Title: Iron Deficiency Can Impact Learning

Fact: Iron-deficiency anemia occurs when the blood contains too few oxygen-carrying red blood cells. This type of anemia can alter dopamine function in the brain and has been shown to cause developmental delays (Booth & Aukett 1997). Now, a new study has found that children with milder cases of iron deficiency (without anemia) also score lower on standardized math tests compared to children with normal iron levels (Halterman, et al. 2001).

Data from a large nationwide survey of more than 5,000 children (6 to 16 years old) were examined for correlations between iron status and cognitive test scores (ibid). The researchers found that 3 percent of all the tested children and 9 percent of the females were iron deficient. Iron deficiency, even without meeting the clinical definition of anemia, was associated with lower scores on a math achievement test. Normal children scored an average 93.7 on the math test; iron-deficient children without anemia scored 87.4; and children who were both iron-deficient and anemic scored 86.4.

Iron deficiency leads to a decrease of this element in the brain. Previous research in animals has shown that iron deficiency causes a reduction in dopamine D2 receptors in areas of the brain associated with memory and learning (Youdim, et al. 1989). These findings suggest a benefit from screening high-risk children for iron deficiency, particularly adolescent girls who are especially prone to the condition. The researchers believe that iron supplementation and appropriate treatment of affected individuals could prevent potentially negative impacts on cognition.


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