

Mental Health, Schooling Attainment and Polygenic Scores: Are There Significant Gene-Environment Associations

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Motivation

- Mental health is influenced by genetic factors, environmental factors, and gene-environment (GxE) interactions.
- Quite a large literature looks at whether stressful life events moderate the genetic risk of poor mental health.
- Schooling is an important determinant of mental health.
- Not much research investigating whether more schooling can attenuate the genetic risk of poor mental health

What do we do?

- Estimate GxE OLS regression in Add Health (average age 29 years) and in the WLS (average age of 54 years).
- Estimate sibling fixed-effect regressions to take account of some of the omitted variable bias.
- Comparison is interesting because:
 - Schooling-health gradients differ over the life-course.
 - Schooling attainment is left truncated at 12 grades in the WLS.

Measures

Add Health (wave 4)

- Depressive symptoms based on 10 item CES-D score (0-30).
- MTAG PGS for depressive symptoms constructed by SSGAC.
- Controls: age, gender, birth order, mother's schooling, adolescent IQ, and MTAG PGS for educational attainment.

WLS (1993-1994 wave)

- Depressive symptoms based on 20 item CES-D score (0-60).
- MTAG PGS for depressive symptoms constructed by SSGAC.
- Controls: age, gender, birth order, mother's schooling, adolescent IQ, and MTAG PGS for educational attainment.

Main Findings

- Some suggestive evidence of GxE associations in the WLS but not in Add Health.
- Some evidence of heterogeneous GxE associations along the conditional CES-D score distribution in the WLS.
- Sibling fixed-effects estimates for Add Health are a bit strange.

Other related work in progress

- Replicate in UK Biobank using (i) sibling fixed-effects and (ii) Easter School Leaving Rule as a natural experiment.
- Looking at how genetics and schooling attainment affect changes in mental health using the HRS.