

## Developmental Relationships between Alcohol Problems and Internalising Symptoms in a Longitudinal Sample of College Students

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**Abstract :** Research supports an association between alcohol problems and internalising symptoms, but the understanding of how the two phenotypes relate to each other is poor. It has been hypothesized that the relationship between the phenotypes is causal; however investigations in regards to direction are inconsistent. Clarity of the relationship between the two phenotypes may be provided by investigating the phenotypes developmental inter-relationships longitudinally. The objective of the study was to investigate a) changes in alcohol problems and internalising symptoms in college students across time and b) the direction of effect of growth between alcohol problems and internalising symptoms from late adolescent to emerging adulthood c) possible gender differences. The present study adds to the knowledge of comorbidity of alcohol problems and internalising symptoms by examining a longitudinal sample of college students and by examining the simultaneous development of the symptoms. A sample of college students is of particular interest as symptoms of both phenotypes often have their onset around this age. A longitudinal sample of college students from a large, urban, public university in the United States was used. Data was collected over a time period of 2 years at 3 time points. Latent growth models were applied to examine growth trajectories. Parallel process growth models were used to assess whether initial level and rate of change of one symptom affected the initial level and rate of change of the second symptom. Possible effects of gender and ethnicity were investigated. Alcohol problems significantly increased over time, whereas internalizing symptoms remained relatively stable. The two phenotypes were significantly correlated in each wave, correlations were stronger among males. Initial level of alcohol problems was significantly positively correlated with initial level of internalising symptoms. Rate of change of alcohol problems positively predicted rate of change of internalising symptoms for females but not for males. Rate of change of internalising symptoms did not predict rate of change of alcohol problems for either gender. Participants of Black and Asian ethnicities indicated significantly lower levels of alcohol problems and a lower increase of internalising symptoms across time, compared to White participants. Participants of Black ethnicity also reported significantly lower levels of internalising symptoms compared to White participants. The present findings provide additional support for a positive relationship between alcohol problems and internalising symptoms in youth. Our findings indicated that both internalising symptoms and alcohol problems increased throughout the sample and that the phenotypes were correlated. The findings mainly implied a bi-directional relationship between the phenotypes in terms of significant associations between initial levels as well as rate of change. No direction of causality was indicated in males but significant results were found in females where alcohol problems acted as the main driver for the comorbidity of alcohol problems and internalising symptoms; alcohol may have more detrimental effects in females than in males. Importantly, our study examined a population-based longitudinal sample of college students, revealing that the observed relationships are not limited to individuals with clinically diagnosed mental health or substance use problems.

**Keywords :** alcohol, comorbidity, internalising symptoms, longitudinal modelling

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