Supplemental Table S1: Confounders used in analyses

|  |  |
| --- | --- |
| Psychiatric disorders | Mental health problems are associated with both substance use and with suicidal ideation/behavior. In NESARC, the AUDADIS-IV module1,2 was used to classify participants on whether or not they meet DSM-IV criteria for psychiatric disorders. The test-retest reliability of the AUDADIS-IV is fair to good for the psychiatric disorders included here.1,2 |
| Mood disorders | We used measures of mood disorders experienced before age 18. The following mood disorders were included: major depressive disorder, dysthymia, bipolar disorder, panic disorder, social anxiety disorder, specific phobia, and generalized anxiety disorder. A measure for each mood disorder was generated and coded “1” if the person met criteria for the disorder and “0” otherwise. |
| Personality disorders | Personality disorders measured in wave 1 included: conduct, antisocial, avoidant, dependent, obsessive-compulsive, paranoid, schizoid, and histrionic personality disorders. To obtain lifetime measures of disorders the following was read to participants: “The questions I’m going to ask you now are about how you have felt or acted most of the time throughout your life regardless of the situation or whom you were with. Do not include times when you weren’t yourself or when you acted differently than usual because you were depressed or hyper, anxious or nervous or drinking heavily, using medicines or drugs or experiencing their bad aftereffects, or times when you were physically ill”. We created a variable for each personality disorder coded “1” if the person met criteria for the disorder and “0” otherwise. Then we created a single combined measure for personality disorders with the following categories: 1) not experiencing any personality disorder; 2) experiencing one personality disorder; 3) experiencing two personality disorders; and 4) experiencing three or more personality disorders. |
| Number of symptoms of conduct/ antisocial personality disorder | We created two variables one measuring the number of symptoms (e.g., cut class, not go to class or go to school and leave without permission; stay out late at night even though parents told you to stay home; ever have time when bullied or pushed people around or tried to make them afraid of you) before age 15 years and another for symptoms after age 15. Each variable was categorized as follows: 1) no social deviance experiences; 2) experiencing one social deviance item; 3) experiencing two; 4) experiencing three; 5) experiencing four; and 6) experiencing five or more social deviance items. |
| Substance abuse/ dependence prior to the last 12 months | We created variables for meeting DSM-IV abuse or dependence criteria prior to the last 12 months for each substance including marijuana, cocaine/crack, heroin, inhalants, hallucinogens, stimulants, tranquilizers and sedatives. For each substance we created a single variable coded “1” if the person met criteria for a specific substance prior to the last 12 months, and “0” otherwise. Then we created a single combined measure for abuse/ dependence with the following categories: 1) no abuse/dependence to any substance prior to the past 12 months; 2) abuse/dependence to a substance; 3) abuse/dependence to two substances; 4) abuse/dependence to 3 or more substances. AUDADIS-IV drug abuse and dependence measures have been shown to be excellent test-retest reliabilities (Kappa above 0.79).3 We separately controlled for alcohol abuse/dependence using DMS-IV criteria.  Additionally, to control for smoking and nicotine dependence, we included two measures: 1) a measure of frequency of smoking prior to the last 12 months (measured at wave 1) among smokers categorized as: smoking 5 days or more a week, 1 to 4 days a week, 2 to 3 days a month or less or did not smoke prior to the last 12 months; 2) a binary measure of nicotine dependence prior to the last 12 months. |
| Other substance use prior to the last 12 months | We created variables for other substances, including marijuana, cocaine/crack, heroin, inhalants, hallucinogens, amphetamines, stimulants, tranquilizers and sedatives to indicate whether a participant had used a particular substance prior to the last 12 months. For each substance we created a single variable coded “1” if the person used the substance prior to the last 12 months, and “0” otherwise. Then we created a single combined measure for substance use with the following categories: 1) no use of substances prior to the past 12 months; 2) used one substance; 3) used two or more substances. The test-retest reliability of the use of different substance measures in AUDADIS has shown to be fair to excellent (Kappa = 0.50-0.86).1 |
| Low self-esteem | As part of the avoidant personality disorder items participants were asked if they felt that they were not as good, smart, or attractive as most other people most of the time throughout their life. To better account for this variable linked to both substance use and suicidal ideation,4,5 we used a separate measure of “low self-esteem” in analyses. This variable was coded as “1” if a participant endorsed believing they were not as good, smart, or attractive as most other people; “0” otherwise. |
| Childhood adversity measures | Prior difficult experiences have been associated with substance use and suicidal ideation.6 We use measures of family history that could be related to hardship during childhood/adolescence, including the following: lifetime history of: 1) depressive events among blood/natural parents; 2) drug abuse/ dependence in blood/natural parents; 3) drug abuse/ dependence in any full brothers/sisters; 4) behavior problems in blood/natural parents (e.g., being cruel to people or animals, fighting or destroying property, trouble keeping a job or paying bills, being impulsive); and 5) parental divorce/separation or death of at least one parent before the participant was 18 years old; 6) We also included a measure from wave 2 on history of suicide attempts among parents or other adults living in home before the participant was 18 years old. |
| Socio-demographic variables | Age was used as a continuous variable; sex was categorized as male or female; race/ethnic group was classified as non-Hispanic white, non-Hispanic American Indian/ Alaska Native, non-Hispanic black, Asian/Native Hawaiian/Pacific Islander, and Hispanic; history of end of marriage was classified “1” if the participant ever experienced a first marriage separation, divorce, or death of partner; and “0” if the participant never experienced a separation, divorce, or death of partner, even if never married. |
| Total family income | Total family income was categorized as income lower than 20,000, between 20,000 and 49,999, between 50,000 and 74,999, and 75,000 or more. |
| Health insurance coverage | Health insurance coverage can influence access to treatment and to disease prevention programs, therefore it can be a factor associated with both substance use and suicidal ideation/behavior. The insurance variable was categorized as follows: 1) No insurance, 2) Medicare, 3) Medicaid, 4) the VA or other military health care, or 5) obtained privately or through a current or former employer or union. |
| Marital status | Current marital status at wave 1 was classified as: 1) Married living with someone, 2) Widowed/divorced/separated, 3) Never married. |
| Use of medicine/drugs to improve mood | Information on the use of medicine/drugs to improve mood were based on the following two questions:  1. Did a doctor EVER prescribe any medicines or drugs to improve your mood or to make you feel better?  2. Did you take any medicines or drugs on your own, that is, without a prescription, in greater amounts or more often or longer than prescribed to help improve your mood or to make yourself feel better when you (felt sad, blue, depressed, or down/didn’t care about things or enjoy things)? Did this happen before 12 months ago?  Two measures, one for each question, were created and coded as “1” if the participant endorsed having use medication to improve low mood; “0” if otherwise. |

References:

1. **Grant BF, Harford TC, Dawson DA, Chou PS, Pickering RP** (1995). The Alcohol Use Disorder and Associated Disabilities Interview schedule (AUDADIS): reliability of alcohol and drug modules in a general population sample. *Drug and Alcohol Dependence.* **39**, 37-44.

2. **Ruan WJ, Goldstein RB, Chou SP, et al**. (2008). The alcohol use disorder and associated disabilities interview schedule-IV (AUDADIS-IV): reliability of new psychiatric diagnostic modules and risk factors in a general population sample. *Drug and Alcohol Dependence.***92**, 27-36.

3. **Grant BF, Stinson FS, Dawson DA, et al**. (2004). Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders - Results from the national epidemiologic survey on alcohol and related conditions. *Archives of General Psychiatry.* **61**, 807-816.

4. **McGee R, Williams S, Nada-Raja S** (2001). Low self-esteem and hopelessness in childhood and suicidal ideation in early adulthood. *Journal of Abnormal Child Psychology.* **29**, 281-291.

5. **Fergusson DM, Lynskey MT (**1995). Childhood circumstances, adolescent adjustment, and suicide attempts in a New Zealand birth cohort. *Journal of the American Academy of Child and Adolescent Psychiatry*. 34, 612-622.

6. **Dube SR, Anda RF, Felitti VJ, Chapman DP, Williamson DF, Giles WH** (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. *JAMA.* **286**, 3089-3096.

Supplemental Table S2: Association between exposure variables and confounders after adjustment for the log transformed propensity score

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **RR Past-year prescription opioid use** | | |  | **RR Past-year heavy/frequent use** | | |  | **RR Past-year PO use disorder** | | |
| **Potential confounders** | **RR** | **p-value** | **95% CI** |  | **RR** | **p-value** | **95% CI** |  | **RR** | **p-value** | **95% CI** |
| Age at wave 1 interview (years); mean | 1.00 | 0.603 | (0.99, 1.01) |  | 1.00 | 0.778 | (0.99, 1.02) |  | 0.99 | 0.502 | (0.98, 1.01) |
| Sex |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.96 | 0.770 | (0.75, 1.24) |  | 0.96 | 0.827 | (0.65, 1.41) |  | 0.97 | 0894 | (0.61, 1.54) |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Non-Hispanic white | Ref |  |  |  | Ref |  |  |  | Ref |  |  |
| Non-Hispanic black | 0.92 | 0.609 | (0.66, 1.28) |  | 0.77 | 0.294 | (0.48, 1.25) |  | 1.04 | 0.934 | (0.45, 2.38) |
| American Indian/Alaska Native | 0.97 | 0.902 | (0.54, 1.72) |  | 1.09 | 0.832 | (0.48, 2.51) |  | 0.94 | 0.883 | (0.39, 2.26) |
| Asian/Native Hawaiian/Pacific Islander | 1.19 | 0.595 | (0.62, 2.28) |  | 0.36 | 0.330 | (0.05, 2.86) |  | 1.11 | 0.871 | (0.28, 4.46) |
| Hispanic | 0.75 | 0.138 | (0.52, 1.09) |  | 0.71 | 0.181 | (0.42, 1.18) |  | 1.00 | 0.995 | (0.45, 2.19) |
| Marital status |  |  |  |  |  |  |  |  |  |  |  |
| Married living with someone | Ref |  |  |  | Ref |  |  |  | Ref |  |  |
| Widowed/ divorced/ separated | 0.99 | 0.927 | (0.75, 1.30) |  | 0.97 | 0.887 | (0.63, 1.49) |  | 0.96 | 0.882 | (0.53, 1.73) |
| Never married | 1.08 | 0.549 | (0.85, 1.37) |  | 0.90 | 0.646 | (0.58, 1.40) |  | 1.08 | 0.778 | (0.63, 1.84) |
| History of divorce/separation/widowed | 0.92 | 0.480 | (0.73, 1.16) |  | 1.06 | 0.732 | (0.75, 1.50) |  | 0.86 | 0.552 | (0.51, 1.44) |
| Any other drug use |  |  |  |  |  |  |  |  |  |  |  |
| None | Ref |  |  |  | Ref |  |  |  | Ref |  |  |
| 1 drug | 1.00 | 0.989 | (0.66, 1.51) |  | 0.75 | 0.308 | (0.43, 1.31) |  | 0.76 | 0.507 | (0.33, 1.74) |
| 2 or more drugs | 1.00 | 0.985 | (0.61, 1.63) |  | 0.72 | 0.340 | (0.37, 1.41) |  | 0.79 | 0.551 | (0.34, 1.78) |
| Alcohol abuse/dependence | 1.15 | 0.250 | (0.90, 1.47) |  | 1.44 | 0.076 | (0.96, 2.14) |  | 1.03 | 0.890 | (0.62, 1.74) |
| Nicotine dependence | 1.00 | 0.993 | (0.76, 1.32) |  | 0.85 | 0.467 | (0.56, 1.31) |  | 1.18 | 0.671 | (0.55, 2.52) |
| Any other drug abuse/dependence |  |  |  |  |  |  |  |  |  |  |  |
| None | Ref |  |  |  | Ref |  |  |  | Ref |  |  |
| 1 drug | 0.92 | 0.710 | (0.58, 1.45) |  | 1.00 | 0.974 | (0.64, 1.60) |  | 0.54 | 0.140 | (0.24, 1.23) |
| 2 drugs | 0.58 | 0.064 | (0.33, 1.03) |  | 0.89 | 0.702 | (0.48, 1.63) |  | 0.51 | 0.150 | (0.20, 1.29) |
| 3 or more drugs | 0.97 | 0.926 | (0.56, 1.70) |  | 1.11 | 0.729 | (0.59, 2.10) |  | 0.68 | 0.474 | (0.23, 2.00) |
| Mood disorders before age 18 |  |  |  |  |  |  |  |  |  |  |  |
| Major depressive disorder | 0.89 | 0.512 | (0.63, 1.26) |  | 0.91 | 0.692 | (0.56, 1.48) |  | 1.04 | 0.893 | (0.57, 1.90) |
| Dysthymia | 0.94 | 0.831 | (0.52, 1.69) |  | 0.75 | 0.492 | (0.33, 1.70) |  | 1.12 | 0.775 | (0.50, 2.53) |
| Bipolar disorder | 0.98 | 0.703 | (0.87, 1.10) |  | 0.99 | 0.932 | (0.84, 1.18) |  | 1.04 | 0.744 | (0.83, 1.29) |
| Anxiety disorder before age 18 |  |  |  |  |  |  |  |  |  |  |  |
| General anxiety disorder | 1.16 | 0.671 | (0.57, 2.39) |  | 0.77 | 0.633 | (0.26, 2.29) |  | 0.94 | 0.911 | (0.34, 2.63) |
| Social phobia | 0.98 | 0.892 | (0.73, 1.31) |  | 1.02 | 0.934 | (0.66, 1.56) |  | 1.00 | 0.997 | (0.55, 1.82) |
| Specific phobia | 1.09 | 0.453 | (0.86, 1.39) |  | 1.16 | 0.427 | (0.81, 1.66) |  | 1.10 | 0.689 | (0.68, 1.77) |
| Panic disorder | 1.00 | 0.997 | (0.65, 1.54) |  | 1.10 | 0.784 | (0.55, 2.19) |  | 0.92 | 0.867 | (0.35, 2.44) |
| Any personality disorder |  |  |  |  |  |  |  |  |  |  |  |
| Experienced 1 disorder | 0.95 | 0.712 | (0.70, 1.28) |  | 0.87 | 0.522 | (0.56, 1.35) |  | 0.90 | 0.705 | (0.52, 1.55) |
| Experienced 2 disorders | 0.91 | 0.642 | (0.60, 1.38 |  | 0.78 | 0.468 | (0.40, 1.53) |  | 1.01 | 0.983 | (0.41, 2.47) |
| Experienced 3 disorders or more | 1.09 | 0.667 | (0.72, 1.65) |  | 1.06 | 0.837 | (0.63, 1.78) |  | 1.04 | 0.914 | (0.47, 2.31) |
| Low self-esteem | 0.87 | 0.403 | (0.63, 1.21) |  | 0.89 | 0.641 | (0.55, 1.45) |  | 1.25 | 0.529 | (0.62, 2.54) |
| Social deviance before 15 years (as continuous variable) | 0.95 | 0.532 | (0.82, 1.11) |  | 1.00 | 0.985 | (0.76, 1.30) |  | 1.12 | 0.508 | (0.80, 1.58) |
| Social deviance after 15 years (as continuous variable) | 1.02 | 0.820 | (0.88, 1.17) |  | 1.08 | 0.581 | (0.82, 1.43) |  | 1.02 | 0.931 | (0.70, 1.47) |
| History of depressive events among parents | 0.97 | 0.799 | (0.75, 1.25) |  | 1.27 | 0.254 | (0.84, 1.92) |  | 1.03 | 0.902 | (0.65, 1.62) |
| History of behavior problems among parents | 1.00 | 0.973 | (0.75, 1.32) |  | 1.07 | 0.755 | (0.70, 1.64) |  | 1.24 | 0.477 | (0.68, 2.24) |
| History of drug abuse/ dependence in blood/natural parents | 1.04 | 0.813 | (0.77, 1.40) |  | 1.23 | 0.365 | (0.79, 1.91) |  | 1.14 | 0.718 | (0.56, 2.33) |
| History of drug abuse/ dependence in any full brothers/sisters | 0.98 | 0.854 | (0.76, 1.26) |  | 0.89 | 0.587 | (0.58, 1.37) |  | 0.90 | 0.717 | (0.50, 1.61) |
| History of suicide attempts among parents (wave 2) | 1.24 | 0.353 | (0.78, 1.95) |  | 1.29 | 0.400 | (0.70, 2.38) |  | 1.78 | 0.305 | (0.58, 5.45) |
| Parents divorce/separation | 0.91 | 0.506 | (0.69, 1.21) |  | 0.94 | 0.449 | (0.81, 1.10) |  | 0.95 | 0.682 | (0.76, 1.20) |
| Family income |  |  |  |  |  |  |  |  |  |  |  |
| <20,000 | Ref |  |  |  | Ref |  |  |  | Ref |  |  |
| 20,000 and 49,999 | 1.10 | 0.643 | (0.72, 1.69) |  | 1.07 | 0.810 | (0.60, 1.90) |  | 1.07 | 0.906 | (0.34, 3.36) |
| 50,000 and 74,999 | 0.89 | 0.468 | (0.66, 1.22) |  | 1.06 | 0.808 | (0.66, 1.71) |  | 0.82 | 0.631 | (0.36, 1.87) |
| 75,000 or more | 0.89 | 0.525 | (0.62, 1.28) |  | 1.14 | 0.627 | (0.66, 1.95) |  | 0.82 | 0.662 | (0.32, 2.05) |
| No medical insurance | 0.97 | 0.523 | (0.89, 1.06) |  | 1.00 | 0.949 | (0.87, 1.14) |  | 1.00 | 0.986 | (0.82, 1.22) |

Supplemental Table S3: Prevalence of psychiatric disorders, events and demographic variables by past-year nonmedical prescription opioid use, heavy/frequent nonmedical prescription opioid use and related disorder, among adults aged 18 and older (n= 34,653)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Past-year prescription opioid use** | | |  | **Past-year heavy/frequent use** | | |  | **Past-year PO use disorder** | | |
|  | **No** | **Yes** | **F, p-value** |  | **No** | **Yes** | **F, p-value** |  | **No** | **Yes** | **F, p-value** |
| Age at wave 1 interview (years); mean | 45.27 | 34.54 | F=192.87, p<0.001 |  | 45.27 | 40.02 | F=15.06, p<0.001 |  | 45.11 | 35.19 | F= 36.12, p<0.001 |
| Sex |  |  |  |  |  |  |  |  |  |  |  |
| Female | 52.25 | 42.45 | F=10.92, p<0.01 |  | 52.25 | 39.63 | F=7.38, p=0.009 |  | 52.13 | 36.52 | F= 7.04, p=0.01 |
| Male | 47.75 | 57.55 |  |  | 47.75 | 60.37 |  |  | 47.87 | 63.48 |  |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Non-Hispanic white | 70.82 | 77.18 | F=5.28, p<0.001 |  | 70.82 | 79.8 | F=8.04, p<0.001 |  | 70.92 | 72.54 | F= 2.72, p=0.04 |
| Non-Hispanic black | 11.13 | 6.32 |  |  | 11.13 | 5.47 |  |  | 11.06 | 7.02 |  |
| American Indian/ Alaska Native | 2.16 | 4.21 |  |  | 2.16 | 5.94 |  |  | 2.18 | 7.37 |  |
| Asian/Native Hawaiian/ Pacific Islander | 4.28 | 3.83 |  |  | 4.28 | 0.22 |  |  | 4.27 | 4.24 |  |
| Hispanic | 11.61 | 8.46 |  |  | 11.61 | 8.57 |  |  | 11.57 | 8.83 |  |
| Marital status |  |  |  |  |  |  |  |  |  |  |  |
| Married living with someone | 63.44 | 41.99 | F=62.57, p<0.001 |  | 63.43 | 46.62 | F=8.32, p<0.001 |  | 63.12 | 45.29 | F=6.94, p=0.002 |
| Widowed/ divorced/ separated | 16.47 | 16.83 |  |  | 16.47 | 25.49 |  |  | 16.47 | 17.02 |  |
| Never married | 20.09 | 41.21 |  |  | 20.09 | 27.89 |  |  | 20.41 | 37.69 |  |
| History of divorce/ separation/ widowed | 28.97 | 26.61 | F=1.12, p=0.29 |  | 28.98 | 39.13 | F=7.00, p=0.01 |  | 28.93 | 29.19 | F= 0.003, p=0.96 |
| Any other drug use |  |  | F=476.22, p<0.001 |  |  |  | F=245.93, p<0.001 |  |  |  | F= 88.66, p<0.001 |
| 1 drug | 11.8 | 19.79 |  |  | 11.80 | 14.49 |  |  | 11.93 | 15.62 |  |
| 2 or more drugs | 9.31 | 57.98 |  |  | 9.31 | 64.46 |  |  | 10.02 | 58.17 |  |
| Alcohol abuse/dependence | 28.8 | 63.6 | F=191.88, p<0.001 |  | 28.8 | 66.97 | F=91.02, p<0.001 |  | 29.25 | 69.35 | F=69.24, p<0.001 |
| Nicotine dependence | 15.9 | 49.7 | F=272.09, p<0.001 |  | 15.89 | 52.24 | F=125.33, p<0.001 |  | 16.34 | 64.58 | F=113.61, p<0.001 |
| Any other drug abuse/dependence |  |  | F=242.55, p<0.001 |  |  |  | F=98.14, p<0.001 |  |  |  | F=102.14, p<0.001 |
| 1 drug | 6.05 | 29.5 |  |  | 6.03 | 28.20 |  |  | 6.39 | 21.36 |  |
| 2 drugs | 1.57 | 9.33 |  |  | 1.55 | 10.71 |  |  | 1.66 | 12.61 |  |
| 3 or more drugs | 1.50 | 12.27 |  |  | 1.49 | 14.46 |  |  | 1.61 | 22.38 |  |
| Mood disorders before age 18 |  |  |  |  |  |  |  |  |  |  |  |
| Major depressive disorder | 4.36 | 13.05 | F=72.45, p<0.001 |  | 4.37 | 11.88 | F=21.07, p<0.001 |  | 4.46 | 22.04 | F=60.02, p<0.001 |
| Dysthymia | 1.14 | 4.79 | F=44.31, p<0.001 |  | 1.15 | 3.79 | F=12.62, p<0.001 |  | 1.18 | 9.94 | F= 53.65, p<0.001 |
| Bipolar disorder | 2.31 | 8.6 | F=63.58, p<0.001 |  | 2.31 | 8.09 | F=16.32, p<0.001 |  | 2.37 | 16.49 | F= 49.28, p<0.001 |
| Anxiety disorder before age 18 |  |  |  |  |  |  |  |  |  |  |  |
| General anxiety disorder | 0.83 | 3.27 | F=22.66, p<0.001 |  | 0.83 | 2.04 | F=3.89, p=0.05 |  | 0.85 | 7.24 | F=34.43, p<0.001 |
| Social phobia | 9.62 | 20.25 | F=47.86, p<0.001 |  | 9.63 | 21.11 | F=20.63, p<0.001 |  | 9.77 | 22.43 | F=11.36, p<0.001 |
| Specific phobia | 31.01 | 44.68 | F=30.48, p<0.001 |  | 31.07 | 46.55 | F=19.30, p<0.001 |  | 31.21 | 43.73 | F=5.31, p=0.024 |
| Panic disorder | 1.75 | 6.78 | F=62.08, p<0.001 |  | 1.75 | 6.22 | F=14.46, p<0.001 |  | 1.82 | 7.58 | F=14.68, p<0.001 |
| Any personality disorder |  |  | F=70.79, p<0.001 |  |  |  | F=57.33, p<0.001 |  |  |  | F= 37.03, p<0.001 |
| Experienced 1 disorder | 10.09 | 20.7 |  |  | 10.10 | 17.32 |  |  | 10.22 | 28.25 |  |
| Experienced 2 disorders | 3.13 | 6.62 |  |  | 3.14 | 6.21 |  |  | 3.17 | 10.01 |  |
| Experienced 3 disorders or more | 2.06 | 11.17 |  |  | 2.06 | 16.47 |  |  | 2.17 | 18.11 |  |
| Low self-esteem | 8.32 | 14.51 | F=16.87, p<0.001 |  | 8.33 | 17.63 | F=13.68, p<0.001 |  | 8.38 | 24.93 | F=17.09, p<0.001 |
| Social deviance before 15 years (number items); mean | 0.53 | 1.85 | F=68.99, p<0.001 |  | 0.53 | 1.92 | F=32.64, p<0.001 |  | 0.54 | 3.35 | F=32.32, p<0.001 |
| Social deviance after 15 years (number items); mean | 1.77 | 5.80 | F=182.35, p<0.001 |  | 1.77 | 6.42 | F=68.78, p<0.001 |  | 1.83 | 7.58 | F=64.86, p<0.001 |
| History of depressive events among parents | 24.4 | 45.12 | F=82.64, p<0.001 |  | 24.40 | 50.23 | F=42.53, p<0.001 |  | 24.67 | 52.53 | F= 37.40, p<0.001 |
| History of behavior problems among parents | 9.03 | 26.03 | F=114.50, p<0.001 |  | 9.03 | 27.64 | F=47.49, p<0.001 |  | 9.25 | 33.79 | F= 48.01, p<0.001 |
| History of drug abuse/ dependence in blood/ natural parents | 3.69 | 16.33 | F=188.57, p<0.001 |  | 3.69 | 20.14 | F=104.39, p<0.001 |  | 3.86 | 20.62 | F= 56.43, p<0.001 |
| History of drug abuse/ dependence disorders in any full brothers/ sisters | 10.94 | 19.57 | F=34.00, p<0.001 |  | 10.93 | 17.11 | F=6.33, p=0.01 |  | 11.07 | 16.44 | F= 2.47, p=0.12 |
| History of suicide attempts among parents (wave 2) | 3.68 | 7.29 | F=13.39, p<0.001 |  | 3.68 | 8.99 | F=11.47, p=0.001 |  | 3.72 | 9.84 | F= 4.89, p=0.03 |
| Parents divorce/separation | 15.92 | 26.68 | F=14.00, p<0.001 |  | 15.92 | 27.86 | F=10.18, p<0.001 |  | 16.09 | 22.56 | F= 1.55, p=0.22 |
| Family income |  |  | F=14.24, p<0.001 |  |  |  | F=8.54, p<0.001 |  |  |  | F= 2.00, p=0.12 |
| <20,000 | 8.92 | 16.46 |  |  | 8.93 | 17.64 |  |  | 9.03 | 15.58 |  |
| 20,000 and 49,999 | 13.03 | 18.78 |  |  | 13.02 | 14.6 |  |  | 13.12 | 15.78 |  |
| 50,000 and 74,999 | 36.51 | 35.31 |  |  | 36.51 | 44.35 |  |  | 36.47 | 43.16 |  |
| 75,000 or more | 41.54 | 29.46 |  |  | 41.54 | 23.41 |  |  | 41.38 | 25.49 |  |
| No medical insurance | 17.76 | 30.86 | F=29.57, p<0.001 |  | 17.76 | 26.45 | F=6.09, p=0.02 |  | 17.95 | 31.36 | F= 7.44, p=0.01 |
| Suicidal outcomes |  |  |  |  |  |  |  |  |  |  |  |
| Suicidal ideation - lifetime (wave 1) | 8.21 | 25.4 | F=168.05, p<0.001 |  | 8.21 | 32.82 | F=114.57, p<0.001 |  | 8.41 | 39.13 | F=83.81, p<0.001 |
| Suicide attempts - lifetime (wave 1) | 2.23 | 10.64 | F=108.06, p<0.001 |  | 2.23 | 18.2 | F=136.33, p<0.001 |  | 2.32 | 21.12 | F=83.25, p<0.001 |
| Suicidal ideation - since last interview (wave 2) | 3.43 | 10.66 | F=64.68, p<0.001 |  | 3.43 | 14.54 | F=54.03, p<0.001 |  | 3.5 | 20.09 | F=80.67, p<0.001 |
| Suicide attempts - since last interview (wave 2) | 0.58 | 3.91 | F=58.53, p<0.001 |  | 0.58 | 6.18 | F=70.79, p<0.001 |  | 0.62 | 7.21 | F=50.22, p<0.001 |

Supplemental Table S4: Past-year nonmedical use of prescription opioids, heavy/frequent use of nonmedical prescription opioids and related disorder at wave 1 and their association with prevalence and incidence of suicidal ideation and suicide attempts since last interview (wave 2) in models not adjusted by marital status, family income and type of insurance, having used medication as directed by physician to improve mood, and having used medication not as directed by physician to improve mood.a

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Prevalence of suicidal ideation** | |  | **Incidence of suicide ideation** | |  | **Prevalence of suicidal attempt** | |  | **Incidence of suicide attempt** | |
|  | **RR** | **95% CI** |  | **RR** | **95% CI** |  | **RR** | **95% CI** |  | **RR** | **95% CI** |
| **No use** | Reference |  |  | Reference |  |  | Reference |  |  | Reference |  |
| **Nonmedical use of prescription opioids in past year** | 1.26 | (0.96, 1.73) |  | 1.27 | (0.78, 2.07) |  | 2.43 | (1.32, 4.48) |  | 1.35 | (0.48, 3.84) |
| **No heavy/frequent use** | Reference |  |  | Reference |  |  | Reference |  |  | Reference |  |
| **Heavy/frequent nonmedical use of prescription opioids** | 1.54 | (1.05, 2.26) |  | 2.11 | (0.96, 4.64) |  | 3.29 | (1.69, 6.42) |  | 0.52 | (0.12, 2.26) |
| **No PO use disorder** | Reference |  |  | Reference |  |  | Reference |  |  | Reference |  |
| **PO use disorder in past year** | 2.02 | (1.24, 3.29) |  | 2.83 | (1.37, 5.87) |  | 4.01 | (1.71, 9.44) |  | 1.67 | (0.24, 11.80) |

a Models were adjusted by the log transformed propensity score that included the following variables: Respondent’s age, sex, and race/ethnic group; history of marriage ending (separated/divorced/widowed); mood and personality disorders experienced before age 18; low self-esteem; other substance use prior to past year before interview; substance use disorder prior to past year before interview; social deviance before and after age 15; lifetime history of depressive events among blood/natural parents; lifetime history of drug use disorders in blood/natural parents; lifetime history of drug use disorders in any full brothers/sisters; parental divorce/separation or death of at least one parent before the participant was 18 years old; family history of behavior problems in blood/natural parents; history of suicide attempts among parents or other adults living in home before the participant was 18 years old.