

OBESITY

Obesity during childhood and adolescence: genes versus environment

Environmental factors affect childhood obesity through to adolescence despite the strong influence genetic factors have on BMI. Findings from a prospective study of Finnish twins indicate that “family-based interventions hold a promise to control obesity into middle adolescence but from late adolescence onwards the emphasis should turn onto individuals,” as lead author Hanna-Reetta Lajunen from the University of Helsinki comments.



Previous studies in children have shown that common environmental factors shared by siblings—such as diet and physical activity—can affect BMI. By contrast, studies in adolescents or adults show no evidence for a persistent effect of shared childhood environment. Common environmental effects decrease but do not completely disappear during childhood; however, when the common environmental effect on BMI is lost remains unclear.

Lajunen and colleagues studied the changing effects of genetic and environmental factors on BMI during adolescence in 2,413 twin pairs studied from age 11 years to 17 years. Differences were assessed by correlations between monozygotic and dizygotic twin pairs to identify the extent of the effect of genotype on phenotype. BMI was calculated using self-reported weight and height measurements at 11–12 years, 14 years and 17 years of age.

Lajunen’s team find, “despite high heritability of BMI, common

environmental factors shared by siblings had an effect on BMI into 14 years of age but the effect disappeared by 17 years of age.” This finding correlates with the end of compulsory education in Finland at the age of 15–16 years, when adolescents might spend less time with their families, and thus, are less likely to share environmental factors with their siblings. Genetic factors accounted for 90–96% of the correlations in BMI during adolescence whereas unique environmental factors had only a minor role. “Genetic factors affecting BMI were quite similar at each age but environmental factors changed during adolescence,” Lajunen adds.

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