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The Relationship Between Anxiety Disorders and Suicide Attempts: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions

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Abstract

Background—Previous work has suggested that anxiety disorders are associated with suicide attempts. However, many studies have been limited by lack of accounting for factors that could influence this relationship, notably personality disorders. The current study aims to examine the relationship between anxiety disorders and suicide attempts, accounting for important comorbidities, in a large nationally representative sample.

Methods—Data came from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) Wave 2. Face-to-face interviews were conducted with 34,653 adults between 2004 and 2005 in the United States. The relationship between suicide attempts and anxiety disorders (panic disorder, agoraphobia, social phobia, specific phobia, generalized anxiety disorder, posttraumatic stress disorder [PTSD]) was explored using multivariate regression models controlling for sociodemographics, Axis I and Axis II disorders.

Results—Among individuals reporting a lifetime history of suicide attempt, over 70% had an anxiety disorder. Even after adjusting for sociodemographic factors, Axis I and Axis II disorders, the presence of an anxiety disorder was significantly associated with having made a suicide attempt (AOR=1.70, 95% CI: 1.40–2.08). Panic disorder (AOR=1.31, 95% CI: 1.06–1.61) and PTSD (AOR=1.81, 95% CI: 1.45–2.26) were independently associated with suicide attempts in multivariate models. Comorbidity of personality disorders with panic disorder (AOR= 5.76, 95% CI: 4.58–7.25) and with PTSD (AOR= 6.90, 95% CI: 5.41–8.79) demonstrated much stronger associations with suicide attempts over either disorder alone.

Conclusion—Anxiety disorders, especially panic disorder and PTSD, are independently associated with suicide attempts. Clinicians need to assess suicidal behavior among patients presenting with anxiety problems.

Introduction

Suicide is a tragic event with profound costs to society. An estimated 877,000 people lost their lives by suicide in 2002.[1,2] Since suicide attempts are strong risk factors for future completed suicides[3,4] and a more common occurrence (4.6% percent of the general population attempt suicide at some point in their life[5,6]), they provide an important

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alternative method for clarifying suicide risk factors. A previous suicide attempt is a major risk factor for a future suicide attempt, resulting in a 30–40 times increased risk of death by suicide compared with those who did not make an attempt.[7,8]

Affective disorders, substance misuse, anxiety disorders, certain personality disorders, and psychotic disorders are all established risk factors for suicide attempts.[9,10] Notably, bipolar affective disorder and schizophrenia have a 20 and 10 times increased risk of completed suicide, respectively.[11] When successful treatment of psychiatric disorders can be attained, a resulting decrease in the suicide rate is observed, suggesting that untreated psychiatric morbidity in itself is an indicator of increased suicide risk.[11] Comorbidity of psychiatric disorders illustrates a summative effect on suicide risk.[12,13] Finally, common factors such as childhood trauma, genetic factors, hopelessness, melancholia, irritability, pessimism, neuroticism, impulsivity, self-criticism, self-blame, no religious affiliation, poor social support and low levels of hydroxyindoleacetic acid in the cerebral spinal fluid have all held associations with suicide attempts.[1,14]

The relationship between anxiety disorders, especially panic disorder, and suicidal behavior has been a subject of great debate in the literature.[15,16] Anxiety disorders have consistently been associated with an increase in suicidal behavior in cross-sectional community[3,17] and clinical studies.[18,19] There are also, however, high levels of comorbidity found within anxiety disorders. One point of contention is whether it is this comorbidity, and not simply the presence of an anxiety disorder, that is associated with increased suicidal behavior.[4,20]

The extant literature on the relationship between anxiety disorders and suicidal behavior reveals an inconsistent, and often limited, adjustment for confounding factors. Most recently, Cougle and colleagues[21] extended previous findings by demonstrating that the association between anxiety disorders and suicide attempts persisted even after accounting for borderline and antisocial personality disorders. These preliminary results emphasize the role of anxiety as a risk for suicide attempts. However, replication is required since only two personality disorders were assessed, and methodological limitations may limit the reliability of the diagnosis of borderline personality disorder in this sample.[22]

Using data from the National Epidemiologic Survey on Alcohol and Related Conditions Wave 2 (NESARC II) we hope to extend findings from Cougle and colleagues[21] and our group[3,14] by further exploring the relationship between anxiety disorders and suicide attempts in a much larger sample with a more complete assessment of Axis II disorders. We hypothesize that anxiety disorders will be associated with suicide attempts even after adjusting for all mental disorders assessed in the survey, including personality disorders. Personality disorders will likely account for a portion of this relationship; however, we anticipate that anxiety disorders will show an independent association even after accounting for personality disorders. The NESARC II has the most complete epidemiologic assessment of personality disorders to date, with reliable assessments of all 10 DSM-IV personality disorders.[14] This investigation is a crucial next step as borderline personality disorder and antisocial personality disorder are well established risk factors for suicide attempts, and hence need to be adjusted for when anxiety disorders are being examined.[9,23] To our knowledge, this is the first study that will adequately adjust for sociodemographic factors, mood and substance use disorders, schizophrenia or psychotic illness or episode (SPIE), and personality disorders. These disorders all have established roles in the suicidal process, enabling a deeper understanding of the relationship between anxiety disorders and suicide attempts.

2. Methods and Measures

Sample

The NESARC II was the source of data for the current analysis. The NESARC II is a representative longitudinal epidemiologic survey of the civilian, non-institutionalized adult population of the United States, 18 years and older.[24,25] The NESARC I was administered in 2001–2002 and was longitudinally followed up in 2004–2005 in the NESARC II.[24,25] Wave 2 reassessed 34,653 respondents of the 43,093 assessed in Wave 1, excluding respondents ineligible for the Wave 2 interview because of death, deportation, or active military duty throughout the follow-up period. The response rate of Wave 1 was 81.0%, with a follow-up response rate of 86.7% in Wave 2. The cumulative response rate at Wave 2 was 70.2%. The NESARC received ethical approval and informed consent from all respondents before face-to-face interviews were conducted by trained lay interviewers aided by computer-assisted software. Further information regarding methodology, sampling, and weighting can be found elsewhere.[24,26]

Psychiatric Diagnoses

Axis I and II disorders were diagnosed using DSM-IV[27] criteria for both past-year and lifetime occurrences. This was possible through the use of the Alcohol Use Disorders and Associated Disabilities Interview (AUDADIS-IV).[28,29] A sub-sample from the NESARC demonstrated fair to good test-retest and inter-rater reliability for all diagnoses when the AUDADIS-IV was used by trained lay interviewers.[28,30] Wave 2 assessed for the following Axis I disorders: generalized anxiety disorder (GAD), panic disorder with or without agoraphobia, social phobia, specific phobia, posttraumatic stress disorder (PTSD), dysthymia, major depressive disorder, hypomanic episodes, manic episodes, alcohol abuse and dependence as well as abuse and dependence diagnoses for specific drugs. All ten personality disorders were assessed by the end of Wave 2 (antisocial, borderline, narcissistic, histrionic, paranoid, avoidant, dependent, obsessive-compulsive, schizotypal, and schizoid personality disorders). Appropriate diagnoses were combined to create any anxiety disorder (including PTSD), any mood disorder, and any personality disorder variables. The SPIE diagnosis was made after respondents identified that they had been given this diagnosis by a health professional in response to the question “Did a doctor or other health professional ever diagnose you with schizophrenia or psychotic illness or episode?”[31] This method of assessing the prevalence of SPIE in North America has been studied and found to have similar prevalence rates to what is expected in this population and has been deemed appropriate for use.[32,33]

Lifetime Suicide Attempts

To assess for lifetime suicide attempts, all Wave 2 respondents were asked, “In your entire life, did you ever attempt suicide?”

Sociodemographic Variables

Variables assessed in the NESARC II include sex, marital status, education, age, household income, ethnicity and census region. Marital status was categorized into: 1) married/cohabitating, 2) divorced/separated/widowed, or 3) never married. Education was dichotomized into less than high school and high school or higher. Age was categorized into four groups (20–29, 30–44, 45–64, or 65 and over), as was household income ($0–19,999, $20,000–34,999, $35,000–59,999, or $60,000 or more). Race/ethnicity included five categories: 1) White, 2) Black, 3) American Indian or Alaska Native, 4) Asian/Hawaiian, and 5) Hispanic or Latino. Finally, census region was used to account for place of residence in the US, and was categorized into four areas (Northeast, Midwest, South, West).

Analytic Strategy

Statistical weights were applied to the NESARC data to provide representation of the general US population. SUDAAN[34] software and the variance estimation procedure Taylor Series Linearization was utilized to take into account the elaborate sampling design of the NESARC.

Cross-tabulations were used to examine the characteristics of the sample including sociodemographics, any mood disorder, any substance use disorder, SPIE and each personality disorder. The prevalence of lifetime suicide attempts were calculated among individuals with a lifetime diagnosis of each of the anxiety disorders, including PTSD.

Associations between lifetime suicide attempt and each anxiety disorder were explored using multiple logistic regression analysis. Model 1 (Adjusted Odds Ratio [AOR]-1) adjusted for sociodemographics, any mood disorder, any substance use disorder, and SPIE. Model 2 (AOR-2) included all variables in Model 1 and included adjustment for each personality disorder. Model 3 (AOR-3) included adjustment for all variables in Model 2 as well as each of the anxiety disorders entered simultaneously. The latter methodology is the most stringent analytic strategy as suggested by previous authors.[16]

We further explored the relationship between those anxiety disorders shown to be significantly associated with suicide attempts to elucidate the influence of comorbidity on this relationship. We were interested in determining whether comorbidity between disorders resulted in significantly higher likelihood of suicide attempts over each disorder alone, or whether each disorder and the comorbid condition contributed equally to the likelihood of suicide attempt. The anxiety disorders we included were those that had demonstrated independent associations with suicide attempts over and above the role of personality disorders, mood disorders, substance use disorders, and SPIE using logistic regression analyses. For each of these anxiety disorders we constructed categorical four-level variables: 1) neither disorder, 2) the anxiety disorder alone, 3) the comorbid disorder alone (depending on the comorbidity of interest), and 4) the anxiety disorder with the comorbid disorder. Four separate models were created which explored the different types of comorbidity, including anxiety disorder comorbid with personality disorders, with mood disorders, with substance use disorders and with SPIE. Each model was adjusted for sociodemographic factors and all other comorbid disorders except the comorbid disorder of interest.

Results

Table 1 presents the characteristics of the sample. The majority of the sample was made up of married, white, females between the ages of 45–64 with a high school education or higher. The prevalence of any lifetime anxiety disorder was 29.5%, while 3.4% of the sample reported a lifetime suicide attempt.

Table 2 illustrates the relationship between each of the anxiety disorders with suicide attempts. Of all those who made a suicide attempt, over 70% had at least one anxiety disorder. In AOR-1, adjusted for sociodemographic factors, any mood disorder, any substance use disorder, and SPIE, all anxiety disorders except agoraphobia without panic disorder remained significantly associated with suicide attempts. Only panic disorder with or without agoraphobia (AOR-2 = 1.44, 95% Confidence Interval [CI]: 1.16–1.79), GAD (AOR-2 = 1.26, 95% CI: 1.04–1.52), and PTSD (AOR-2 = 1.89, 95% CI: 1.51–2.36) remained significantly associated with suicide attempts in AOR-2 after additional adjustment for each personality disorder. After adjusting for all other anxiety disorders in addition to those factors previously noted in AOR-2, PTSD (AOR-3=1.81, 95% CI: 1.45–

2.26) and panic disorder (AOR-3=1.31, 95% CI: 1.06–1.61) remained significantly associated with lifetime suicide attempts.

Tables 3a, b and c show the relationship between anxiety disorders and suicide attempts, and how this relationship is affected by comorbidity. Analyses revealed a stronger relationship with suicide attempts among individuals with comorbidity than among individuals with each disorder alone, across disorders. After adjusting for sociodemographic factors and other mental disorders, suicide attempts were two-and half (AOR = 2.66 [95% CI: 1.97–3.60] for comorbid substance use disorder and panic disorder) to almost seven times (AOR = 6.90 [95% CI: 5.41–8.79] for comorbid personality disorder and PTSD) more likely for those with comorbid disorders over having neither disorder. With the exception of the comorbidity between SPIE and any anxiety disorder and SPIE and panic disorder, all other comorbidities examined showed much higher odds of suicide attempts over the comorbid disorder alone (AORs ranging from 1.34 for mood and panic disorder over mood disorder alone to 2.02 for personality and PTSD over personality disorder alone).

Possible interactions with age, gender, and race/ethnicity were also explored to see if a significant association existed with each anxiety disorder and lifetime suicide attempts. None of these were of significance.

4. Discussion

This is the first epidemiologic study to examine the relationship between anxiety disorders and suicide attempts in a sample where all ten DSM-IV personality disorders were assessed. In stringent models adjusting for sociodemographic factors, mood and substance use disorders, SPIE, and all personality disorders, PTSD and panic disorder remained significantly associated with lifetime suicide attempts. These findings are an important extension to existing literature because of the established risk of suicidal behavior among individuals with personality disorders, and the lack of adjustment for personality disorders in studies to date.

Panic disorder and PTSD were independently associated with suicide attempts. We examined the influence of comorbidity over and above the impact of each disorder alone on suicide attempts. Comorbidity of personality disorders with panic disorder and PTSD is very strongly associated with suicide attempts, emphasizing the importance of comorbidity and suicidal behaviour. However, when the comorbid group is referenced to the personality disorder only group, the heightened risk remains, illustrating that anxiety is an independent risk factor even in the context of personality pathology.

Our results are in line with the groundbreaking paper by Weissman and the existing literature that warns of anxiety, especially panic disorder, in association with suicide.[3,17,19] Sareen et al [12] found PTSD to be a severe and disabling disorder associated with suicidal behavior; our findings are consistent with these. Panic disorder and PTSD both hold significant associations with lifetime suicide attempts over and above the association of psychiatric co-morbidity. The fact that anxiety disorders are highly undertreated and underdiagnosed reflect that properly screening for and treating anxiety disorders should be encouraged.[3]

Inconsistent with the NCS-R findings, we found no gender interactions between each anxiety disorder and lifetime suicide attempt. When the NCS-R data were stratified by gender, panic disorder was associated with suicide attempts for men and generalized anxiety disorder, PTSD, and social anxiety disorder were associated with suicide attempts for women.[21] We believe the contradictory findings may reflect differences between the methods and samples of the NCS-R and the NESARC II. The NCS-R did not assess

psychotic illness nor all of the personality disorders as the NESARC II did. Furthermore, the NESARC II had a sample size for suicide attempts almost ten times the sample size in the NCS-R.[21] It is important to note that although gender interactions differed in these samples, both revealed a relationship between anxiety disorders and suicide attempts.

Several limitations of this study should be noted. First, the dataset was cross-sectional and used lifetime histories of disorders and suicide attempts; therefore, causal relationships cannot be inferred from these findings. The temporal relationship between psychiatric disorder and suicide attempt was not documented in the data; hence, whether the suicide attempt or psychiatric disorder appeared first is unknown. Second, the diagnosis of obsessive compulsive disorder was not assessed in the NESARC II and could be a significant variable in the risk for suicide attempt. Third, it is possible that other factors not assessed in this study could account for the relationship between anxiety disorders and suicide attempts. Finally, we examined suicide attempts, not completed suicides, and therefore our results are limited to the former. Although there is substantial overlap in risk factors for suicide attempts and completed suicide, further study is required to clarify the role of anxiety in completed suicide. Both psychological autopsy and epidemiologic studies implicate anxiety disorders in suicide,[11,35] suggesting that the influence of anxiety is not confined to nonfatal suicidal behavior. [21]

Anxiety disorders, especially panic disorder and PTSD, are associated with suicide attempts. Clinicians need to carefully assess for suicidal ideation and attempts among patients presenting with anxiety problems and assess for anxiety, most notably panic disorder and PTSD, with patients in suicidal crisis.

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Table 1

Characteristics of the sample.

	n(%)
Sex	
Male	14564 (47.9)
Female	20089 (52.1)
Age	
20–29 years	4913 (16.3)
30–44 years	10603 (29.7)
45–64 years	11960 (34.6)
65 years or older	7177 (19.3)
Marital Status	
Married/cohabitating	18866 (63.8)
Separated/widowed/divorced	9149 (18.9)
Never married	6638 (17.4)
Education	
Less than high school graduate	5514 (14.0)
High school graduate or higher	29139 (86.0)
Household income	
$0–$19,999	8031 (18.6)
$20,000–$34,999	6882 (18.5)
$35,000–$69,999	10820 (32.8)
$70,000 or more	8920 (30.2)
Race	
White	20161 (70.9)
Black	6587 (11.1)
American Indian/Alaska Native	578 (2.2)
Asian/Native Hawaiian/Pacific Islander	968 (4.3)
Hispanic	6359 (11.6)
Region	
Northeast	6091 (17.8)
Midwest	6558 (18.5)
South	13178 (38.4)
West	8826 (25.3)
Urbanicity	
Urban	11524 (32.7)
Rural	23129 (67.3)
Any anxiety disorder	10629 (29.5)
Panic disorder with or without agoraphobia	2627 (7.4)
Agoraphobia without panic disorder	95 (0.3)
Social phobia	2448 (7.0)
Specific phobia	5487 (15.1)

	***n*(%)**
Generalized anxiety disorder	2730 (7.7)
Posttraumatic stress disorder	2463 (6.6)
Any mood disorder	9292 (25.7)
Any substance use disorder	12084 (36.8)
Any personality disorder	7783 (21.5)
Paranoid	1689 (4.3)
Schizoid	1144 (3.1)
Schizotypal	1534 (3.9)
Antisocial	1226 (3.8)
Borderline	2231 (5.9)
Histrionic	651 (1.8)
Narcissistic	2449 (6.2)
Avoidant	821 (2.3)
Dependent	147 (0.4)
Obsessive-compulsive	2753 (8.1)
Schizophrenia / psychotic illness or episode	1205 (3.1)
Suicide attempt	1265 (3.4)

Table 2

Relationship of anxiety disorders and suicide attempts with adjusted odds ratios.

	No Suicide Attempt *n* (%)	Suicide Attempt *n* (%)	AOR-1[a] (95% CI)	AOR-2[b] (95% CI)	AOR-3[c] (95% CI)
Panic disorder with or without agoraphobia	2235 (6.6)	377 (29.8)	2.06 (1.71–2.47)**	1.44 (1.16–1.79)**	1.31 (1.06–1.61)*
Agoraphobia without panic disorder	81 (0.3)	13 (1.7)	2.04 (0.78–5.33)	1.20 (0.43–3.39)	1.21 (0.44–3.28)
Social phobia	2096 (6.3)	337 (27.1)	2.12 (1.75–2.57)**	1.22 (0.96–1.53)	1.08 (0.85–1.38)
Specific phobia	5015 (14.4)	450 (37.3)	1.58 (1.32–1.91)**	1.18 (0.95–1.45)	1.04 (0.84–1.28)
Generalized anxiety disorder	2316 (6.8)	399 (31.1)	1.97 (1.66–2.34**	1.26 (1.04–1.52)*	1.10 (0.90–1.35)
Posttraumatic stress disorder	2100 (5.9)	360 (30.4)	2.66 (2.21–3.21)**	1.89 (1.51–2.36)**	1.81 (1.45–2.26)**
Any anxiety disorder	9680 (28.1)	903 (70.7)	2.43 (2.02–2.92)**	1.70 (1.40–2.08)**	---

[a] AOR-1: Adjusted odds ratio for sociodemographics, any mood disorder, any substance use disorder, and schizophrenia or psychotic illness or episode.

[b] AOR-2: Adjusted odds ratio for sociodemographics, any mood disorder, any substance use disorder, schizophrenia or psychotic illness or episode, and each personality disorder.

[c] AOR-3: Adjusted odds ratio for sociodemographics, any mood disorder, any substance use disorder, schizophrenia or psychotic illness or episode, each personality disorder, and all other anxiety disorders.

* $p<.05$.

** $p<.01$.

Table 3

Table 3a Comorbidity between anxiety disorders and mood disorders, substance use disorders, personality disorders and SPIE with suicide attempts.

	No Suicide Attempts *n* (%)	Suicide Attempts *n* (%)	AOR (95% CI)
Any anxiety disorder and mood disorders[a]	---	---	---
Neither	19969 (61.7)	169 (14.1)	1.00
Mood disorder only	3518 (10.2)	193 (15.2)	3.85 (2.90–5.11)**
Anxiety disorder only	4919 (14.3)	140 (11.0)	2.27 (1.65–3.11)**
Both mood and anxiety disorder	4761 (13.8)	763 (59.7)	5.50 (4.20–7.19)**
Mood and anxiety disorder (reference group: mood disorder only)	NA	NA	1.43 (1.15–1.78)**
Any anxiety disorder and substance use disorders[b]	---	---	---
Neither	16253 (48.4)	168 (13.5)	1.00
Substance use disorder only	7234 (23.5)	194 (15.9)	1.98 (1.47–2.68)**
Anxiety disorder only	5659 (15.6)	326 (23.7)	1.83 (1.47–2.68)**
Both substance use and anxiety disorder	4021 (12.5)	577 (47.0)	3.19 (2.39–4.25)**
Substance use and anxiety disorder (reference group: substance use disorder only)	NA	NA	1.61 (1.27–2.04)**
Any anxiety disorder and personality disorders[c]	---	---	---
Neither	20281 (62.6)	202 (16.4)	1.00
Personality disorder only	3206 (9.3)	160 (12.9)	3.12 (2.36–4.10)**
Anxiety disorder only	5990 (17.4)	210 (16.6)	1.82 (1.40–2.37)**
Both personality and anxiety disorder	3690 (10.6)	693 (54.1)	5.99 (4.73–7.59)**
Personality and anxiety disorder (reference group: personality disorder only)	NA	NA	1.92 (1.51–2.44)**
Any anxiety disorder and SPIE[d]	---	---	---
Neither	22929 (70.4)	332 (27.1)	1.00
SPIE only	558 (1.5)	30 (2.2)	2.93 (1.76–4.88)**
Anxiety disorder only	9236 (26.9)	735 (57.8)	1.73 (1.41–2.12)**
Both SPIE and anxiety disorder	443 (1.2)	168 (12.9)	4.03 (2.82–5.76)**
SPIE and anxiety disorder (reference group: SPIE only)	NA	NA	1.38 (0.76–2.48)

Table 3b Comorbidity between panic disorder and mood disorders, substance use disorders, personality disorders and SPIE with suicide attempts.

	No Suicide Attempts *n* (%)	Suicide Attempts *n* (%)	AOR (95% CI)
Panic disorder and mood disorders[a]	---	---	---
Neither	24093 (73.6)	273 (22.4)	1.00
Mood disorder only	6839 (19.8)	615 (47.8)	3.59 (2.96–4.37)**
Panic disorder only	795 (2.4)	36 (2.7)	2.35 (1.47–3.77)**

Table 3b Comorbidity between panic disorder and mood disorders, substance use disorders, personality disorders and SPIE with suicide attempts.

	No Suicide Attempts *n* (%)	Suicide Attempts *n* (%)	AOR (95% CI)
Both mood and panic disorder	1440 (4.2)	341 (27.0)	4.82 (3.63–6.40)**
Mood and panic disorder (reference group: mood disorder only)	NA	NA	1.34 (1.07–1.68)**
Panic disorder and substance use disorders[b]	---	---	---
Neither	20714 (60.7)	366 (28.0)	1.00
Substance use disorder only	10218 (32.7)	522 (42.2)	1.91 (1.55–2.36)**
Panic disorder only	1198 (3.4)	128 (9.1)	1.58 (1.14–2.18)**
Both substance use and panic disorder	1037 (3.2)	249 (20.7)	2.66 (1.97–3.60)**
Substance use and panic disorder (reference group: substance use disorder only)	NA	NA	1.39 (1.07–1.80)**
Panic disorder and personality disorders[c]	---	---	---
Neither	25053 (76.4)	349 (27.9)	1.00
Personality disorder only	5879 (17.0)	539 (42.4)	3.56 (2.96–4.28)**
Panic disorder only	1218 (3.6)	63 (5.1)	1.85 (1.31–2.60)**
Both personality and panic disorder	1017 (3.0)	314 (24.6)	5.76 (4.58–7.25)**
Personality and panic disorder (reference group: personality disorder only)	NA	NA	1.62 (1.31–2.00)**
Panic disorder and SPIE[d]	---	---	---
Neither	30086 (91.1)	787 (62.4)	1.00
SPIE only	845 (2.3)	101 (7.8)	2.95 (2.08–4.16)**
Panic disorder only	2079 (6.2)	280 (22.5)	1.56 (1.25–1.96)**
Both SPIE and panic disorder	156 (0.4)	97 (7.2)	2.71 (1.74–4.20)**
SPIE and panic disorder (reference group: SPIE only)	NA	NA	0.92 (0.54–1.57)

Table 3c Comorbidity between PTSD and mood disorders, substance use disorders, personality disorders and SPIE with suicide attempts.

	No Suicide Attempts *n* (%)	Suicide Attempts *n* (%)	AOR (95% CI)
PTSD and mood disorders[a]	---	---	---
Neither	23630 (74.5)	237 (22.5)	1.00
Mood disorder only	6444 (19.6)	503 (47.1)	3.69 (2.98–4.57)**
PTSD only	871 (2.5)	45 (3.9)	3.25 (2.15–4.93)**
Both mood and PTSD	1229 (3.4)	315 (26.5)	6.15 (4.50–8.41)**
Mood and PTSD (reference group: mood disorder only)	NA	NA	1.67 (1.32–2.10)**
PTSD and substance use disorders[b]	---	---	---
Neither	20123 (61.0)	309 (27.8)	1.00
Substance use disorder only	9951 (33.1)	431 (41.8)	1.89 (1.51–2.36)**
PTSD only	1232 (3.4)	125 (9.8)	1.89 (1.34–2.66)**

Table 3c Comorbidity between PTSD and mood disorders, substance use disorders, personality disorders and SPIE with suicide attempts.

	No Suicide Attempts *n* (%)	Suicide Attempts *n* (%)	AOR (95% CI)
Both substance use and PTSD	868 (2.5)	235 (20.7)	3.55 (2.63–4.78)**
Substance use and PTSD (reference group: substance use disorder only)	NA	NA	1.88 (1.44–2.46)**
PTSD and personality disorders[c]	---	---	---
Neither	24576 (77.5)	303 (28.7)	1.00
Personality disorder only	5498 (16.6)	437 (40.9)	3.42 (2.78–4.20)**
PTSD only	1145 (3.3)	75 (6.1)	2.49 (1.76–3.50)**
Both personality and PTSD	955 (2.7)	285 (24.4)	6.90 (5.41–8.79)**
Personality and PTSD (reference group: personality disorder only)	NA	NA	2.02 (1.60–2.54)**
PTSD and SPIE[d]	---	---	---
Neither	29258 (91.8)	658 (62.7)	1.00
SPIE only	816 (2.3)	82 (6.9)	2.29 (1.60–3.28)**
PTSD only	1963 (5.6)	277 (23.2)	1.90 (1.51–2.39)**
Both SPIE and PTSD	136 (0.4)	83 (7.2)	4.06 (2.59–6.35)**
SPIE and PTSD (reference group: SPIE only)	NA	NA	1.77 (1.02–3.08)*

[a] Adjusted odds ratios adjusted for sociodemographics, any substance use disorder, each personality disorder, and schizophrenia or psychotic illness or episode.

[b] Adjusted odds ratios adjusted for sociodemographics, any mood disorder, each personality disorder, and schizophrenia or psychotic illness or episode.

[c] Adjusted odds ratios adjusted for sociodemographics, any mood disorder, any substance use disorder, and schizophrenia or psychotic illness or episode.

[d] Adjusted odds ratios adjusted for sociodemographics, any mood disorder, any substance use disorder, each personality disorder.

* $p<.05$.

** $p<.01$.