





Home and Epigenome:

Links between poor housing quality, DNA methylation, and depression

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Background



- £118 million annual cost of mental health in UK (LSE, 2022)
- 26% of UK 18–24-year-olds live in poor quality housing (Resolution Foundation, 2023)
- Persistent poor housing quality explained greater variance in mental health than household income and stressful life events (e.g., divorce) (Pevalin et al., 2017)

DNA Methylation

- Markers on our DNA that change across our lifetime due to both genetic & environmental factors
- Chromosome Nucleosome Histone Modification Chromatin DNA Methylation
- Influences gene expression
- Can associate with mental health

Research Questions



1) Does housing quality predict depressive symptoms whilst controlling for key confounders?

2) Does DNA methylation mediate this relationship?





Participants

Avon Longitudinal Study of Parents and Children

 Mothers from Avon Longitudinal Study of Parents and Children (ALSPAC) (Boyd et al., 2013; Fraser et al., 2013).

Pregnant women resident in Avon, UK (expected delivery dates April 1991 - December 1992)

• ARIES = Accessible Resource for Integrated Epigenomic Studies Depression data available (n = ~9000) DNAm data available (n¹ = 582) (n²= 301)



Exposure – Housing Quality

Collected using self-report questionnaires

Across 3 timepoints:

- Mean age 30 years
- Mean age 32 years
- Mean age 33 years

Covariates

- Housing stability
- Neighbourhood quality
- Known familial risk for depression
- Contextual SES risk
- Baseline Depressive Symptoms







Part 1 – Cross-sectional

 Poor housing quality significantly predicted depressive symptoms crosssectionally at mean age 30, 32 and 33 years



Part 2- Longitudinal follow-up



Part 3 – DNA Methylation Mediation

- 10 CpG sites partly explained the association between poor housing quality and depression in model 6
- O CpG sites in model
 7



Key takeaways

- Poor housing quality consistently associates with depressive symptoms in adulthood
- DNA methylation partly explains associations between poor housing quality and depressive symptoms in early adulthood





Future/Other Works

- Housing conditions and biological ageing <u>view article here</u>
- Understanding how the *location* of housing influences both our health and mobility behaviour















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Please do reach out if you have any questions or follow-ups!

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