Your best friend from high school? Here's why their genes mattered

August 7 2024

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Mom always said, "Choose your friends wisely." Now a study led by a Rutgers Health professor shows that she was onto something: Their traits can rub off on you—especially ones that are in their genes.
The genetic makeup of adolescent peers may have long-term consequences for individual risk of drug and alcohol use disorders, depression and anxiety, the groundbreaking study has found.

"Peers' genetic predispositions for psychiatric and substance-use disorders are associated with an individual's own risk of developing the same disorders in young adulthood," said Jessica E. Salvatore, an associate professor of psychiatry at the Rutgers Robert Wood Johnson Medical School and lead author of the study published in the American Journal of Psychiatry.

"What our data exemplifies is the long reach of social genetic effects," she said.

Socio-genomics—the influence of one person's genotype on the observable traits of another—is an emerging field of genomics. Research suggests that peers' genetic makeup may influence health outcomes of their friends. To test this, Salvatore and colleagues used Swedish national data to assess peer social genetic effects for several psychiatric disorders.

With an anonymized database of more than 1.5 million individuals born in Sweden between 1980 and 1998 to Swedish-born parents, the first step was to map individuals by location and by school during their teenage years. The researchers then used medical, pharmacy and legal registries documenting substance use and mental health disorders for the same individuals in adulthood.

Models were run to assess whether peers' genetic predispositions predicted target individuals' likelihood of experiencing substance abuse, major depression, and anxiety disorder in adulthood. Peers' genetic predispositions were indexed with family genetic risk scores—personalized measures of genetic risk based on family
history—for the same conditions.

Even when controlling for factors such as the target individuals' own genetic predispositions and family socioeconomic factors, the researchers found a clear association between peers' genetic predispositions and target individuals' likelihood of developing a substance use or psychiatric disorder. The effects were stronger among school-based peers than geographically defined peers.

Within school groups, the strongest effects were among upper secondary school classmates, particularly those in the same vocational or college-preparatory track between ages 16 and 19. Social genetic effects for school-based peers were greater for drug and alcohol use disorders than major depression and anxiety disorder.

Salvatore said more research is needed to understand why these connections exist.

"The most obvious explanation for why peers' genetic predispositions might be associated with our own well-being is the idea that our peers' genetic predispositions influence their phenotype, or the likelihood that peers are also affected by the disorder," she said. "But in our analysis, we found that peers' genetic predispositions were associated with target individuals' likelihood of disorder even after we statistically controlled for whether peers were affected or unaffected."

What is clear, Salvatore said, is what the findings mean for interventions.

"If we want to think about how to best address these socially costly disorders, we need to think more about network-based and social interventions," she said. "It's not enough to think about individual risk."

This research also underscores the importance of disrupting processes
and risks that extend for at least a decade after attendance in school, Salvatore added. "Peer genetic influences have a very long reach," she said.

Co-authors include Henrik Ohlsson, Jan Sundquist and Kristina Sundquist, from Lund University in Sweden; and Kenneth S. Kendler from the Virginia Institute for Psychiatric and Behavioral Genetics at Virginia Commonwealth University.


Provided by Rutgers University

Citation: Your best friend from high school? Here's why their genes mattered (2024, August 7) retrieved 15 August 2024 from https://medicalxpress.com/news/2024-08-friend-high-school-genes.html

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