Genetic susceptibility to obesity is partly mediated by emotional overeating during adolescence

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**Background**

- Eating behaviours in adults partly mediate genetic influences on BMI.
- Are these adult eating behaviours mediated by related eating behaviours during adolescence?

**Methods**

- We calculated a BMI-genetic risk score (BMI-GRS) based on 934 variants associated with BMI (in N=1443, 68% female, 99.8% white).
- We examined whether BMI-GRS effects on adult eating (emotional overeating, emotional disinhibition, situational disinhibition) were mediated by similar behaviours in adolescence (emotional eating and external eating).
- Analyses used structural equation models adjusted for sex and age.

**Results**

- Average BMI (kg/m²) at age 13-14 and 23-24 was 20.22 (SD 3.30) and 24.52 (4.76).
- Emotional eating (overeating due to negative emotions) during adolescence partly mediated the effect of BMI-GRS on adult emotional overeating, and emotional disinhibition by 12.3% and 11.5%, respectively.

**Conclusion**

- Improved management of emotional eating may reduce obesity risk among genetically susceptible individuals.
- Intervening during adolescence or earlier may be beneficial.
- Further research should determine the age at which overeating develops in response to negative emotions.

**Figure 1: Emotional eating in adolescence partly mediates genetic susceptibility to obesity effects on adult emotional overeating/disinhibition**

Standardised regression coefficient (95% upper, lower confidence interval) a, effect of X on M (mediator); b, effect of M on Y (controlling for X); c', effect of X on Y (controlling for M - the 'direct effect'); c, total effect of BMI-GRS

1 BMI genetic risk score (934 SNPs), 2 Modified emotional eating scale (negative emotions) from the Dutch Eating Behaviour Questionnaire at age 13-14. 3 Emotional overeating from the Adult Eating Behaviour Questionnaire at age 23 years, 4 Emotional disinhibition from the Three-Factor Eating Questionnaire at age 25 years.

**References**