SUPPLEMENTAL MATERIALS

Statistical Analyses & Results.

Null Model Results. The null LMM of sleep duration found a significant effect for the intercept, A=7.913, $t(340)$=190.64, p<.001. The intercept had significant associated variance, σ^2=0.490, Z=10.96, p<.001. The ICC was 0.131.

LMM Specifications & Diagnostics. All LMMs were fitted using restricted maximum likelihood estimation (REML) and robust standard errors were specified because they are less sensitive to departures from normality. After the initial run for each of the alcohol or cannabis models, Q-Q plots of the conditional and unconditional Pearson and studentized residuals of the model were examined to determine whether the residuals of the outcome satisfied the assumption of normality. The Q-Q plots of the Pearson and studentized residuals identified a cluster of 64 individual daily observations among the complete cases with a sleep duration value of 0. These observations did not fit with the overall monotonic linear and curvilinear trends and led to a violation of the assumption of normality for the LMM, and therefore were removed from the models in subsequent runs.

Influential data points were assessed at the individual daily value level using Cook's *D*, the PRESS statistic, and restricted likelihood distance (RLD). Dot and needle plots were constructed for Cook's *D* and the RLD, and an index plot for the PRESS values, which were used for visual inspection of values that stood out from the main distribution of each statistic. Observations associated with Cook's *D* values >= .50 or those that stood out from the main distribution of their respective plots were flagged as influential data points and removed from the analyses.

Influence diagnostic statistics for the initial LMM of sleep duration regressed onto daily and average cannabis use showed that there was a total of four daily-level observations that were highly influential, two with Cook's D >= 0.5 and LRD >= 0.5, one with LRD => 0.5, and one with Cook's D >= 0.35 and LRD => 0.5, which were removed from the subsequent analysis. The LMM was rerun (N_{person}=337 with 10,815 total daily responses; 534 daily observations were not accepted by the model because of missing data issues). Only two of the four daily-level observations were removed (Cook's D >= 0.5 & LRD => 0.5) from the LMM with cannabis *only* use days (N_{person}=264 with 2,757 total daily responses).

Influence diagnostic statistics for the initial LMM of sleep duration regressed onto daily and average alcohol use showed that there was one daily-level observation that was highly influential, LRD >= .5, which was removed from the subsequent analysis. The LMM was rerun (N_{person}=337 with 10,837 total daily responses; 515 daily observations were not accepted by the model because of missing data issues). The same single daily-level observation was removed from the LMM with alcohol *only* use days (N_{person}=259 with 1,396 total daily responses).

Loglikelihood tests for models with & without burst collection period. Once a final LMM using all the available data as described above was achieved, the potential effect of burst was tested by incorporating burst as a dummy coded variable (Burst 1 = 0, Burst 2 = 1) into the model as, first, a main effect and, second, as an interaction effect with all possible interaction effects. The models with and without burst were compared with each other using the log-likelihood test of fit. In each case, the model with burst had significantly worse fit than the model without burst ($p > .10$). Thus, burst was not included in the final analyses.