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**Genetic, Neural, Psychological, and Environmental Factors are Uniquely Associated With Onset of Alcohol Use in the Adolescent Brain Cognitive Development (ABCD) Study**

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Alcohol use during adolescence poses a significant public health problem due to its potential long-term consequences on both physical and mental health and increased risk for developing substance use disorders later in life. Both individual (e.g., genetic liability, neural functioning, personality features) and environmental (e.g., parenting, school environment) features play an important role in accelerating or buffering the progression of early alcohol consumption. This study used data from the Adolescent Brain Cognitive Development study (Release 5.1; N = 11,868) to provide a comprehensive examination of how genetic, neural, trait, and environmental factors are associated with time to first sip, first full drink, and the progression from first sip to full drink, both independently and uniquely. Cox proportional hazard models were used to examine the univariable associations between theoretically relevant genetic (e.g., polygenic scores), neural, trait, and environmental variables and early alcohol use. Then, stepwise model-fitting was used to determine which indicators were uniquely associated with alcohol outcomes. Risk for early alcohol use was distributed across multiple domains highlighting the unique information provided by polygenic scores, trait, and environmental variables. Results also indicated the importance of both environmental and genetic factors on time to first sip, but that time to first full drink and the progression from sip to drink was most associated with genetic and trait factors rather than broad environmental influences. These findings highlight both potential etiological pathways driving early alcohol use as well as phenotypic and environmental process that can be targeted for prevention efforts.