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Sex Differences in Heritability-By-Age of Latent Dementia Risk in 10 Studies of The Consortium on Interplay of Genes and Environment Across Multiple Studies

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ABSTRACT:

Genetically informed studies of dementia are rare with heritability of dementia estimated at approximately 60% across older adulthood. Alzheimer's disease researchers have suggested that, within older adults, earlier age of onset might be associated with greater genetic influence. The ordinal nature of dementia diagnosis outcomes severely affects power to test for age differences in heritability, as well as to detect significant sex differences in heritability estimates. The first aim of the current study is to examine age differences in the heritability of dementia likelihood across older adulthood. The second aim is to test for sex differences in these patterns. The current study uses 7,568 pairs of twins across 10 studies from The Consortium on Interplay of Genes and Environment Across Multiple Studies (IGEMS). Dementia likelihood is quantified continuously using a latent dementia index measure that is estimated from twins' available cognitive, memory-specific, and functional ability measures. Quadratic age-trends are estimated for men and women using a modified twin correlation model (Turkheimer et al. 2017). Significant quadratic effects of age were observed in women but not men. Heritability increases in men from approximately 16% at age 60 years to greater than 80% by age 100 years. However, heritability in women decreases with age, with estimates as high as 64% at age 60 years and 10% by age 100 years. The genetic basis for dementia likelihood, thus, appears to vary drastically between men and women across older adulthood.

Turkheimer E, Beam CR, Sundet, JM, & Tambs, K. (2017). Interaction between parental education and twin correlations for cognitive ability in a Norwegian conscript sample. Beh gen, 47, 507-515.

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