants, and send messages to the brain, where the odor is identified. Along with playing an important role in helping us perceive food flavors, the sense of smell can warn us of danger in our environment. For example, an odorant is added to natural gas to help us detect potentially disastrous gas leaks, the smell of smoke can alert us to fire and an unpleasant odor can serve as a deterrent for eating spoiled food.

Disorders in the sense of smell can cause a loss in the ability to detect odors or cause changes in the way an odor is perceived. People with hyposmia have a reduced ability to perceive odors while those with anosmia have the inability to smell anything. Some people notice "phantom smells," smelling something when nothing is present. Data from the EHLS showed that the sense of smell generally declines as we age, and women tend to have a more accurate sense of smell compared to men. Other things found to affect the sense of smell included smoking, medications, head injuries, nasal polyps, sinus and upper respiratory infections, radiation therapy to the head or neck, and exposure to certain chemicals.

Beaver Dam Offspring Study

Tell Me More about My Senses

The Beaver Dam Offspring Study gives us the unique opportunity to study genetic and other risk factors in two groups of people born in different time periods.

The information gained from this study may help reduce the burden of sensory loss in future generations.

★ Taste

Taste also is a chemosense and is closely associated with the sense of smell. Taste cells, which are clustered in the taste buds on the tongue, mouth and throat, react with food or beverages and send messages along nerve cells to the brain, where the taste is identified. People are generally able to identify five different tastes: sweet, sour, bitter, salty and umami (from glutamate, which is found in meat extracts and some cheeses). These tastes combine with odors to create the perception of flavor.

The reduced ability to perceive taste is called hypogeusia. The inability to taste anything is called ageusia. Some people experience phantom tastes - tasting something when nothing is present. Other disorders can distort tastes or flavors or can cause a normally appealing substance to taste foul. Not much is known about how common these taste disorders are in the general population. The Beaver Dam Offspring Study will help determine how common taste disorders are and identify factors associated with taste disorders. In one of the tests conducted in the BOSS, the participant's tongue is dyed blue with ordinary food coloring and a digital photograph is taken. Structures on the tongue, the fungiform papillae, which contain the taste buds, remain pink while the surrounding tongue is colored blue. By counting the number of fungiform papillae on the tongue, we are hoping to determine if there is an association between the number of taste buds and how intensely tastes are perceived.

★ Vision

What do those numbers on the eye chart mean? We have all heard that 20/20 is considered average vision, but what is 20/20? Visual acuity refers to the eye's ability to distinguish fine detail. In a clinical setting, this is usually measured by reading an eye chart with the letters decreasing in size as one reads further down the eye chart. Twenty feet is considered "optical infinity," and in standard practice, the eye chart is placed 20 feet away from the person reading it. At 20 feet, the average human eye should be able to distinguish a letter of a specific size. So, 20/20 simply means that at 20 feet, the eye is able to distinguish a letter of this size. Some people have visual acuity better than 20/20. For example, a person with 20/15 vision is able to see as well at 20 feet as a person with average vision at 15 feet. Likewise, a person with 20/40 vision can see at 20 feet as well as a person with average vision at 40 feet.

The visual acuity charts measure how well the eye performs in ideal conditions, with adequate lighting and high-contrast black letters on a white background. To determine how a person sees in less than ideal conditions, another eye chart is used to measure contrast sensitivity. The letters on this chart are a grey scale; instead of the getting smaller as they go down the chart, the letters seem to fade away. The contrast sensitivity test is a better indicator of how a person functions in the real world.

★ Hearing

Hearing loss is one of the most common conditions affecting older adults. Data from the Epidemiology of Hearing Loss Study (EHLS) show that nearly half of people over the age of 48 have a hearing loss and that the condition has been associated with decreased quality of life. Other studies have shown a link between hearing loss and depression and social isolation.

Although there are a variety of resources available to help people with hearing loss (such as hearing aids and listening devices), very few people actually make use of these resources, and hearing aids do not help with all types of hearing loss. Early prevention of hearing loss is crucial. Understanding the causes of hearing loss can help us to prevent it from occurring.

One important risk factor for hearing loss is noise exposure. The Occupational Safety and Health Administration (OSHA) guidelines implemented in 1983 helped reduce the amount of occupational noise exposure for workers. With less noise exposure at work, it might be expected that the younger generation would have less hearing loss than their parents. However, many leisure activities such as yard work and driving a snow mobile expose people to noise levels high enough to cause hearing loss. The EHLS found that very few people use hearing protection during noisy leisure activities. Noise exposure is not the only risk factor for hearing loss. Smoking, atherosclerosis (hardening of the arteries), and genetic factors are also risk factors for hearing loss. Along with wearing hearing protection, quitting smoking and improving your cardiovascular health, may reduce your risk of hearing loss.



Examiner Tom Dugolenski takes a photograph of the lens of study participant Shirley Mork's eye.



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Better Health for Future Generations