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| Table S1. Proportion of additive genetic and individual-specific environmental variance in substance use disorders attributable to five-factor model personality traits, borderline personality features, and specific to substance use disorder |
| **Additive genetic factors** |
|  | Personality | BPF | Specific |
| *Neuroticism* | % | % | % |
|  AAD | 12.40 | 0.19ns | 82.33 |
|  MJAD | 2.97 | 14.86 | 82.16 |
|  ND | 13.20 | 22.85 | 63.95 |
| *Extraversion* |  |  |  |
|  AAD | - | - | - |
|  MJAD | 0.43ns | 10.18 | 88.53 |
|  ND | 4.71 | 22.61 | 68.68 |
| *Agreeableness* |  |  |  |
|  AAD | 7.28 | 4.08 | 88.65 |
|  MJAD | 4.39 | 7.11 | 88.49 |
|  ND | 21.14 | 11.74 | 67.11 |
| *Conscientiousness* |  |  |  |
|  AAD | 11.66 | 3.28 | 85.06 |
|  MJAD | 4.75 | 6.69 | 88.55 |
|  ND | 14.80 | 17.92 | 67.29 |
| **Individual-specific environmental factors** |
|  | Personality | BPF | Specific |
| *Neuroticism* | % | % | % |
|  AAD | 0.67ns | 3.40 | 95.93 |
|  MJAD | 8.44 | 2.98 | 89.42 |
|  ND | 6.25 | 2.33 | 91.41 |
| *Extraversion* |  |  |  |
|  AAD | - | - | - |
|  MJAD | 1.70 | 9.25 | 89.04 |
|  ND | 0.43ns | 7.60 | 91.96 |
| *Agreeableness* |  |  |  |
|  AAD | 0.12ns | 3.74 | 96.15 |
|  MJAD | 0.22ns | 11.11 | 88.64 |
|  ND | 0.51ns | 11.80 | 87.69 |
| *Conscientiousness* |  |  |  |
|  AAD | 0.36ns | 5.10 | 94.55 |
|  MJAD | 3.05 | 9.17 | 87.78 |
|  ND | 0.10ns | 8.74 | 91.16 |
| *Note:* *ns=not significant at p < 0.05; all other estimates are significant at p < 0.05;* BPF = borderline personality features; AAD=Lifetime Alcohol Abuse or Dependence; MJAD = Lifetime Cannabis Abuse or Dependence; ND=Lifetime Nicotine Dependence;From Figure 1, total genetic variance in each substance use disorder measure is (c2+e2+f2); ***%Personality*** is calculated as c2/(c2+e2+f2); ***%BPF*** as e2/(c2+e2+f2); and ***%Specific*** as f2/(c2+e2+f2); From Figure 1, total individual-specific environmental variance in each substance use disorder measure is (p2+q2+r2); ***%Personality*** is calculated as p2/(p2+q2+r2); ***%BPF*** as q2/(p2+q2+r2); and ***%Specific*** as r2/(p2+q2+r2);  |

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| Table S2. Proportion of genetic covariance between borderline personality features and substance use disorder explained by five-factor model personality traits |
|  | %PersonalityA | %PersonalityE |
| *Neuroticism* |  |  |
|  AAD | 93.29 | 29.31 |
|  MJAD | 43.95 | 60.86 |
|  ND | 56.83 | 60.28 |
| *Extraversion* |  |  |
|  AAD | - | - |
|  MJAD | 28.58 | 8.82 |
|  ND | 20.29 | 5.07 |
| *Agreeableness* |  |  |
|  AAD | 53.02 | 7.01 |
|  MJAD | 39.79 | 5.65 |
|  ND | 52.83 | 9.67 |
| *Conscientiousness* |  |  |
|  AAD | 49.54 | 7.47 |
|  MJAD | 29.84 | 13.31 |
|  ND | 31.97 | 2.79 |
| *Note:* AAD=Lifetime Alcohol Abuse or Dependence; MJAD = Lifetime Cannabis Abuse or Dependence; ND=Lifetime Nicotine Dependence; A=genetic covariance - from Figure 1, calculated as bc/(bc+de); E=individual-specific environmental covariance – from Figure 1, calculated as np/(np+tq);  |