

Timing of Incarceration, Genetic Susceptibility, and Depression

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Introduction

Numerous studies have shown that, compared to their counterparts, individuals with a history of incarceration are more likely to experience depression or other mental health problems later in life. Yet there are two important limitations in extant research on the incarceration-depression relationship. First, few studies have been attentive to the timing of incarceration. Because of that, an implicit assumption has been that the effect of incarceration is the same irrespective of the age at which incarceration occurs. Second, prior studies have not considered the possibility that the effect of incarceration on depression may differ among individuals with differential genetic susceptibility.

Aims of Study

- Test whether and to what extent the effect of incarceration on depression varies by age.
- Test whether and to what extent the effect of incarceration on depression varies by genetic susceptibility.
- Test whether and to what extent the moderating effect of age on the incarceration-depression relationship varies by genetic susceptibility.

Data and Measures

Data

The Dunedin Longitudinal Study collected data from a cohort of 1,037 individuals born between April 1st, 1972 and March 31, 1973 in Dunedin, New Zealand. Participants have been assessed at ages 3, 5, 7, 9, 11, 13, 15, 18, 21, 26, 32, 38, and 45.

Measures

- Dependent variable
 - Depression scale: sum of 9 major depression episodes.
- Independent variables:
 - Age
 - Incarceration: whether the participant was incarcerated between the previous wave and the current wave (0: No; 1: Yes).
 - Depression polygenic risk score (Wary et al. 2018): low genetic susceptibility (0 - 33%); medium genetic susceptibility (34% - 66%); high genetic susceptibility (67%-100%).
- Covariates:
 - Sex
 - Childhood mental health
 - Childhood socioeconomic status
 - Delinquency
 - Lagged depression scale

Findings

	Model 1	Model 2	Model 3
Incarceration	0.939***	-0.335	-0.200
Age	-0.011**	-0.009*	-0.007
Low Genetic Susceptibility	.	.	.
Medium Genetic Susceptibility	0.276**	0.235*	0.241*
High Genetic Susceptibility	0.540***	0.500***	0.502***
Incarceration × Age	0.085**		0.019
Incarceration × Low Genetic Susceptibility	.	.	.
Incarceration × Medium Genetic Susceptibility		1.081*	1.026
Incarceration × High Genetic Susceptibility		1.083*	2.119***
Incarceration × Age × Low Genetic Susceptibility	.	.	.
Incarceration × Age × Medium Genetic Susceptibility			0.003
Incarceration × Age × High Genetic Susceptibility			0.169**
Constant	1.400***	1.428***	1.421***
Number of Observations	4,297	4,297	4,297

- The impact of incarceration on depression gets stronger as participants age.
- The effect of incarceration on depression is greater for participants with medium or high genetic susceptibility than those with low genetic susceptibility.

- The increasing impact of incarceration on depression is isolated to those who have high genetic susceptibility for depression.

References

Wray, N. R., Ripke, S., Mattheisen, M., Trzaskowski, M., Byrne, E. M., et al. (2018). Genome-wide association analyses identify 44 risk variants and refine the genetic architecture of major depression. *Nature Genetics*, 50, 668.

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