

Prenatal exposure to green space and mental health in early adolescence: Findings from the TRAILS study

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Little is known about the long-term relationship between prenatal exposure to green space and adolescent mental health. Using data from the TRAILS cohort ($n=1,476$; study period: 1989-2002), we assessed 1) associations between prenatal green-space exposure and four mental-health outcomes, namely externalising problems, internalising problems, tobacco use, and alcohol use, self-reported at eleven-year-old; 2) the mediation of gestational age and birthweight on these associations. Both prenatal and early adolescence green-space exposure were assessed to account for their temporal intercorrelation. In a structural equation model, adolescents with one standard deviation (SD) unit more prenatal green-space exposure showed a 0.119 SD (95% confidence interval [CI]: 0.028, 0.210) more externalising problems in early adolescence. The additional analyses generated two potential explanations for this unexpected positive association. First, controlling for urbanicity attenuated this association to become insignificant, but the degree of attenuation is minor (0.096, 95% CI: -0.003, 0.195). Second, this unexpected association might be a consequence of changes in green-space exposure in the intervening years, namely from birth to early adolescence (childhood), indicating that individuals with increased green-space exposure over childhood exhibited fewer externalising problems in early adolescence. Null mediation was observed for gestational age and birthweight on associations of prenatal green-space exposure with any mental-health outcomes. Overall, these findings highlight the importance of green-space exposure in childhood to the development of externalising problems in adolescence, while green-space exposure at the prenatal period might not play a role in adolescent mental health.

Keywords: Green space, mental health, prenatal exposure, adolescence, life-course

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