# Genetic and Environmental Influences on Odor Identification Ability in the Very Old

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# Studio sulla capacità olfattiva in un grande campione di gemelli anziani

## Study Population

The sample was comprised of participants from two Danish nationwide population-based surveys, the Longitudinal Study of Aging Danish Twins (LSADT) and the Danish 1905-Cohort 2005 survey. Those eligible from LSADT 2005 were Danish twins aged 70 + years in 2001 and still living in Denmark. The eligible participants from the Danish 1905-Cohort 2005 survey were all Danes born in 1905 and still living in Denmark. Details of both surveys have been previously described (Christensen, Holm, McGue, Corder, & Vaupel, 1999; Christensen et al., 2000b; Christensen, Holm, & Vaupel, 1996; Christensen, Gaist, Jeune, & Vaupel, 1998; Christensen et al., 2000a; McGue & Christensen, 1997; McGue & Christensen, 2001; Nybo et al., 2001a; Nybo et al., 2001b; Nybo et al., 2003). The subjects who provided complete responses to all of the odor test items (see next section) included 91 centenarians, 18 men and 73 women; respective mean (SD) ages = 99.83 (0.28) & 99.63 (0.29), and 1,131 elderly twins under the age of 100 years, 513 men and 618 women, respective mean (SD) ages = 79.65 (4.53) & 81.17 (5.17).

- 1131 gemelli anziani (oltre i 70 anni) danesi hanno partecipato alla ricerca

# Esempio di regressione multipla

- Variabile dipendente: capacità olfattiva, rilevata con un test
- Variabili indipendenti: età, genere, status fumantizio, abilità cognitiva generale

## Multiple Association Analyses

The results of the multiple linear regression analyses are shown in Table 1. When all variables were included in the regression model, the only significant associations were sex, age, cognitive functioning, and smoking (all $ps < 0.001$). Forward and backward stepwise estimation regression (using $p = .20$ as the criterion for inclusion/exclusion) showed the same results. On average, those participants in the highest quartile of the cognitive test battery were able to correctly identify 1.83 more test items than those in the lowest quartile (2.23 for men and 1.5 for women). Women identified 0.66 more odor items than men. On average, a 74-year-old person identified 3.38 more items than a 100-year-old person (3.33 for men and 3.49 for women).

## Table 1
### Multiple Linear Regression Analysis

| Covariate | Regression coefficient (95% CI)* | p-value |
|---|---|---|
| **Sex** | | |
| - Male (ref. group) | 0 | — |
| - Female | 0.66 (0.39; 0.92) | <0.001 |
| Age (years) | −0.13 (−0.15; −0.11) | <0.001 |
| **Cognitive Score** | | |
| - 1st quartile (ref. group) | 0 | — |
| - 2nd quartile | 0.96 (0.60; 1.33) | <0.001 |
| - 3rd quartile | 1.58 (1.23; 1.94) | <0.001 |
| - 4th quartile | 1.83 (1.47; 2.19) | <0.001 |
| **Smoking** | | |
| - Smoker (ref. group) | 0 | — |
| - Previous smoker | 0.65 (0.32; 0.97) | <0.001 |
| - Never smoker | 0.66 (0.31; 1.01) | <0.001 |

*Note.* Variables selected using stepwise estimation regression (same results when using forward and backward estimation procedures). Inclusion of the variables social group, self rated health, activity of daily living, hearing, and depression, which were individually statistically significant, changed the regression coefficients only minimally.