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Residential transience and substance use disorder are independently associated with suicidal thoughts, plans, and attempts in a nationally representative sample of U.S. adults

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Abstract

This study tests the association between past year residential transience (RT), substance use disorder (SUD), major depressive episode (MDE), and suicidal outcomes in a nationally representative sample of noninstitutionalized, civilian, community-dwelling adults who participated in the 2008–2013 National Surveys on Drug Use and Health (NSDUHs). RT, SUD, and MDE were each significantly associated with suicidal thoughts, plans, and attempts in models adjusted for each other and sociodemographic covariates. Because RT is independently associated with each suicidal outcome, even when there is no co-occurring SUD or MDE, assessment of RT should occur when screening for suicide.

Introduction

Suicide is the 10th leading cause of death in the United States across all ages and is estimated to cost more than \$44 billion annually (1). Substance use disorder (SUD) is a well-established risk factor for suicidal behavior, above and beyond the presence of comorbid depression (2-5), which is one of the strongest predictors of suicide (6). Several other well-known risk factors for suicide risk include age, race/ethnicity, and income (7), as well as stressful life events (2).

Recent studies have begun to study the associations between specific types of stress, such as residential transience (RT), and suicidal outcomes. RT, which also has been referred to as “residential mobility” in the literature, represents one construct of the larger umbrella of housing instability that also includes homelessness (living outdoors/on the streets) or living in a temporary housing situation such as a shelter (8). Residential transience (RT) is typically defined as frequently changing residences in an unstructured fashion without having a central “home”(9), and thus is characterized more by the stressful act of moving rather than the physical structure of residence. The stress of frequent moving includes factors associated with the need to frequently change residences such as loss of employment, lack of money to sustain current housing, and leaving a location for safety reasons, as well as stress associated with the physical act of moving one's belongings, having to find new

housing, schools for children, and healthcare providers, and loss of friends or neighbors who provided social support. Several research studies have found significant associations between RT and various high risk behaviors (10, 11) and poor mental health outcomes (12-14), including suicidality (15). In a nationally representative sample of non-homeless, U.S. adults, Glasheen and Forman-Hoffman observed that residentially transient adults, defined as moving residences three or more times in the past year, had a 60%–90% greater odds of past year suicidal outcomes (thoughts, plans, and attempts) compared to nontransient adults, and that transience and suicidality were significantly associated even among those who did not have co-occurring depression (16). The diathesis stress theory may explain the increased risk of suicidal outcomes among those with RT because of shared risk factors increasing vulnerability to suicide in combination with heightened stressors and feelings of hopelessness, reduced social networks, depression, and drug and alcohol use problems associated with RT (17).

A variety of studies that have examined the interplay between alcohol and drug misuse, including SUD, housing instability, and depression have found significant correlations between each of these constructs. However, the majority of these studies have either focused on targeted, nongeneralizable samples—such as among HIV-positive individuals (18), people with severe mental illness (19), or survivors of intimate partner violence (20) or have focused on homeless populations (21, 22), which may be experienced differently than RT. The unique and collective associations of RT and SUD with suicidal outcomes have not been studied in nationally representative samples using models adjusted for depression and important sociodemographic factors that might confound the associations. The current study conducted using a nationally representative sample of U.S. adults builds upon the extant research to test whether past year RT, SUD, and depression are each independently associated with suicidal outcomes (thoughts, plans, and attempts) in models adjusted for each other and sociodemographic characteristics. We hypothesize that RT, SUD, and MDE each will be independently associated with suicidal thoughts, plans, and attempts. A secondary aim is to examine whether the prevalence of each suicidal outcome differs between adults with no, one, different combinations of two, or all three potential risk factors (RT, SUD, and MDE). We hypothesize that the prevalence of suicidal thoughts, plans, and attempts will steadily increase in the presence of each additional potential risk factor. Understanding the interplay of these variables and the magnitude of the increase in suicidal outcomes may allow for better identification of at-risk individuals and aid in targeting suicide prevention efforts.

Studying these associations is important for several reasons. RT, SUD, and depression are associated with negative health outcomes potentially resulting from decreased access to mental health and general health care services as well as strains on social relationships and support (14, 23). Thus, those with one, two, or all three of these potential risk factors may be at increased risk for not receiving primary or secondary prevention services for suicide risk. Because suicide attempts are the strongest indicator of future completed suicides (24) and suicidal ideation and plans may precede attempts in some instances (25), identifying RT, SUD, and depression as correlates of suicidal thoughts and behaviors are important possible targets for preventing completed suicides. In turn, lack of service use among adults with RT,

SUD, and/or depression may perpetuate this cycle by increasing the duration and possibly the severity of their symptoms and related functional impairment.

Methods

Data Source

Data are from the public use files of the 2008 to 2013 U.S. National Surveys on Drug Use and Health (NSDUHs) (26-31). NSDUH is an annual cross-sectional survey of the United States civilian, noninstitutionalized residents aged 12 or older (annual average of about 67,000), sponsored by the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA). NSDUH uses a multistage area probability sample to collect information on mental health and substance use from residents of households, civilians living on military bases, and noninstitutional group quarters (e.g., shelters, rooming houses, dormitories; see <http://www.samhsa.gov/data/sites/default/files/NSDUH2013MRB/NSDUH2013MRB/NSDUHmrbcAIquex2013.pdf> for further details). NSDUH excludes homeless persons who do not use shelters, military personnel on active duty, and residents of institutional group quarters (e.g., jails or hospitals). Verbal consent (rather than written consent, to better ensure confidentiality) is obtained from all adult respondents (aged 18). All research is conducted under the supervision of the RTI International's Institutional Review Board and in accordance with SAMHSA's Office of Management and Budget (OMB). More information about the NSDUH study design is presented in SAMHSA's *Results from the National Survey on Drug Use and Health: Summary of National Findings* series (32). The study sample consisted of 228,556 adults aged 18 or older.

Measures

Our main independent variables of interest were past year RT and SUD, by themselves and in combination with a known risk factor of suicidal outcomes, past year MDE. RT was measured by respondents who reported moving residences 3 times in the past 12 months. The assessment of number of moves in the past year is not a genuinely continuous variable (response options include 0, 1, 2, and 3 moves in the past year), thereby mandating a cut point. This threshold was selected to be consistent with definitions used in prior research (16, 33). It should be noted that there is little consensus about a single definition of RT. Prior studies have used both continuous and categorical definitions of RT, including, for example, continuous number of moves over the lifespan (34), 2 moves in the past 6 months (35), or, when focused on childhood residential transience, 3 moves prior to adulthood (14). Because the NSDUH does not assess number of moves over the lifespan, past 6 months, or during childhood, a past year dichotomous variable was created.

Past year SUD included substance abuse or dependence of any of the following: alcohol, cocaine or crack, marijuana or hashish, hallucinogens, heroin, inhalants, and prescription sedatives or tranquilizers, stimulants, or prescription pain relievers. SUDs were assessed using a series of questions assessing criteria specified in the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV) (36), because the fifth edition criteria had not been published by the time of data collection. Per DSM-IV criteria, a respondent was classified as having a SUD if they endorsed 1 abuse criteria or 3 dependence

criteria, and per DSM-5 criteria, abuse and dependence were combined into a single construct, “use disorder” for analyses (37).

The measure of depression included in the NSDUH, major depressive episode (MDE), was defined according to DSM-IV criteria. These criteria specify that the respondent experienced a depressed mood or loss of interest or pleasure in daily activities for at least 2 weeks in the past year, accompanied by four or more symptoms of depression included in the DSM-IV criteria. An estimated 6.8 percent of U.S. adults represented by the NSDUH sample met criteria for past year MDE. The MDE and SUD measures collected in the NSDUH interview have been clinically validated against the Structured Clinical Interview for DSM-IV (SCID-IV), the gold standard of psychiatric diagnosis among adults (38).

The primary outcomes of interest were serious thoughts of suicide, suicide plans, and suicide attempts in the past year. Serious thoughts of suicide, herein referenced as suicidal thoughts, was assessed by asking respondents “*At any time in the past 12 months, that is from [datefill] up to and including today, did you seriously think about trying to kill yourself?*” Suicide plans and attempts were assessed only among respondents who indicated serious thoughts of suicide by asking “*During the past 12 months, did you make any plans to kill yourself?*” and “*During the past 12 months, did you try to kill yourself?*” The accuracy of responses to these sensitive questions is boosted by the use of audio computer-assisted self-interview (ACASI), which provides the respondent with a confidential mode for responding to questions.

Other sociodemographic covariates included in the analysis were selected to adjust for potential confounders. Each covariate was significantly associated with suicidal outcomes in each adjusted model. Covariates included gender, age, race/ethnicity, marital status, employment, federal poverty level (poverty), and being a veteran of the armed forces. Survey year was tested as a covariate but not included in the final models because none of the suicide outcomes significantly differed by year.

Analysis

Prevalence estimates are weighted unless otherwise specified. Bivariate logistic regression models indicated the unadjusted associations between RT, SUD, MDE, and each suicidal outcome. Because RT, SUD, MDE, and each covariate were significantly associated with each suicidal outcome in the bivariate analyses, all variables were included in the adjusted models. These models indicated whether the association between RT, SUD, MDE, and each suicidal outcome maintained independent significance after adjusting the model for each of the potential sociodemographic confounders. Although the bivariate associations between RT, SUD, and MDE indicated significant correlation, there was no significant multicollinearity noted in any of the three adjusted models (variance inflation factor [VIF]<2 for all variables in the model). Post hoc analyses examined the past year prevalence of suicidal thoughts, plans, and attempts for each of the eight combinations of the three potential risk factors (none, only one [RT only, SUD only, MDE only], exactly two [RT and SUD, SUD and MDE, RT and MDE], and all three [RT, SUD, and MDE]). All analyses were conducted while accounting for the complex survey design in SUDAAN® (39).

Less than .5% of the RT, SUD, MDE, and suicidal outcome variables had missing values. The remaining covariates used in the adjusted models each had less than 1% missing values, with the federal income level/poverty variable being the sole exception (which had slightly < 3% missing values). Because those with missing data did not significantly differ with respect to RT, SUD, MDE, or any of the suicidal outcome variables, analyses were conducted using listwise deletion. The thoughts, plans, and attempts final models included 221,798; 221,780; and 221,778 respondents, respectively.

The sample was representative of noninstitutionalized, civilian adults aged 18 or older living in U.S. households. Slightly more than half were female (51.8%); the majority (67.3%) were non-Hispanic white race/ethnicity, employed full time (50.7%), and married (53.3%).

Results

An estimated 2.7 percent of noninstitutionalized, civilian U.S. adults living in households had past year RT; 6.8 percent and 8.8 percent had past year MDE and SUD, respectively. An estimated 3.8 percent of U.S. adults represented by NSDUH reported past year suicidal thoughts; 1.1 and 0.5 percent of U.S. adults reported past year suicide plans and suicide attempts, respectively.

RT, SUD, and MDE were each associated with suicidal thoughts, plans, and attempts in unadjusted models (Table 2). Adults with RT were more likely than those without RT to have suicidal thoughts (12.5 percent versus 3.6 percent), suicidal plans (4.5 percent versus 1.0 percent) and suicidal attempts (2.5 percent versus 0.4 percent). Although the magnitude of each association decreased in models adjusting for all three of these variables plus sociodemographic covariates, each maintained significance. The magnitude of the associations between MDE and each suicidal outcome were the largest. The odds of adults with MDE were nearly 13, 15, and 10 times the odds of adults without MDE of having past year suicidal thoughts, plans, and attempts, respectively, in adjusted models. In addition, the odds of adults with SUD were over two times the odds of adults without SUD and the odds of adults with RT were nearly two times the odds of adults without RT of having past year suicidal thoughts, plans, and attempts, respectively.

Post hoc comparisons confirmed increases in the prevalence of each suicidal outcome with combinations of variables of interest (RT, MDE, and/or SUD). For example, more than half (50.9%) of adults with RT, SUD, and MDE reported past year suicidal thoughts, as compared to 1.7% with none of these factors (Figure 1). The differences in magnitude between those with all versus none of these potential risk factors were even more pronounced for suicidal plans (25.6% versus .4%) and suicidal attempts (12.1% versus .2%; Figures 2 and 3).

Discussion

This is the first known study to examine the independent and combined associations between RT, SUD, MDE, and suicidal outcomes in models adjusted for potential sociodemographic confounders. All three variables were significantly associated with each suicide outcome in models adjusted for sociodemographic correlates and each of the other focal variables of

interest (e.g., the association between RT and suicidal outcomes were adjusted for SUD and MDE and sociodemographic covariates). Both SUD and RT had adjusted ORs of approximately 2.0 for each suicidal outcome, which loosely can be interpreted as a moderate effect size (40). These associations generalize to noninstitutionalized, civilian adults living in U.S. households due to the national representativeness of the NSDUH sample. The additional post hoc analyses comparing adults with no, one, two, or all three RT, SUD, and MDE variables exemplify the importance of each of these three indicators experienced alone and in combination with each other. This suggests that the heightened association between RT, SUD, and suicidal outcomes are not due solely to co-occurring depression. Elucidating the mechanisms by which RT, SUD, and suicidal outcomes are associated will be important to future research.

Although the cross-sectional design of NSDUH and retrospective assessment of past year RT, SUD, and MDE and each suicidal outcome precludes the investigation of temporal order and causal pathways, there are several potential hypotheses for shared underpinnings. For example, suicidal outcomes may indicate an underlying mental illness, which may also lead to both RT and/or SUDs. The only DSM-IV diagnoses that are assessed in NSDUH survey, however, are SUDs and MDE. Although NSDUH data does include a variable indicating past year “any mental illness (AMI),” this variable is calculated using a predicted probability from a model that includes suicidal thoughts in its measure. Thus, the AMI variable cannot be used to adjust for the presence of other mental disorders in models that include suicidal thoughts as the outcome. Future studies may be able to better identify role(s) of psychiatric diagnoses in RT and suicidal outcomes using more specific diagnoses as well as analyses within specific demographic strata. To investigate the possibility of the significant associations between suicidal outcomes, RT, and SUD being due to an unmeasured mental illness further, we reran each final model after adding any past year mental health treatment as reported by the respondent as a proxy for mental illness. The RT associations were only very slightly attenuated and still significant with each suicidal outcome. Because further investigation revealed multicollinearity in each of these models, we do not report these herein, but findings are available upon request. Another explanation for the associations between RT, SUD, MDE, and suicide can be made using Joiner's interpersonal-psychological conceptualization of suicidal behavior (41). Those with RT and/or SUD may be experiencing both perceived burdensomeness and low belonging/social alienation, two components Joiner explains may lead to suicidal thoughts and behaviors if experienced simultaneously. Because the temporal order of RT, SUD, MDE, and suicidal outcomes is unclear, longitudinal research is needed to disentangle the mechanisms by which RT, SUD, and MDE work to increase the risk of suicidal outcomes or vice versa. In addition, understanding whether these associations differ by factors known to be associated with RT, MDE, or SUD via moderation analyses also needs to be examined (e.g., by gender, because females are more likely to have MDE but males are more like to have SUDs). Finally, because the NSDUH survey only queries suicidal plans and attempts among respondents reporting past year suicidal thoughts, the examined associations with suicidal plans and attempts only apply to those who also had past year ideation and not those who experience impulsive suicidality. Because recent studies have indicated that those who experience impulsive suicidal attempts might be characteristically different from those who progress

from having suicidal thoughts to making a plan and then attempting suicide (42), the associations between RT, SUD, MDE, and suicidal attempts, in particular, might differ between those who did and did not have prior ideation.

Despite the inability to tease out temporal and causal associations between RT, MDE, SUD, and suicidal outcomes, our findings suggest that each of these three factors are potentially important markers for suicide risk. A recent study by McCarthy and colleagues conducted among veterans demonstrated the utility of similar approaches that combine several variables to calculate the risk of suicide (43). While these approaches may help identify a large number of at-risk individuals not otherwise identified during clinical encounters, factors that lead to suicidality often are dynamic and thus are difficult to be captured.

The implications of our findings suggest that mental health and substance abuse treatment providers should consider screening patients for a recent history of RT, because these patients appear to have an increased chance of experiencing suicidal outcomes above and beyond the presence of MDE or SUD alone. General health care providers may also benefit from recognizing an increased probability of MDE, SUD, and suicidal outcomes among patients reporting recent RT and consider more in-depth screening for these issues in patients who move often and have lost contact with their professional network.

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Figure 1. Prevalence of past year suicidal thoughts, by past year combinations of residential transience, substance use disorder, and major depressive episode among U.S. adults aged 18 or older: National Survey on Drug Use and Health, 2008–2013

MDE=major depressive episode; NSDUH=National Survey on Drug Use and Health,

RT=residential transience; SUD=substance use disorder.

NOTE: Residential transience is defined as moving 3 or more times in the past 12 months.

NOTE: Substance Use Disorder is defined as meeting criteria for illicit drug or alcohol dependence or abuse. Dependence or abuse is based on definitions found in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). The time frame reported is past year. NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically, including data from original methamphetamine questions but not including new methamphetamine items added in 2005 and 2006.

NOTE: Major Depressive Episode (MDE) is defined as in DSM-IV, which specifies a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of specified depression symptoms. The time frame reported is past year. Respondents with unknown past year MDE data were excluded.

NOTE: Standard error bars showing 95% confidence interval shown for each estimate.

Source: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2008–2013.

Figure 2. Prevalence of past year suicidal plans by past year combinations of residential transience, substance use disorder, and major depressive episode among U.S. adults aged 18 or older: National Survey on Drug Use and Health, 2008–2013

*only assessed among those reporting past year suicidal thoughts.

MDE=major depressive episode; NSDUH=National Survey on Drug Use and Health, RT=residential transience; SUD=substance use disorder.

NOTE: Residential transience is defined as moving 3 or more times in the past 12 months.

NOTE: Substance Use Disorder is defined as meeting criteria for illicit drug or alcohol dependence or abuse. Dependence or abuse is based on definitions found in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). The time frame reported is past year.

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NOTE: Standard error bars showing 95% confidence interval shown for each estimate.

Source: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2008–2013.

Figure 3. Prevalence of past year suicidal attempts, by past year combinations of residential transience, substance use disorder, and major depressive episode among U.S. adults aged 18 or older: National Survey on Drug Use and Health, 2008–2013

*only assessed among those reporting past year suicidal thoughts.

MDE=major depressive episode; NSDUH=National Survey on Drug Use and Health, RT=residential transience; SUD=substance use disorder.

NOTE: Residential transience is defined as moving 3 or more times in the past 12 months.

NOTE: Substance Use Disorder is defined as meeting criteria for illicit drug or alcohol dependence or abuse. Dependence or abuse is based on definitions found in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). The time frame reported is past year.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically, including data from original methamphetamine questions but not including new methamphetamine items added in 2005 and 2006.

NOTE: Major Depressive Episode (MDE) is defined as in DSM-IV, which specifies a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of specified depression symptoms. The time frame reported is past year. Respondents with unknown past year MDE data were excluded.

NOTE: Standard error bars showing 95% confidence interval shown for each estimate.

Source: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2008–2013.

Table 1
Sociodemographic characteristics among U.S. Adults Aged 18 Or Older: NSDUH 2008–2013

Characteristic	Weighted % (SE)
Gender	
Male	48.2 (.17)
Female	51.8 (.17)
Age group in years	
18-25	14.7 (.13)
26-34	15.8 (.13)
35-49	27.0 (.15)
50-64	25.2 (.21)
65 or older	17.3 (.17)
Race/ethnicity	
Non-Hispanic	
White	67.3 (.23)
Black	11.6 (.17)
Other non-Hispanic	6.8 (.11)
Hispanic	14.3 (.15)
Marital status	
Married	53.3 (.23)
Widowed	6.1 (.10)
Divorced or Separated	13.8 (.15)
Never been married	26.8 (.19)
Employment	
Employed full time	50.7 (.19)
Employed part time	14.0 (.12)
Unemployed	5.6 (.08)
Other ¹	29.7 (.22)
Education	
Less than high school	14.6 (.15)
High school graduate	30.3 (.20)
Some college	26.0 (.18)
College graduate	29.1 (.24)
Federal Income Level (Poverty)²	
<100% of FPL	13.5 (.14)
100–199% of FPL	19.7 (.15)
200% of FPL	66.8 (.22)
Veteran status	
No	89.4 (.11)
Yes	10.6 (.11)

FPL= Federal Poverty Level; NSDUH=National Survey on Drug Use and Health; SE=standard error.

¹Other Health Insurance is defined as having Medicare, CHAMPUS, TRICARE, CHAMPVA, the VA, military health care, or any other type of health insurance.

²Estimates are based on a definition of Poverty Level that incorporates information on family income, size, and composition and is calculated as a percentage of the U.S. Census Bureau's poverty thresholds. Respondents aged 18 to 22 who were living in a college dormitory were excluded.

Source: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2008–2013; sample size=228,556.

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Table 2
Past year suicidal thoughts, plans, and attempts among U.S. adults aged 18 or older, by past year residential transience, substance use disorder, and major depressive episode status, unadjusted and adjusted odds ratios: NSDUH, 2008–2013

	Past Year Suicidal Thoughts		Past Year Suicide Plans*		Past Year Suicide Attempts*	
	OR (95%CI)	aOR (95%CI)	OR (95%CI)	aOR (95%CI)	OR (95%CI)	aOR (95%CI)
RT						
Yes	3.7 (3.3–4.1)	1.7 (1.5–2.0)	4.7 (4.0–5.5)	1.8 (1.5–2.1)	5.4 (4.4–6.7)	1.8 (1.4–2.2)
No	REF	REF	REF	REF	REF	REF
SUD						
Yes	4.13 (3.9–4.4)	2.2 (2.1–2.4)	4.6 (4.2–5.1)	2.0 (1.8–2.3)	5.7 (4.9–6.7)	2.6 (2.2–3.1)
No	REF	REF	REF	REF	REF	REF
MDE						
Yes	16.7 (15.5–18.2)	12.9 (11.8–14.2)	21.4 (18.9–24.3)	14.7 (12.9–16.7)	15.4 (13.1–18.2)	9.9 (8.2–11.9)
No	REF	REF	REF	REF	REF	REF

* only assessed among those reporting past year suicidal thoughts

aOR=adjusted odds ratio; CI=confidence interval; MDE=major depressive episode; NSDUH=National Survey on Drug Use and Health; OR=odds ratio; RT=residential transience; SE=standard error; REF=reference level; SUD=substance use disorder.

NOTE: Each adjusted model controlled for gender, age group, race/ethnicity, education, employment, marital status, veteran status, and federal income level (poverty). Each covariate was significant in the final model with the exception of no significant differences in gender for the suicidal attempts outcome. Gender was left in the model for theoretical reasons.

NOTE: Residential transience is defined as moving 3 or more times in the past 12 months.

NOTE: Substance Use Disorder is defined as meeting criteria for illicit drug or alcohol dependence or abuse. Dependence or abuse is based on definitions found in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). The time frame reported is past year.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically, including data from original methamphetamine questions but not including new methamphetamine items added in 2005 and 2006.

NOTE: Major Depressive Episode (MDE) is defined as in DSM-IV, which specifies a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of specified depression symptoms. The time frame reported is past year. Respondents with unknown past year MDE data were excluded.

NOTE: The ORs and 95% CIs were unadjusted, with each variable in the model alone; aORs and 95% CIs were produced by including all variables shown in one single model.

Source: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2008–2013; sample size=228,556.