

The Contributions of Genetic and Contextual Factors to Alcohol and Marijuana Use and Disorders in African-American Young Adults

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Alcohol and marijuana use and disorders are significant public health problems. Internalizing symptoms have been associated with substance use; however, less is known about whether alcohol and marijuana use and disorders could be predicted from (a) polygenic influences of internalizing symptoms; and (b) the interplay between these polygenic influences and contextual factors (e.g., parental monitoring, community disadvantage). Accordingly, we sought to address these gaps.

Participants ($N=1,051$; 44.4% male) were initially recruited for an elementary school-based prevention trial in a Mid-Atlantic city and followed through age 20. Youth reported on their parental monitoring in sixth grade and substance use at age 20. Blood or saliva samples were genotyped using Affymetrix 6.0 microarrays. An internalizing symptom polygenic score (PGS) was created using discovery results from a genome-wide meta-analysis in European samples (Benke et al., 2014). Community disadvantage was calculated based on census data at the level of census tract when youth were in first grade.

The internalizing symptom PGS did not predict any of the substance use outcomes. The internalizing symptom PGS and parental monitoring interaction predicted alcohol use such that lower parental monitoring predicted a reduced likelihood of alcohol use among youth with a higher internalizing symptom PGS. The internalizing symptom PGS and community disadvantage interaction predicted an alcohol use disorder. Exposure to higher community disadvantage predicted lower risk for an alcohol use disorder among youth with a higher internalizing symptom PGS. None of the G X E interactions predicted marijuana use or disorders.

Findings indicate that a lower PGS predicted alcohol use and an alcohol use disorder in the context of lower parental monitoring and higher community disadvantage, respectively. Interventions should consider targeting these contexts, as lower levels of these contextual features may exacerbate risk for alcohol use and disorders, particularly among individuals with lower genetic loading for internalizing problems.