

NEUROBEHAVIORAL AND NEUROIMAGING FINDINGS FROM THE FAROESE COHORT. RF White, C Palumbo, P Weihe, F Debes, KJ Heaton, P Grandjean, S Gruber, D Yurgelun-Todd. *Department of Environmental Health, Boston University School of Public Health; Environmental Hazards Research Center, VA Boston Healthcare System; Faroese Hospital System; University of Southern Denmark; McLean Hospital, Harvard University School of Medicine.* Prior research with the Faroese cohort of approximately 1000 children born in 1986-87 demonstrated dose-effect relationships between measures of prenatal methylmercury (MeHg) exposure and neuropsychological test performance at age 7 in several functional domains. Higher exposure was associated with poorer test scores. The affected domains included attention/reaction time, language, and short-term memory. Because of these findings, the research team was interested in whether these relationships would be observed using functional magnetic resonance (fMRI) neuroimaging techniques. A pilot study was assembled in which 12 Faroese children in four exposure categories underwent fMRI in the United States in 2002. The four groups of three children each were chosen to include cohort members with the highest mixed exposure to MeHg and PCBs (measured as prenatal MeHg blood level x total PCB level), the highest prenatal MeHg level alone, the highest prenatal PCB level alone, and the lowest MeHg x PCB level. Functional images of the brain were acquired using the BOLD technique during the completion of psychological test challenges chosen to represent the relevant domains of function. Resultant fMRI analyses compared findings in predicted brain regions for the four exposure groups.

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