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## Intergenerational Transmission of BMI and Educational Attainment

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### ABSTRACT:

Individual differences in educational attainment (EA) and body mass index (BMI) are correlated and are subject to intergenerational transmission<sup>1</sup>. The aim of our study is to address the question as to what extent BMI is transmitted from one generation to the next, and what the role of EA is in this transmission. Our study population is a sample of 42,413 young twins from the Netherlands Twin Register (NTR). First, we will simultaneously analyze direct (i.e., within trait) and indirect (i.e., across trait) transmission of BMI and EA by structural equation modeling (SEM). Second, we will apply a nuclear twin family design<sup>2</sup> to test for genetic and cultural transmission of BMI from parents to children. Both analyses will be performed on data from early childhood (5 years old) and adolescence (12 years old) to analyze differences in the roles of genetic and environmental factors in the transmission of BMI at those two life stages. We will contrast our findings of the SEM portion of the analyses in our young sample to the results we previously obtained in adult offspring and their parents, where we found strong evidence for intergenerational transmission of EA and BMI, and significant within- and cross-trait correlations both within person and between spouses<sup>3</sup>.

<sup>1</sup> Newton, S., Braithwaite, D., & Akinyemiju, T. F. (2017). Socio-economic status over the life course and obesity: Systematic review and meta-analysis. *PloS one*, 12(5), e0177151.

<sup>2</sup> Keller, M. C., Medland, S. E., Duncan, L. E., Hatemi, P. K., Neale, M. C., Maes, H. H., & Eaves, L. J. (2009). Modeling extended twin family data I: description of the Cascade model. *Twin research and human genetics*, 12(1), 8-18.

<sup>3</sup> Alrouh H., van Bergen E., de Zeeuw E., Dolan C., & Boomsma D. I. (2021) Intergenerational Transmission of BMI and Educational Attainment in Adults. Manuscript submitted for publication

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