# POSTNATAL MERCURY AND LEAD EFFECTS UPON VISUAL-MOTOR DEVELOPMENT IN MEXICAN ADOLESCENTS

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**Background and Aims:** Mercury and lead, two established neurodevelopmental toxicants, comprise two of the top three chemicals of concern on the EPA/ATSDR Priority List of Hazardous Substances. Yet, there is limited epidemiological data regarding the relationship, including potential interactions, between mercury and lead exposure upon neurodevelopmental outcomes in children. The objectives of this study were to determine the associations between biomarkers of postnatal mercury and lead exposure and visual-motor development in adolescents aged 13-15 years living in Mexico City.

**Methods:** The Wechsler Abbreviated Scale of Intelligence and the Wide Range Assessment of Visual Motor Activity (WRAVMA) were used to assess children's cognitive and visual-motor development. Biomarker levels for lead and mercury were collected via ICP-MS and DMA-80. Data were analyzed using generalized linear models adjusting for maternal age, maternal IQ, child's IQ, sex, and child's age.

**Results:** In the 135 eligible adolescents, aged 13-15 years, mean levels of total mercury in blood, hair, and urine were:1.43 µg/L, 0.39 µg/g, and 0.60 µg/L; and whole blood lead levels were 3.21 µg/dL, respectively. A one-log increase in concurrent blood lead and mercury levels resulted in a -4.08 (95%CI -7.58, -0.59) and -2.86 (95%CI -5.85, 0.13) decrease in the WRAVMA composite score, respectively. Inclusion of hair mercury levels, instead of blood mercury, resulted in a stronger, more significant adverse relationship with the WRAVMA composite score. While no significant interactions between blood lead and mercury were detected with the WRAVMA, there was a significant positive interaction term (p-value=0.04) between hair mercury and blood lead levels.

**Conclusions:** Our study demonstrates adverse relationship between concurrent biomarkers of methylmercury exposure, blood lead, and adolescence's visual motor development.