**Supplemental Materials 3: Substance Use Frequency Two-Part Growth Model**

**Substance Use**. Log-likelihood nested model tests were used to compare multiple forms of growth (e.g., linear, piecewise) from W2-W9 to determine the best fitting two-part growth model with random effects. W1 was not included in the two-part growth model due to the low levels of use at this wave (N=11, 2.8% of sample). The intercept for both dichotomous and continuous growth was set at W3. A piecewise model provided the best fit for the continuous portion of the model. The first piece of dichotomous growth was from W2 to W6 (slope loadings of -1.87, 0, 1, 2, 3 for W2 to W6, respectively) and the second piece was from W6 to W9 (slope loadings of 0, 1.54, 2, 3 for W6 to W9, respectively). The probability of substance use increased from both W2 to W6 (*M*=0.96, *p*<.001) and W6 to W9 (*M*=3.04, *p*<.001). There was significant variability in the intercept at W3 (σ2=11.20, *p*<.001), the slope for W2 to W6 (σ2=0.50, *p*<.001) and W6 to W9 (σ2=4.03, *p*=.001). Higher probabilities of use at W3 were associated with marginally slower increases in the probability of use from W2 to W6 (covariance=-1.36, *p*=.06) and significantly slower increases from W6 to W9 (covariance=-2.38, *p*=.01). Growth from W2 to W6 was unrelated to growth from W6 to W9 (covariance=0.23, *p*=.33).

A piecewise model provided the best fit for the continuous portion of the model. The first piece of continuous growth was from W2 to W6 (slope loadings of -1, 0, 0.74, 2, 3 for W2 to W6, respectively) and the second piece was from W6 to W9 (slope loadings of 0, 0.68, 0.86, 1 for W6 to W9, respectively). Continuous levels of substance use increased from both W2 to W6 (*M*=0.41, *p*<.001) and W6 to W9 (*M*=2.73, *p*<.001). There was significant variability in the intercept at W3 (σ2=1.69, *p*<.001), the slope for W2 to W6 (σ2=0.11, *p*<.001) and W6 to W9 (σ2=1.92, *p*<.001). Higher levels of use at W3 were associated with faster increases in levels of use from W2 to W6 (covariance=0.10, *p*=.003) and slower increases in substance use from W6 to W9 (covariance=-0.41, *p*=.005). Greater growth from W2 to W6 was associated with slower increases in substance use from W6 to W9 (covariance=-0.18, *p*=.01).

The final two-part model combined the growth models for the dichotomous and continuous substance use. Higher probabilities of substance use at W3 were associated with higher levels of substance use at W3 (covariance = 4.35, *p*<.001) and slower growth in continuous use from W6 to W9 (covariance=-1.73, *p*=.001). Greater increases in the probability of use from W2-W6 were associated with quicker growth in continuous substance use from W2 to W6 (covariance=0.13, *p*=.001). Greater increases in the probability of use from W6-W9 were associated with quicker growth in continuous substance use from W6 to W9 (covariance=1.15, *p*<.001). Non-significant covariances were constrained to zero to reduce model complexity and assist with model convergence in prediction models. The only fit statistic available for two-part growth models with random effects is the likelihood ratio chi-square test for growth in dichotomous substance use, which was *χ*2=301.68(243), p=.006.