**Supplementary Material**

1. **Supplementary Table 1.** Multinomial Logistic Regression for Antisocial Behaviors in African Genetic Ancestry Group (*N* = 1,278)
2. **Supplementary Table 2.** Multinomial Logistic Regressions for Substance Use Behaviors in African Genetic Ancestry Group (*N* = 1,278)
3. **Supplementary Table 3.** Multinomial Logistic Regression for Antisocial Behaviors in Hispanic Genetic Ancestry Group (*N* = 675)
4. **Supplementary Table 4.** Multinomial Logistic Regressions for Substance Use Behaviors in Hispanic Genetic Ancestry Group (*N* = 675)
5. **Supplementary Table 5.** Multinomial Logistic Regression for Antisocial Behaviors in East Asian Genetic Ancestry Group (*N* = 262)
6. **Supplementary Table 6.** Multinomial Logistic Regressions for Substance Use Behaviors in East Asian Genetic Ancestry Group (*N* = 262)
7. **Supplementary Table 7.** Correlations for Study Variables
8. **Supplementary Table 8.** Fit Statistics for Growth Mixture Modeling of Antisocial Behaviors (*N* = 20,722)
9. **Supplementary Table 9.** Fit Statistics for Growth Mixture Modeling of Substance Use Behaviors (N =20,692)
10. **Supplementary Table 10.** Chi-Square Test Between Three-Class and Six-Class Substance Use Behaviors Growth Mixture Models
11. **Supplementary Table 11.** Chi-Square Test Between Antisocial Behavior and Substance Use Behaviors

**Supplementary Table 1**

*Multinomial Logistic Regression for Antisocial Behaviors in African Genetic Ancestry Group (N = 1,278)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
| **Moderate** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex a |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race b |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
| Highest parental education at wave I c |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
| SUB class d |  |  |  |  |  |
| Low Use | - | - | - | - | - |
| High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |
| **High Decline** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
|  Highest parental education at wave I |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
|  SUB class |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
|  Low Use | - | - | - | - | - |
|  High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |
| **Adolescence-Peaked** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
| Highest parental education at wave I |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
| SUB class |  |  |  |  |  |
| Low Use | - | - | - | - | - |
| High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |

*Note.* Model did not converge. The Low class was used as the reference class in this model. Genetic principal components were also covaried; this data is available upon request. SUB = substance use behaviors; EXT PGS = externalizing polygenic score.

a Male used as comparison group. b White used as comparison group. c Less than high school used as comparison group. d Typical Use used as comparison group.

**Supplementary Table 2**

*Multinomial Logistic Regressions for Substance Use Behaviors in African Genetic Ancestry Subsample (N = 1,278)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
| **High Use** |  |  |  |  |  |
| Age at wave I | 1.05 | - | - | - | - |
| Biological sex a |  |  |  |  |  |
| Female | 0.41 | - | - | - | - |
| Self-reported race b |  |  |  |  |  |
| Black or African American | <0.01 | - | - | - | - |
| American Indian or Native American | <0.01 | - | - | - | - |
| Asian or Pacific Islander | <0.01 | - | - | - | - |
| Other  | <0.01 | - | - | - | - |
| Household income at wave I | 1.00 | - | - | - | - |
| Highest parental education at wave I c |  |  |  |  |  |
| High school | 1.09 | - | - | - | - |
| Some college | 0.78 | - | - | - | - |
| College degree | 0.42 | - | - | - | - |
| Post-college education | 1.10 | - | - | - | - |
| ASB class d |  |  |  |  |  |
| Moderate | 1.87 | - | - | - | - |
| Adolescence-Peaked | 1.08 | - | - | - | - |
| High Decline | 3.40 | - | - | - | - |
|  EXT PGS | 1.13 | - | - | - | - |
| **Low Use** |  |  |  |  |  |
| Age at wave I | 1.12 | - | - | - | - |
| Biological sex |  |  |  |  |  |
| Female | 1.39 | - | - | - | - |
| Self-reported race |  |  |  |  |  |
|  Black or African American | 1.18 | - | - | - | - |
|  American Indian or Native American | <0.01 | - | - | - | - |
|  Asian or Pacific Islander | <0.01 | - | - | - | - |
| Other  | 3.81 | - | - | - | - |
| Household income at wave I | 1.00 | - | - | - | - |
| Highest parental education at wave I |  |  |  |  |  |
|  High school | 1.68 | - | - | - | - |
|  Some college | 0.87 | - | - | - | - |
|  College degree | 0.96 | - | - | - | - |
|  Post-college education | 1.63 | - | - | - | - |
|  ASB class |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
|  Moderate | 0.28 | - | - | - | - |
|  Adolescence-Peaked | 0.13 | - | - | - | - |
|  High Decline | <0.01 | - | - | - | - |
|  EXT PGS | 0.94 | - | - | - | - |

*Note.* As model did not fully converge, relative risk ratio values are unreliable. These limited results likely do accurately reflect true associations. The Typical Use class was used as the reference class in this model. Genetic principal components were also covaried; this data is available upon request. ASB = antisocial behaviors; EXT PGS = externalizing polygenic score.

a Male used as comparison group. b White used as comparison group. c Less than high school used as comparison group. d Low used as comparison group.

**Supplementary Table 3**

*Multinomial Logistic Regression for Antisocial Behaviors in Hispanic Genetic Ancestry Group (N = 675)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
| **Moderate** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex a |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race b |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
| Highest parental education at wave I c |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
| SUB class d |  |  |  |  |  |
| Low Use | - | - | - | - | - |
| High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |
| **High Decline** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
|  Highest parental education at wave I |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
|  SUB class |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
|  Low Use | - | - | - | - | - |
|  High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |
| **Adolescence-Peaked** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
| Highest parental education at wave I |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
| SUB class |  |  |  |  |  |
| Low Use | - | - | - | - | - |
| High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |

*Note.* Model did not converge. The Low class was used as the reference class in this model. Genetic principal components were also covaried; this data is available upon request. SUB = substance use behaviors; EXT PGS = externalizing polygenic score.

a Male used as comparison group. b White used as comparison group. c Less than high school used as comparison group. d Typical Use used as comparison group.

**Supplementary Table 4**

*Multinomial Logistic Regressions for Substance Use Behaviors in Hispanic Genetic Ancestry Subsample (N = 675)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
| **High Use** |  |  |  |  |  |
| Age at wave I | 1.02 | 0.07 | .74 | 0.90 | 1.17 |
| Biological sex a |  |  |  |  |  |
| Female | 0.74 | 0.24 | .35 | 0.39 | 1.41 |
| Self-reported race b |  |  |  |  |  |
| Black or African American | <0.01 | <0.01 | <.01 | <0.01 | <0.01 |
| American Indian or Native American | 3.06 | 3.03 | .26 | 0.43 | 21.86 |
| Asian or Pacific Islander | 9.54 | 12.94 | .10 | 0.65 | 141.06 |
| Other  | 0.87 | 0.51 | .81 | 0.27 | 2.80 |
| Household income at wave I | 1.00 | 0.01 | .98 | 0.99 | 1.01 |
| Highest parental education at wave I c |  |  |  |  |  |
| High school | 2.02 | 0.73 | .06 | 0.98 | 4.16 |
| Some college | 0.89 | 0.38 | .63 | 0.31 | 2.04 |
| College degree | 0.97 | 0.48 | .95 | 0.36 | 2.61 |
| Post-college education | 0.89 | 0.75 | .89 | 0.17 | 4.73 |
| ASB class d |  |  |  |  |  |
| Moderate | 2.61 | 0.93 | <.01 | 1.29 | 5.29 |
| Adolescence-Peaked | 3.22 | 1.39 | <.01 | 1.37 | 7.58 |
| High Decline | 4.01 | 4.76 | .24 | 0.38 | 42.33 |
|  EXT PGS | 0.98 | 0.17 | .90 | 0.70 | 1.37 |
| **Low Use** |  |  |  |  |  |
| Age at wave I | 1.07 | 0.10 | .50 | 0.87 | 1.28 |
| Biological sex |  |  |  |  |  |
| Female | 1.00 | 0.32 | 1.00 | 0.53 | 1.89 |
| Self-reported race |  |  |  |  |  |
|  Black or African American | <0.01 | <0.01 | <.01 | <0.01 | <0.01 |
|  American Indian or Native American | <0.01 | <0.01 | <.01 | <0.01 | <0.01 |
|  Asian or Pacific Islander | 2.81 | 3.38 | .39 | 0.26 | 30.54 |
| Other  | 1.16 | 0.82 | .83 | 0.29 | 4.69 |
| Household income at wave I | 0.99 | 0.01 | .07 | 0.97 | 1.00 |
| Highest parental education at wave I |  |  |  |  |  |
|  High school | 1.16 | 0.49 | .73 | 0.50 | 2.67 |
|  Some college | 1.27 | 0.54 | .58 | 0.54 | 2.97 |
|  College degree | 0.86 | 0.43 | .77 | 0.32 | 2.32 |
|  Post-college education | 0.57 | 0.48 | .51 | 0.11 | 3.04 |
|  ASB class |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
|  Moderate | 0.16 | 0.09 | <.01 | 0.05 | 0.48 |
|  Adolescence-Peaked | 0.38 | 0.23 | .12 | 0.11 | 1.28 |
|  High Decline | <0.01 | <0.01 | <.01 | <0.01 | <0.01 |
|  EXT PGS | 1.10 | 0.20 | .59 | 0.77 | 1.58 |

*Note.* Standard errors questionable due to low sample size. The Typical Use class was used as the reference class in this model. Genetic principal components were also covaried; this data is available upon request. ASB = antisocial behaviors; EXT PGS = externalizing polygenic score.

a Male used as comparison group. b White used as comparison group. c Less than high school used as comparison group. d Low used as comparison group.

**Supplementary Table 5**

*Multinomial Logistic Regression for Antisocial Behaviors in East Asian Genetic Ancestry Group (N = 262)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
| **Moderate** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex a |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race b |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
| Highest parental education at wave I c |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
| SUB class d |  |  |  |  |  |
| Low Use | - | - | - | - | - |
| High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |
| **High Decline** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
|  Highest parental education at wave I |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
|  SUB class |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
|  Low Use | - | - | - | - | - |
|  High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |
| **Adolescence-Peaked** |  |  |  |  |  |
| Age at wave I | - | - | - | - | - |
| Biological sex |  |  |  |  |  |
| Female | - | - | - | - | - |
| Self-reported race |  |  |  |  |  |
| Black or African American | - | - | - | - | - |
| American Indian or Native American | - | - | - | - | - |
| Asian or Pacific Islander | - | - | - | - | - |
| Other  | - | - | - | - | - |
| Household income at wave I | - | - | - | - | - |
| Highest parental education at wave I |  |  |  |  |  |
| High school | - | - | - | - | - |
| Some college | - | - | - | - | - |
| College degree | - | - | - | - | - |
| Post-college education | - | - | - | - | - |
| SUB class |  |  |  |  |  |
| Low Use | - | - | - | - | - |
| High Use | - | - | - | - | - |
|  EXT PGS | - | - | - | - | - |

*Note.* Model did not converge. The Low class was used as the reference class in this model. Genetic principal components were also covaried; this data is available upon request. SUB = substance use behaviors; EXT PGS = externalizing polygenic score.

a Male used as comparison group. b White used as comparison group. c Less than high school used as comparison group. d Typical Use used as comparison group.

**Supplementary Table 6**

*Multinomial Logistic Regressions for Substance Use Behaviors in East Asian Genetic Ancestry Subsample (N = 262)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | 95% CI |
|  | RR | *SE* | *p* | Lower | Upper |
| **High Use** |  |  |  |  |  |
| Age at wave I | 0.81 | 0.16 | .30 | 0.55 | 1.20 |
| Biological sex a |  |  |  |  |  |
| Female | 0.45 | 0.24 | .14 | 0.15 | 1.33 |
| Self-reported race b |  |  |  |  |  |
| Other  | 0.05 | 0.03 | <.01 | 0.01 | 0.20 |
| Household income at wave I | 0.99 | <0.01 | .17 | 0.98 | 1.00 |
| Highest parental education at wave I c |  |  |  |  |  |
| High school | 5.71 | 6.38 | .13 | 0.60 | 53.95 |
| Some college | 19.09 | 20.80 | .01 | 2.13 | 170.85 |
| College degree | 3.63 | 4.12 | .26 | 0.37 | 35.57 |
| Post-college education | 5.94 | 8.23 | .20 | 0.37 | 96.27 |
| ASB class d |  |  |  |  |  |
| Moderate | 5.67 | 4.93 | .05 | 0.98 | 32.65 |
| Adolescence-Peaked | 0.08 | 0.06 | <.01 | 0.02 | 0.39 |
| High Decline | 5.35 | 7.39 | .23 | 0.33 | 86.05 |
|  EXT PGS | 1.62 | 0.49 | .12 | 0.88 | 2.96 |
| **Low Use** |  |  |  |  |  |
| Age at wave I | 1.20 | 0.16 | .19 | 0.91 | 1.57 |
| Biological sex |  |  |  |  |  |
| Female | 2.01 | 1.00 | .16 | 0.74 | 5.48 |
| Self-reported race |  |  |  |  |  |
| Other  | <0.01 | <0.01 | .57 | <0.01 | <0.01 |
| Household income at wave I | 0.99 | 0.01 | .35 | 0.96 | 1.01 |
| Highest parental education at wave I |  |  |  |  |  |
|  High school | 0.43 | 0.40 | .37 | 0.07 | 2.77 |
|  Some college | 0.34 | 0.28 | .19 | 0.07 | 1.73 |
|  College degree | 0.74 | 0.64 | .73 | 0.13 | 4.24 |
|  Post-college education | 0.44 | 0.29 | .22 | 0.12 | 1.67 |
|  ASB class |  |  |  |  |  |
|  Moderate | 0.19 | 0.33 | .34 | 0.01 | 6.12 |
|  Adolescence-Peaked | <0.01 | <0.01 | <.01 | <0.01 | <0.01 |
|  High Decline | <0.01 | <0.01 | <.01 | <0.01 | <0.01 |
|  EXT PGS | 1.21 | 0.35 | .71 | 0.60 | 2.08 |

*Note.* Standard errors questionable due to low sample size. The Typical Use class was used as the reference class in this model. Genetic principal components were also covaried; this data is available upon request. ASB = antisocial behaviors; EXT PGS = externalizing polygenic score.

a Male used as comparison group. b White used as comparison group. c Less than high school used as comparison group. d Low used as comparison group.

**Supplementary Table 7**

*Correlations for Study Variables*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 |
| 1. Age at wave I a | - |  |  |  |
| 2. Household income at wave I b | .02 | - |  |  |
| 3. ASB at wave I c | .04\*\* | -.01 | - |  |
| 4. SUB at wave I d | .29\*\* | -.01 | .41\*\* | - |
| 5. EXT PGS e | .00 | -.04\* | .08\*\* | .17\*\* |

*Note*. Correlations computed for primary analytic sample (i.e., participants of European genetic ancestry). Biological sex, self-reported race, and highest parental education at wave I were not included in the correlation matrix as they did not meet assumptions of Pearson correlations. ASB = antisocial behaviors; SUB = substance use behaviors; EXT PGS = externalizing polygenic score.

a Age measured in years. b Income measured in thousands. c ASB included property damage, stealing something greater than $50, selling drugs, pulling a knife or gun on someone, and shooting or stabbing someone. These items were dichotomized and summed to create a composite score for each wave. d SUB included frequency of alcohol consumption, cigarette smoking, and marijuana use. Each item ranged from zero to six, with zero indicating no substance use and six indicating daily/almost daily substance use. These items were summed to create a composite score for each wave. e EXT PGSs were standardized with a mean of zero and standard deviation of one.

\**p* < .05. \*\**p* < .01.

**Supplementary Table 8**

*Fit Statistics for Growth Mixture Modeling of Antisocial Behaviors (N = 20,722)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | *N* classes | AIC | BIC | Sample adjusted BIC | LMR adjusted value | LMR adjusted *p*-value |
| Intercept-only | 2 | 74525.61 | 74557.37 | 74557.37 | 2316.08 | <.01 |
|  | 3 | 74369.29 | 74416.93 | 74397.86 | 152.64 | <.01 |
|  | 4 | 74373.29 | 74436.81 | 74411.38 | 0.00 | .50 |
|  | 5 | 74367.28 | 74446.67 | 74414.89 | 28.11 | <.01 |
|  | 6 | 74371.28 | 74466.55 | 74428.42 | 0.00 | .76 |
| Linear | 2 | 70978.67 | 71034.24 | 71011.99 | 2720.23 | <.01 |
|  | 3 | 70817.58 | 70896.97 | 70865.19 | 161.66 | <.01 |
|  | 4 | 70752.05 | 70855.26 | 70813.94 | 69.21 | <.01 |
|  | 5 | 70732.33 | 70859.35 | 70808.51 | 24.89 | <.01 |
|  | 6 | 70735.15 | 70885.99 | 70825.61 | 3.08 | .10 |
| Quadratic | 2 | 70970.47 | 71049.86 | 71018.08 | 2722.94 | <.01 |
|  | 3 | 70793.00 | 70904.15 | 70859.65 | 180.92 | <.01 |
|  | 4 | 70517.95 | 70660.85 | 70603.65 | 187.55 | <.01 |
|  | 5 | 70718.22 | 70892.88 | 70822.96 | 0.00 | .50 |
|  | 6 | 73793.90 | 74000.31 | 73917.68 | -3214.87 | 1.00 |

Note. Cubic models were also run, but none converged; thus, no fit statistics are reported. Based on the model fit indices and extant theory, the four-class quadratic solution was selected.

**Supplementary Table 9**

*Fit Statistics for Growth Mixture Modeling of Substance Use Behaviors (N =20,692)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | *N* classes | AIC | BIC | Sample adjusted BIC | LMR adjusted value | LMR adjusted *p*-value |
| Intercept-only | 2 | 335643.99 | 335675.74 | 335663.03 | 42404.75 | <.01 |
|  | 3 | 330374.74 | 330422.36 | 330403.30 | 5020.64 | <.01 |
|  | 4 | 327289.91 | 327353.41 | 327327.99 | 2940.86 | <.01 |
|  | 5 | 326456.70 | 326536.08 | 326504.30 | 797.11 | <.01 |
|  | 6 | 326386.85 | 326482.10 | 326443.97 | 70.31 | 0.49 |
| Linear | 2 | 328312.13 | 328367.70 | 328345.45 | 43630.54 | <.01 |
|  | 3 | 321078.63 | 321158.01 | 321126.23 | 7004.55 | <.01 |
|  | 4 | 317708.36 | 317811.54 | 317770.23 | 3266.70 | <.01 |
|  | 5 | 315283.92 | 315410.92 | 315360.07 | 2351.56 | <.01 |
|  | 6 | 314442.00 | 314592.81 | 314532.43 | 820.41 | <.01 |
| Quadratic | 2 | 326167.21 | 326246.59 | 326214.81 | 44403.84 | <.01 |
|  | 3 | 318808.92 | 318920.05 | 318875.56 | 7185.52 | <.01 |
|  | 4 | 342448.30 | 342591.18 | 342533.97 | -23051.47 | 1.00 |
|  | 5 | 312097.03 | 312271.65 | 312201.74 | 3317.46 | <.01 |
|  | 6 | 311061.09 | 311267.47 | 311184.84 | 1018.32 | <.01 |

*Note.* Cubic models were also run, but none converged; thus, no fit statistics are reported. Based on the model fit indices and extant theory, the three-class quadratic solution was selected. While the quadratic solution with six classes resulted in similar fit indices as the three-class model, the three-class model was chosen because of its alignment with prior research and a more parsimonious fit to the data.

**Supplementary Table 10**

*Chi-Square Test Between Three-Class and Six-Class Substance Use Behaviors Growth Mixture Models*

|  |  |
| --- | --- |
|  | SUB six-class model |
| SUB three-class model | Low | Low Incline | Mid-Stable | Young Adulthood-Peaked | Adulthood-Peaked | High Stable | Total |
|  | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % |
| Low Use | 2,597 | 12.6 | 2,639 | 12.8 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 5,236 | 25.3 |
| Typical Use | 0 | 0.0 | 4,952 | 23.9 | 2,246 | 10.9 | 226 | 1.1 | 1,116 | 5.4 | 0 | 0.0 | 8,540 | 41.3 |
| High Use | 0 | 0.0 | 14 | 0.1 | 292 | 1.4 | 2,703 | 13.1 | 2,079 | 10.0 | 1,828 | 8.8 | 6,916 | 33.4 |
| Total | 2,597 | 12.6 | 7,605 | 36.8 | 2,538 | 12.3 | 2,929 | 14.2 | 3,195 | 15.4 | 1,828 | 8.8 | 20,692 | 100.0 |

*Note*. SUB = substance use behaviors.

χ2 (10, *N* = 20,692) = 23,885.75, *p* <.001

**Supplementary Table 11**

*Chi-Square Test Between Antisocial Behaviors and Substance Use Behaviors*

|  |  |
| --- | --- |
|  | SUB class |
| ASB class | Low Use | Typical Use | High Use | Total |
|  | *n* | % | *n* | % | *n* | % | *n* | % |
| Low | 4,848 | 23.5 | 7,118 | 34.4 | 4,340 | 21.0 | 16,306 | 78.9 |
| Moderate | 267 | 1.3 | 871 | 4.2 | 1,401 | 6.8 | 2,539 | 12.3 |
| Adolescence-Peaked | 101 | 0.5 | 478 | 2.3 | 860 | 4.2 | 1,439 | 7.0 |
| High Decline | 6 | 0.0 | 65 | 0.3 | 311 | 1.5 | 382 | 1.8 |
| Total | 5,222 | 25.3 | 8,532 | 41.3 | 6,912 | 33.4 | 20,666 | 100.0 |

*Note*. ASB = antisocial behaviors. SUB = substance use behaviors.

χ2 (6, *N=* 20,666) = 1,897.84, *p* <.001