

## Publication

### Association of early-life exposure to household gas appliances and indoor nitrogen dioxide with cognition and attention behavior in preschoolers

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The authors investigated the association of early-life exposure to indoor air pollution with neuropsychological development in preschoolers and assessed whether this association differs by glutathione-S-transferase gene (GSTP1) polymorphisms. A prospective, population-based birth cohort was set up in Menorca, Spain, in 1997-1999 (n = 482). Children were assessed for cognitive functioning (McCarthy Scales of Children's Abilities) and attention-hyperactivity behaviors (Diagnostic and Statistical Manual of Mental Disorders, 4th Edition) at age 4 years. During the first 3 months of life, information about gas appliances at home and indoor nitrogen dioxide concentration was collected at each participant's home (n = 398, 83%). Genotyping was conducted for the GSTP1 coding variant Ile105Val. Use of gas appliances was inversely associated with cognitive outcomes (beta coefficient for general cognition = -5.10, 95% confidence interval (CI): -9.92, -0.28; odds ratio for inattention symptoms = 3.59, 95% CI: 1.14, 11.33), independent of social class and other confounders. Nitrogen dioxide concentrations were associated with cognitive function (a decrease of 0.27 point per 1 ppb, 95% CI: -0.48, -0.07) and inattention symptoms (odds ratio = 1.06, 95% CI: 1.01, 1.12). The deleterious effect of indoor pollution from gas appliances on neuropsychological outcomes was stronger in children with the GSTP1 Val-105 allele. Early-life exposure to air pollution from indoor gas appliances may be negatively associated with neuropsychological development through the first 4 years of life, particularly among genetically susceptible children

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