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Early iron deficiency and neurocognitive functioning in infancy

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Iron deficiency (ID) is the most common nutritional disorder worldwide, affecting between one-quarter and one-half of pregnant women and infants in developing countries. ID is concerning not only because of its prevalence but also because of its effects on brain development and behavioral functioning. ID impacts the developing hippocampus as well as dopamine-mediated prefrontal-striatal circuits. In the human, these neuroanatomical alterations result in functional deficits in hippocampus-based recall memory as well as deficits in prefrontal-striatal-based executive functions such as planning or inhibitory control. Because previous studies identified ID based on one measurement, there is limited information as to whether the timing and chronicity of ID is associated with neurocognitive functioning in infancy. The goal of the present study was to examine how iron status at birth and 9 months related to performance on a recall memory task and performance on tasks assessing working memory and inhibitory control. Blood data obtained from Chinese infants at two time points (through cord blood at birth and at 9 months) were used to classify infants as prenatal ID, postnatal ID, or iron sufficient (IS). Data analysis is presently ongoing but results are expected to reveal differential effects of prenatal versus postnatal ID on neurocognitive functioning at 9 months. Implications will be discussed in terms of the importance of early identification of and treatment for ID in infancy.

Biography

Angela F Lukowski received her PhD from the Institute of Child Development, University of Minnesota. She then completed her Post-doctoral studies at the Center for Human Growth and Development, University of Michigan. She has been an Assistant Professor in the Department of Psychology and Social Behavior, University of California-Irvine, since 2008. Her research program primarily focuses on understanding contextual factors associated with cognitive functioning in infancy and beyond.

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