

Table S3. Details of final multivariate Latent Curve Models with Structured Residuals

	Alcohol and Depression	Alcohol and Social Anxiety	Cannabis and Depression	Cannabis and Social Anxiety
Within time covariances equal across assessments	Yes	Yes	Yes	Yes
Equality of Cross-lags across time	Yes	Yes	Yes	No
Model Fit	$\chi^2(107) = 132.85, p < .05$ CFI = .99, TLI = .98 RMSEA = 0.03	$\chi^2(117) = 143.41, p < .05$ CFI = .99, TLI = .98 RMSEA = 0.03	$\chi^2(109 \text{ df}) = 117.91,$ $p < .26$ CFI = 1.0, TLI = 1.0 RMSEA = 0.02)	$\chi^2(89 \text{ df}) = 104.42, p < .13$ CFI = .99, TLI = .98 RMSEA = 0.03

Note: Structured residuals at the first assessment represents variance left over after accounting for growth, whereas structured residuals at the second and third assessments represent variance left over after accounting for growth and stability and cross-lag paths (when they are included). Our initial models only constrained the structured residuals at the second and third assessment to be equal. However, this led to warnings that the PSI matrix of latent variables was not positive definite. There were no obvious problems with our estimates (e.g., negative variances, correlations > 1.0).

However, such a message raises concerns about the stability of the estimates. Constraining all three residuals to be equal was supported by nested tests ($\Delta\chi^2(6 \text{ df}) = 1.11, p = .98$ to $\Delta\chi^2(5 \text{ df}) = 7.48, p = .19$ across the four models), and did not produce a warning about the PSI matrix. Hence, our final models included equality constraints for all three structured residuals for each construct.