

Toxic Neighborhoods: The Joint Effects of Concentrated Poverty and Environmental Lead Contamination on Cognitive Development during Early Childhood

Abstract

Although socioeconomic disparities in cognitive ability emerge early in the life course, most research on the developmental consequences of living in a disadvantaged neighborhood focuses on school-age children or adolescents. In this study, we outline and test a theoretical model of neighborhood effects on cognitive development during early childhood that highlights the mediating role of environmental health hazards, and in particular, exposure to neurotoxic lead. To evaluate this model, we follow a cohort of 1,266 children in the Project on Human Development in Chicago Neighborhoods from birth through the time of school entry, matching them at each survey wave with information on neighborhood composition and the areal risk of lead exposure. With these data, we then estimate the joint effects of neighborhood poverty and environmental lead contamination on receptive vocabulary ability. We find that sustained exposure to disadvantaged neighborhoods substantially reduces vocabulary ability during early childhood and that nearly all of this effect may operate through a causal mechanism involving lead contamination. These findings are robust to unobserved confounding and to the use of several alternative estimation strategies, which suggests that living in a disadvantaged neighborhood impedes early childhood development because it increases exposure to environmental toxins like lead.

About the Speaker

Geoff Wodtke is an Associate Professor in the Department of Sociology at the University of Chicago. His research is in the areas of neighborhood effects and urban poverty, group conflict and racial attitudes, class structure and income inequality, and methods of causal inference in observational research. He is currently working on several projects dealing with the impact of neighborhood poverty on child development, the link between private business ownership and growing income inequality, and new methods for estimating causal effects in longitudinal studies. His previous work on these topics has been published in the *American Sociological Review*, *American Journal of Sociology*, *Demography*, and *Sociological Methodology*, among other outlets. Wodtke completed his PhD in Sociology at the University of Michigan in 2014, where he also earned his MA in statistics.