

Early childhood offers opportunity to head off metabolic syndrome, obesity

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Juan Carreño de Miranda's "La monstrua desnuda" (The Nude Monster) painting.

Research conducted at LSU Health New Orleans School of Public Health has found that exposure to poverty does not produce metabolic and inflammatory biomarkers in young, healthy children. It identifies early childhood as an opportunity to prevent a known association in adults between poverty and the metabolic syndrome. The study is one of the first to characterize the timing of exposure to such stress and the emergence of the physiologic changes leading to cardio-metabolic

disease and to document these relationships during this critical developmental period. Findings are available March 9, 2016, online in *Obesity*.

"Early childhood is protective and presents a very short-lived window for intervention to ensure cardio-metabolic [health](#) in the future," notes Melinda Sothorn, PhD, LSU Health New Orleans Professor and Jim Finks Endowed Chair in Health Promotion, the study's principal investigator.

The study used data from Dr. Sothorn's Study of Insulin sensitivity in Low-birthweight Louisiana Youth (SILLY) and Mechanisms for the Metabolic Syndrome in Pre-pubertal Youth (MET) studies. Researchers evaluated body mass index, insulin resistance, abdominal fat and fat under the skin, circulating levels of pro and anti-inflammatory molecules and the concentrated disadvantage index in a group of 7-to-9-year-old African-American and Caucasian children. There were no significant differences in inflammatory and metabolic markers between black and white children except for insulin resistance. Black children in the study had higher levels of [insulin resistance](#) than the white children.

The researchers found that neighborhood disadvantage was not positively associated with markers of inflammation and [metabolic dysfunction](#) in the children. Conversely, they found an unexpected, negative relationship between neighborhood disadvantage and obesity and early markers of metabolic syndrome. Childhood is a critical period of life marked by plasticity in the relationship between genetic and environmental influences.

"Increasingly we are learning that health disparities in cardiovascular disease and diabetes tend to result from environments that expose residents to social or nutritive stress," says Richard Scribner, MD, MPH, Professor of Epidemiology at LSU Health New Orleans School of Public

Health. "These exposures tend to be greater in poor and minority neighborhoods. In adults, these exposures lead to a characteristic inflammatory phenotype known as [metabolic syndrome](#), a precursor of cardiovascular disease and diabetes. Consequently, understanding when metabolic dysfunction emerges due to environmental exposures is critical to our understanding of the process. Our study found that children exposed to neighborhoods characterized by concentrated disadvantage seem to be protected from the effects of the stressful environment - a protection that may be lost after puberty."

The LSU Health New Orleans research team also included Richard Scribner, MD, Professor and Co-Investigator, Maura Kepper, MPH, PhD candidate, Jovanny Zabaleta, PhD, Assistant Professor of Pediatrics, Claudia Leonardi, PhD, postdoctoral fellow, and Lauren Griffiths, MPH, research associate. Eric Ravussin, PhD, Associate Executive Director for Clinical Science at Pennington Biomedical Research Center, also participated.

"Our research indicates that [early childhood](#) may be a protected period in the life course when the negative effects of disadvantaged neighborhoods are not yet evidenced by adverse health outcomes," concludes Maura Kepper, MPH, LSU Health New Orleans PhD candidate and first author. "Longitudinal studies following children into adulthood are needed to further understand at which point exposure translates to inflammatory and metabolic changes in order to capitalize on a potentially impactful period for primary intervention."

Provided by Louisiana State University

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