



Published in final edited form as:

Psychiatry Res. 2018 April ; 262: 384–392. doi:10.1016/j.psychres.2017.09.012.

Self- and Other-directed Forms of Violence and Their Relationship with Lifetime *DSM-5* Psychiatric Disorders: Results from the National Epidemiologic Survey on Alcohol Related Conditions–III (NESARC–III)

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Abstract

A combined history of violence toward self and others has been reported in clinical and incarcerated populations. Psychiatric disorders have been implicated as risk factors. This study examines the lifetime prevalence of this combined violence in the general population and its associations with *DSM-5* psychiatric disorders in comparison with other- and self-directed violence. Data from the National Epidemiologic Survey on Alcohol and Related Conditions–III (NESARC–III) were analyzed, including 36,309 U.S. adults ages 18 and older. Violent behavior was defined by suicide attempts; recurrent suicidal behavior; gestures, threats, or self-mutilating behavior (self-directed); and multiple items of violence toward others (other-directed) in four categories: none, self-directed only, other-directed only, and combined self-/other-directed. Multinomial logistic regression examined these violence categories in association with sociodemographics and lifetime *DSM-5* psychiatric disorders. Results show that approximately 18.1% of adults reported violent behavior, including self-directed only (4.4%), other-directed only (10.9%), and combined self- and other-directed violence (2.8%). *DSM-5* psychiatric disorders significantly associated with the violence typology include alcohol, tobacco, cannabis, and other drug use disorders; mood disorders; posttraumatic stress disorder; and schizotypal, antisocial, and borderline personality disorders. Findings extend the clinical literature regarding the co-occurrence of self- and other-directed violent behaviors to the general population.

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Conflict of Interest

None.

Keywords

DSM-5 psychiatric disorders; suicidal behavior; violence; National Epidemiologic Survey on Alcohol and Related Conditions–III; NESARC–III

1. Introduction

Correlates of both suicidal behavior and interpersonal violence in clinical populations have been a focus of psychiatric studies for many years (Plutchik et al., 1989; Apter et al., 1993; Links et al., 2003). In addition to an earlier review of 27 clinical studies (Hillbrand, 2001), a more recent systematic review of clinical and community studies supported the co-occurrence of aggression against self and aggression against others (O'Donnell et al., 2015). Not only have studies of incarcerated violent offenders revealed high frequency of suicide attempts (Hillbrand, 1995; Kimonis et al., 2010; Webb et al., 2012; Cook, 2013), but a large population cohort study, based on a Swedish population registry, has also indicated a significant association between a record of intentional self-harm (i.e., ingestion of harmful substances or cutting/burning oneself) and conviction of a violent crime (Sahlin et al., 2017). Moreover, a prospective study has shown that suicidality and violence toward others mutually affect each other during adolescence and young adulthood (Van Dulmen et al., 2013). In a review of independent literatures of risk factors for violence toward others and suicidality, Plutchik (1995) noted that a number of risk factors (e.g., substance abuse, history of psychiatric hospitalization, poor impulse control) were common to both forms of violence. Among them, psychiatric disorders have been associated with increased risk of violence toward others (Swanson et al., 1990; Arseneault et al., 2000; Pulay et al., 2008) and suicidality (Harris and Barraclough, 1997; Jokinen et al., 2010).

Even though murder-suicide is extremely rare (< 0.001%) (Eliason, 2009), the co-occurrence of suicidal behavior and violence toward others is likely to be more prevalent in the general population, according to the few available studies. Studies of adolescents in the general population have established associations between suicide attempts and physical fighting, and the joint prevalence of these behaviors was reported to be 2.9% (Harford et al., 2012), 3.6% (Swahn et al., 2013), or merely 0.8% (Harford et al., 2016) when violence toward others is defined as intent to seriously inflict harm. In a national study of high school students, suicidality and fighting were used to form a violence typology of self-directed, other-directed, and both self- and other-directed violence, and no violence (Harford et al., 2012). When compared with students in the other-directed and self-directed violence categories, those in the combined violence group were more likely to be younger, depressed, and engaged in substance abuse (Harford et al., 2012). Using a similar typology, Swahn et al. (2013) found significant associations between combined violence and early drinking onset, heavy drinking, and feelings of sadness. Harford et al. (2016) also found heavy episodic drinking to be more prevalent among youth in the combined violence category relative to other-directed and self-directed violence categories. Combined violence showed even stronger associations with meeting 2 or more *DSM-IV* AUD symptom criteria.

By contrast, combined violence against self and others among adults is less explored in the research literature. Using data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), Harford et al. (2013) derived a violence typology for adults based on a latent class analysis of 5 other-directed and 4 self-directed indicators of violent behavior. The analysis identified 4 broad categories of violence: other-directed violence, self-directed violence, combined violence, and no or minimal violence. The identification of a small category of combined violence raises a question as to whether there are associations between self- and other-directed violent behaviors in adults. The group with combined self- and other-directed violence, compared with these two forms of violence alone, was more strongly associated with substance use disorders (88.2% for combined vs. 81.1% for other-directed and 60.3% for self-directed), mood disorders (63.3% for combined vs. 18.3% for other-directed and 40.6% for self-directed), and personality disorders (76.2% for combined vs. 42.1% for other-directed and 46.5% for self-directed). Nevertheless, the extent to which the combined form of violence is a meaningful and reliable phenomenon requires replication in other independent adult samples, with different measures of self- and other-directed violence.

To this end, the current study seeks to use data from the NESARC–III to assess the associations between *DSM-5* disorders (American Psychiatric Association, 2013) and the prevalence of violence toward others and self among American adults. Unlike the measures in Harford et al. (2013), the self-directed violence is not measured by suicide attempts and suicidal ideation, but rather by suicide attempts, recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior. The other-directed violence is not limited to the 5 items of interpersonal aggression, but rather is supplemented by 2 additional items: forcing someone to have sex, and robbing or mugging someone (Pulay et al., 2008). Based on the current literature, it is hypothesized that *DSM-5* disorders will yield significantly stronger associations for combined violence relative to self- or other-directed violence.

2. Methods

2.1. Study design

Data for this study were obtained from the National Epidemiologic Survey on Alcohol and Related Conditions–III (NESARC–III), a nationally representative survey of the noninstitutionalized U.S. civilian population ages 18 or older in 2012–2013, including persons in households and group quarters (e.g., group homes, worker dormitories) (Grant et al., 2014). Among other areas, the NESARC–III collected detailed information on demographics, substance use, and mental health. The NESARC–III was sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA); the fieldwork was conducted by Westat (Rockville, MD). Participants within households and segments (i.e., groups of census-defined blocks) were randomly selected according to a multistage probability sample design, in which primary sampling units were individual or combined counties from 50 states and the District of Columbia. High- and moderate-minority segments were oversampled relative to the low-minority segments by a ratio of 2.0 and 1.5, respectively. A total of 36,309 respondents completed the face-to-face Alcohol Use Disorder and Associated Disabilities Interview Schedule, *DSM-5* Version (AUDADIS-5) interview—

a fully structured, computer-assisted diagnostic interview designed for trained lay interviewers (Grant et al., 2011). The response rate of NESARC–III was 60.1%, comparable to most current U.S. national health surveys (Centers for Disease Control and Prevention, 2014; Substance Abuse and Mental Health Services Administration, 2014).

2.2. Measures

2.2.1. Self- and other-directed violence—Self-directed violence in this study was measured not only by suicide attempts but also by recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior. In two separate sections of NESARC–III on mood disorders for both depression (low mood) and mania (high mood), respondents were asked about suicidality experiences during the time in their life when they were not their normal selves and their mood was at its lowest and they enjoyed or cared the least about things, as well as during the time when they or others noticed that they were excited or elated/irritable or easily annoyed and also extremely revved up or energetic. Respondents with suicidality experiences in the context of manic or hypomanic episodes were asked for the bipolar disorder specifiers with reference to mixed (depressive) features during episodes of excited or elated/irritable mood. Specifically, the suicidality experiences were about whether they attempted suicide or tried to kill themselves, whether they thought about committing suicide or killing themselves, and whether they thought about their own death nearly every day for at least 2 weeks. The latter questions pertaining to suicidal ideation were not considered in the present study. A positive response to the first question or to a standalone question from the medical conditions section that asked respondents whether they ever attempted suicide denotes ever having had a suicide attempt. A total of 30% of respondent-reported suicide attempts were not associated with mood episodes. The experience of recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior was measured in one of the diagnostic criteria of borderline personality disorders by two questions about whether the respondents cut, burned, or scratched themselves on purpose when under a lot of stress and whether the respondents tried to hurt or kill themselves, or threatened to do so. Other-directed violence was based on a threshold of at least one of the following 7 violent behaviors since age 15: (1) ever steal something from someone directly, like mugging them, threatening them with a weapon, or taking their purse or wallet; (2) ever force anyone to engage in any sexual activity with you against their will; (3) ever get into a lot of fights that you started; (4) ever physically hurt another person in any way on purpose; (5) ever get into a fight that came to swapping blows with someone like a husband, wife, boyfriend, or girlfriend; (6) ever use a weapon like a stick, knife, or gun in a fight; and (7) ever hit someone so hard that you injured them or they had to see a doctor (Cronbach’s $\alpha=0.96$).

A violence typology was constructed from a cross-tabulation of other-directed violence and self-directed violence, with the following four violence categories: none, self-directed only, other-directed only, and combined self-/other-directed.

2.2.2. Selected psychiatric disorders—The following *DSM-5* lifetime diagnoses of psychiatric disorders, as assessed by AUDADIS-5, were included in the present study: substance use disorders (alcohol, tobacco, cannabis, opioid/heroin, and any other drug use disorders, including sedative, cocaine, stimulant, hallucinogen, inhalant/solvent, club drug,

and other drug use disorders), persistent depressive disorder, bipolar 1 disorder, panic disorder, agoraphobia, specific phobia, social phobia, generalized anxiety disorder, posttraumatic stress disorder (PTSD), and schizotypal personality disorder. For substance use disorders, the experiences with medicines and other kinds of drugs pertain to nonmedical use without a doctor's prescription; in greater amounts, more often, or longer than prescribed; or for a reason other than the doctor said. Respondents used these medicines and drugs on their own to feel more alert, to relax or quiet their nerves, to feel better, to enjoy themselves, to get high, or just to see how they would work. Because heroin is an opioid drug, heroin and prescription opioid use disorders were considered as one measure in this study. Major depressive disorder (MDD) and antisocial personality disorder (ASPD) also were examined in the present analysis in view of their criteria for suicide attempt and violent behavior, respectively, as was borderline personality disorder (BPD) in view of their criteria for suicidal behavior, recurrent physical fights, displays of temper, and constant anger. Although the strong associations with violence typology were expected, these three disorders were included as confounders to other psychiatric disorders for statistical adjustment purposes. For comparison, a sensitivity analysis was further conducted by removing these three disorders from the covariates. Consistent with *DSM-5*, all these diagnoses excluded substance- and medical illness-induced disorders. Because of hierarchical diagnoses, the mood disorders were coded into mutually exclusive categories (none, persistent depressive disorder only, major depressive disorder only, both major depressive disorder and persistent depressive disorder, and bipolar 1 disorder) in our analysis. The AUDADIS-5 measures of psychiatric disorders generally have good reliability and validity (Grant et al., 2015; Hasin et al., 2015).

2.2.3. Sociodemographic variables—Included are gender (male and female); age (18–25, 26–34, 35–49, 50+); race/ethnicity (non-Hispanic White, non-Hispanic Black, non-Hispanic American Indian/Alaska Native, non-Hispanic Asian/Native Hawaiian/Pacific Islander, Hispanic); education (less than high school, high school or GED, some college or higher); marital status (married, divorced/separated/widowed, never married); and family income (<\$10,000, \$10,000–\$29,999, \$30,000–\$79,999, \$80,000).

2.3. Analytic plan

Descriptive analyses were first conducted to compare the four violence categories with respect to the distributions of each sociodemographic and psychiatric disorder. The associations between self-directed and other-directed violence and among the lifetime *DSM-5* psychiatric disorders were examined using unadjusted odds ratios (OR). Multinomial logistic regression of the four violence categories was used to estimate the adjusted odds ratios for sociodemographics and psychiatric disorders as covariates. The sensitivity analysis excluding MDD, ASPD, and BPD from the list of covariates is provided for comparison. The adjusted Wald test was used for comparison and to test whether the coefficients from multinomial logistic regression were jointly equal to zero across violence categories for each covariate. Significant and nonsignificant covariates were noted. The significance level was set at 0.01 to avoid misidentifying covariates with spurious associations. The analyses were conducted using the data analysis and statistical software Stata 14 (StataCorp, 2015). Stata allows the specification of complex survey design in the

models for stratification, clustering, and sampling weights that reflect unequal probabilities of selection. These three sampling features were taken into account for parameter estimation as well as standard error and model fit calculations.

3. Results

Violent behaviors in American adults are distributed as follows: none, 81.9% (95% confidence interval [CI]= 81.1%–82.6%); self-directed only, 4.4% (95% CI=4.1%–4.7%); other-directed only, 10.9% (95% CI=10.4%–11.4%); and combined self-/other-directed, 2.8% (95% CI=2.5%–3.1%). Distributions of sociodemographics and lifetime *DSM-5* psychiatric disorders for each violence category are shown in Table 1. According to chi-squared or adjusted Wald F tests, all these covariates are significantly associated with the violence typology ($p<0.01$), confirming their candidacy for potential risk factors. Among these, substance use disorders and other psychiatric disorders are generally more prevalent in the combined violence category than in other categories. Table 2 shows that these lifetime *DSM-5* psychiatric disorders are moderately (OR=3.47–6.71) or highly (OR>6.71) associated with one another, especially within the same categorization of disorders (i.e., substance use disorders vs. mood and anxiety disorders vs. personality disorders) according to the bivariate odds ratios (Chen et al., 2010).

Preliminary results (data not shown) showed that, with adjustments for sociodemographic characteristics and no adjustments for other disorders, each *DSM-5* substance use disorder was significantly associated with higher odds for combined violence relative to violence against self or toward others, as were bipolar 1 disorder, panic disorder, generalized anxiety disorder, PTSD, schizotypal personality disorder, ASPD, and BPD. The analysis results adjusted for confounding are presented in Table 3. This multinomial logistic regression identifies significant risk factors ($p<0.01$), which are gender, race/ethnicity, age, marital status, family income, lifetime alcohol use disorder, tobacco use disorder, cannabis use disorder, other drug use disorders, mood disorders (MDD, persistent depressive disorder, bipolar 1 disorder), PTSD, schizotypal personality disorder, ASPD, and BPD. Nonsignificant risk factors, also listed in the footnote of Table 3, are education ($p=0.3132$), lifetime opioid/heroin use disorder ($p=0.0117$), panic disorder ($p=0.3779$), agoraphobia ($p=0.0585$), specific phobia ($p=0.2959$), social phobia ($p=0.0100$) and generalized anxiety disorder ($p=0.4985$). In view of the well-established literature regarding separate associations for suicidality and violence, and the large number of comparisons in the multinomial model, the findings are summarized specifically for combined violence versus other categories, using $p<0.01$ for statistical significance.

The significant odds ratios are summarized first for sociodemographics. Relative to no violence, the odds for combined violence are higher among non-Hispanic Whites than non-Hispanic Asians, among those ages 18–49 than those ages 50+, and among those with lower (<\$30,000) rather than higher (\$80,000+) family income. Relative to self-directed violence, the odds for combined violence are higher among those ages 35–49 than those ages 50+. Relative to other-directed violence, the odds for combined violence are higher among females than males and among those with lower (<\$30,000) rather than higher (\$80,000+) family income.

The significance of odds ratios varies according to lifetime *DSM-5* psychiatric disorders. As noted earlier, anxiety disorders do not show significant associations with the violence typology; neither does opioid/heroin use disorder ($p=0.0117$). However, all substance use disorders confer significantly higher odds for combined violence relative to no violence. Alcohol, tobacco, and other drug use disorders additionally confer significantly higher odds for combined violence relative to self-directed violence. Mood disorders confer significantly higher odds for combined violence relative to no violence or to other-directed violence, but importantly confer significantly lower odds for other-directed violence relative to self-directed violence. PTSD confers significantly higher odds for combined violence relative to no violence, as do the three personality disorders (schizotypal, antisocial, and borderline). ASPD and BPD also confer significantly higher odds for combined violence relative to self-directed violence, as does BPD for combined violence relative to other-directed violence. A comparison with the sensitivity analysis (Table 4) reveals that lifetime opioid use disorder, social phobia, and generalized anxiety disorder were rendered nonsignificant when MDD, ASPD, and BPD were included in the list of covariates.

4. Discussion

Our finding provides additional support for clinical studies that established associations between self- and other-directed violent behaviors (Hillbrand, 1995, 2001; O'Donnell et al., 2015). Findings from this study yielded a prevalence estimate of approximately 2.8% for adults in the general population who reported evidence of violence toward both self and others (i.e., combined violence), and a moderate association between self- and other-directed violence ($OR=4.76$ [95% $CI=4.32-5.23$]). The size of the odds ratio is comparable to the size of the crude hazard ratio for violent crime conviction during follow-up with deliberate self-harm as the exposure or vice versa, as reported in a recent population-based cohort study that further suggested a shared vulnerability to impulsive and aggressive acts rather than a causal relationship (Sahlin et al., 2017). Because of higher prevalence of suicidal ideation than that of suicide attempts and self-injury, the absence of suicidal ideation in the definition of suicidality in the present study may account for the lower prevalence than the reported 3% for combined violence identified in a latent class analysis of multiple indicators (where suicidality included suicidal ideation rather than self-injury) from a previous national study (Harford et al., 2013). National estimates of past-year prevalence of combined violence as measured by suicide attempt and fighting are in a similar range from 2.9% to 3.6% among adolescents (Harford et al., 2012; Swahn et al., 2013). However, when violence toward others was defined by fighting with intent to seriously inflict harm, the prevalence of combined violence was reduced to 0.8% (Harford et al., 2016).

The major finding from the present study indicates significant associations between *DSM-5* psychiatric disorders and between some of these disorders and the violence typology. Adjusted for the presence of other disorders, the odds ratios of alcohol, tobacco, and all drug use disorders were significantly greater than 1 for combined versus no violence. Although the overall prevalence of the other drug use disorders was low (4.4%), it reflected high proportions of polysubstance use disorders for alcohol (80.4%), tobacco (76.5%), marijuana (39.5%), and opioid/heroin (24.4%). This helps explain why the other drug use disorders had significantly higher odds for combined violence relative to no violence or self-directed

violence. Although the effects of substance use disorders on impulsivity and other cognitive functions are well established, their specific role in combined violence needs further study.

When adjusted for the presence of all other psychiatric disorders, mood disorders (especially the comorbidity of MDD and persistent depressive disorders) confer significantly higher odds for combined versus no violence and other-directed violence; MDD without persistent depressive disorder confers significantly lower odds for combined versus self-directed violence. This pattern is in contrast to that of substance use disorders, such as alcohol and tobacco use disorders, which confer significantly higher odds for combined versus self-directed violence. Taken together, our findings confirm that individuals with mood disorders are more likely to inflict harm on themselves than on other people. Further, people with anxiety disorders do not pose a significant threat for violence, and social phobia is even protective against combined versus self-directed violence. Although the risk of violent behavior is significantly higher among persons with substance use and mood disorders, only a minority (approximately 8%) of people with psychiatric disorders engage in violent behaviors (Pulay et al., 2008). Nevertheless, the implication for public opinion is to end discrimination affecting people with psychiatric disorders and to remove the stigma perpetuated by a few high-profile cases in the media.

In contrast to substance use and mood disorders, personality disorders in the current study (i.e., ASPD and BPD) consistently show higher odds for combined violence relative to self- or other-directed violence. Future studies on violence should target specific psychiatric disorders, especially personality disorders such as BPD, as opposed to gross categories of substance use disorders and other mental disorders. They should also examine the extent to which comorbidity between psychiatric disorders contributes to disparate findings in the debate about the relationship between severe psychiatric disorders and violence (Elbogen and Johnson, 2009; Van Dorn et al., 2012). Despite variation in the measurement of violence across studies, combined violence appears to involve a particularly serious constellation of risk factors distinct from separate forms of violence.

Several conceptual frameworks have been developed to explain the co-occurrence of aggression toward self and others (see reviews in Hillbrand, 2001; O'Donnell et al., 2015). Plutchik et al. (1989) proposed a two-stage theory based on the proposition that aggression impulses lead to violence toward self and others. In the first stage, co-occurring risk factors serve to either amplify or attenuate the manifestation of overt aggression. In the second stage, the pattern of risk factors (i.e., hopelessness, depression for self, and impulsivity for others) determines the target. Hillbrand (2001) has proposed that individuals having both sets of factors would be at increased risk for co-occurring violence. One possible explanation for the co-occurrence of self- and other-directed violence distinct from the separate forms of violence is that combined violence reflects the addition of risk factors from self-directed and other-directed violence. Another possible explanation is that both forms of violence share underlying etiological conditions (e.g., emotional dysregulation, impulsive hostility and aggression, serotonergic dysfunction, etc.). Personality disorders represent enduring maladaptive traits, which may foster important vulnerabilities related to violence (e.g., impulsivity, interpersonal detachment, emotional responsivity). Other Cluster A personality disorders, including paranoid and schizoid, were shown to be associated with

significantly higher odds for combined relative to self- or other-directed violence (Harford et al., 2013), and it is also the case for schizotypal personality disorder in the current analysis excluding ASPD and BPD. To more thoroughly discriminate between combined violence and other violence, a more detailed analysis of personality disorder criteria may yield specific indications for traits related to co-occurrence.

There were few substantive socioeconomic differences among the violence categories in this study. There were no significant gender differences for combined violence relative to no violence, although males were more likely to report other-directed violence and females were more likely to report self-directed violence. Mean age and family income were generally lower for overall violence relative to no violence categories. Of note, there were disproportionately higher numbers of American Indians and non-Hispanic Blacks engaging in other-directed violence. Since these sample populations of non-Hispanic Blacks also are statistically more likely to be unmarried and have lower family incomes, these findings are a cause of public-health concern for racial disparity. However, they should neither be used as a justification for making non-Hispanic Blacks targets of racial profiling nor for reinforcing stereotypes.

A number of study limitations need to be highlighted. First, the measurement and categorization of violent behavior in the present study are based on retrospective reports and are restricted to a limited number of question items. Second, other-directed violence does not always discriminate between the roles of instigator and victim, multiparty instigation, or incident severity. Third, the study is limited to cross-sectional data, which do not allow for the assessment of directionality of important covariates. Although we hope to make inferences to individuals who have the potential to engage in combined violence (i.e., co-occurrence of suicide attempts and violence against others), we may overestimate their prevalence by using the lifetime measures of violence (since age 15 for violence against others), which do not preclude the possibility of some extreme cases in which the two forms of violence did not occur within a short period of time but rather decades apart. Fourth, many persons who engage in violence may be incarcerated or homeless, and they are therefore not included in the survey sample analyzed in this study. Our findings cannot be generalized to these special populations, and the estimates of the prevalence of combined violence may be conservative in that respect. And fifth, our analysis including many psychiatric disorders in the same model is subject to overadjustment bias. Because psychiatric disorders are moderately or highly associated with one another (Table 2), invariably there is a chance that some psychiatric disorders are mediators on the causal pathway through which other psychiatric disorders bring about violence, at least in some subgroups. Overadjustment can bias the estimation of the total effects of psychiatric disorders on violence, but can still provide correct estimates of the controlled direct effect with added assumptions (Schisterman et al., 2009).

In conclusion, despite variations in the measurement and time period, studies have consistently revealed findings about combined violence. Clinicians are advised to explore homicidal risk among patients who attempt suicide or who have suicidal ideation and, conversely, assess suicidal risk among patients who report violence (Hillbrand, 2001). It is also important for future studies to look into the individual symptom criteria of psychiatric

disorders (e.g., borderline personality disorder) and their associations with the violence typology, as well as the possibility of expanding the violence typology by including relevant symptoms as indicators. Relevant symptom criteria of BPD include inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights). We have provided another set of tables as supplementary material (available electronically), with two additional BPD items “getting so angry that the respondent lost control” and “hitting people or throwing things when angry” for other-directed violence. The relatively high prevalence of these two items (17.8%) increases the prevalence dramatically for any other-directed violence (from 10.9% to 19.4%) and combined violence (from 2.8% to 4.0%). We did not include these BPD items in this current study because we were more inclined to view them as indicators of reactive aggression when compared with the present other-directed items as indicators of instrumental aggression (Berkowitz, 1993). Mancke et al. (2015) provided a multidimensional model of reactive aggression in BPD.

Symptom criteria of intermittent explosive disorder (IED) such as recurrent behavioral outbursts with verbal and physical aggression, although not premeditated, may be relevant to other-directed violence. Broadly and narrowly defined prevalence estimates of lifetime IED have been reported to be 7.3% and 5.4%, respectively (Kessler et al., 2006). Further study of the extent of suicidal behavior among people diagnosed with IED who show impulsive aggressive outbursts may help substantiate and understand the clinical features of combined violence. In this study, with the exception of anxiety disorders, some of the psychiatric disorders (BPD in particular) have been found to be associated with combined violence. Nevertheless, further variation regarding severity and lifetime exposure requires more research. Personality disorders have been shown to mediate associations between childhood maltreatment and the persistence of alcohol and nicotine dependence (Elliott et al., 2016). For future studies, the use of multiple mediation models are needed to uncover the pathways by which individual and contextual factors (e.g., adverse childhood experiences) lead to personality disorders, substance use disorders, and mood disorders with respect to the co-occurrence of suicide attempt and violence against others. Future research should examine variations in impulsivity of combined violence relative to self- and other-directed violence and should specify which ones are critical to combined violence among the broad array of common factors. Identifying a more specific set of factors underlying combined violence will inform prevention and intervention efforts to reduce the prevalence of combined violence in the general population.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The NESARC–III was sponsored by NIAAA, with supplemental support from the National Institute on Drug Abuse. Support is acknowledged from the intramural program, NIAAA, National Institutes of Health (NIH).

Role of the Funding Source

This article is based on a study conducted for the Alcohol Epidemiologic Data System project funded by NIAAA, NIH, through Contract No. HHSN275201300016C to CSR, Incorporated.

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Highlights

- The typology of self- and/or other-directed violence among U.S. adults has been identified, and the odds ratio between self- and other-directed violence is estimated to be 4.76.
- About 18 percent of U.S. adults exhibit any self- and/or other-directed violence at any time in their lives.
- Close to 3 percent of U.S. adults exhibit combined self-/other-directed violence at any time in their lives.
- Many *DSM-5* psychiatric disorders are found to be significantly associated with the violence typology, including alcohol use disorder, tobacco use disorder, cannabis use disorder, other drug use disorder, mood disorders (major depressive disorder, persistent depressive disorder, bipolar 1 disorder), posttraumatic stress disorder, schizotypal personality disorder, antisocial personality disorder, and borderline personality disorder.
- *DSM-5* anxiety disorders do not show significant associations with the violence typology.

Table 1
 Weighted means or distributions (%) of background characteristics and potential risk factors, by violence category.

	Violence categories				Total
	None	Self-directed	Other-directed	Combined	
Background characteristics and potential risk factors	(N=29,481) 81.9%	(N=1,730) 4.4%	(N=4,038) 10.9%	(N=1,060) 2.8%	(N=36,309) 100%
Sociodemographics					
Gender					
Male	46.6 ^{b,c}	30.2 ^{a,c,d}	68.3 ^{a,b,d}	43.0 ^{b,c}	48.1
Female	53.4 ^{b,c}	69.8 ^{a,c,d}	31.7 ^{a,b,d}	57.0 ^{b,c}	51.9
Race/ethnicity					
White, non-Hispanic	65.7 ^{b,d}	70.6 ^a	67.2	70.3 ^a	66.2
Black, non-Hispanic	11.4 ^{b,c}	9.2 ^{a,c}	15.9 ^{a,b}	12.6	11.8
American Indian/Alaska Native, non-Hispanic	1.2 ^{c,d}	2.5	3.2 ^a	3.4 ^a	1.6
Asian/Native Hawaiian/Other Pacific Islander, non-Hispanic	6.5 ^{b,c,d}	3.0 ^a	2.1 ^a	1.6 ^a	5.7
Hispanic, any race	15.2 ^c	14.7	11.7 ^a	12.1	14.7
Age (mean)	47.4 ^{b,c,d}	42.9 ^{a,d}	43.3 ^{a,d}	39.6 ^{a,b,c}	46.5
Age groups					
18–25	14.3 ^d	17.5	15.5 ^d	19.8 ^{a,c}	14.7
26–34	14.8 ^{b,c,d}	18.9 ^a	18.7 ^a	20.8 ^a	15.5
35–49	25.4 ^{c,d}	26.3 ^{c,d}	30.8 ^{a,b}	32.8 ^{a,b}	26.2
50+	45.6 ^{b,c,d}	37.3 ^{a,d}	35.0 ^{a,d}	26.6 ^{a,b,c}	43.5
Education					
Less than high school	12.6 ^d	15.5	13.8 ^d	18.0 ^{a,c}	13.0
High school graduate or GED	24.9 ^{c,d}	27.6	29.6 ^a	32.8 ^a	25.8
Some college or higher	62.5 ^{b,c,d}	56.9 ^{a,d}	56.5 ^{a,d}	49.2 ^{a,b,c}	61.2
Marital status					

	Violence categories				Total (N=36,309) 100%
	None	Self-directed	Other-directed	Combined	
	(N=29,481) 81.9%	(N=1,730) 4.4%	(N=4,038) 10.9%	(N=1,060) 2.8%	
Background characteristics and potential risk factors					
Married	59.5 ^{b,c,d}	49.8 ^{a,d}	52.7 ^{a,d}	42.3 ^{a,b,c}	57.8
Divorced, separated, or widowed	18.7 ^{b,c,d}	25.1 ^a	22.5 ^{a,d}	27.4 ^{a,c}	19.7
Never married	21.8 ^{b,c,d}	25.1 ^a	24.9 ^{a,d}	30.3 ^{a,c}	22.5
Family income					
Less than \$10,000	8.0 ^{b,c,d}	14.1 ^{a,c}	9.4 ^{a,b,d}	16.5 ^{a,c}	8.6
\$10,000–\$29,999	25.8 ^{b,d}	34.3 ^{a,c,d}	28.1 ^{b,d}	42.1 ^{a,b,c}	26.9
\$30,000–\$79,999	38.8 ^{b,d}	35.1 ^{a,c}	41.5 ^{b,d}	30.8 ^{a,c}	38.7
\$80,000 or more	27.4 ^{b,c,d}	16.5 ^{a,c,d}	21.1 ^{a,b,d}	10.6 ^{a,b,c}	25.8
Lifetime DSM-5 disorders					
Alcohol use disorder	23.6 ^{b,c,d}	43.5 ^{a,c,d}	54.0 ^{a,b,d}	70.3 ^{a,b,c}	29.1
Tobacco use disorder	22.4 ^{b,c,d}	45.1 ^{a,c,d}	51.7 ^{a,b,d}	68.0 ^{a,b,c}	27.9
Cannabis use disorder	3.7 ^{b,c,d}	12.6 ^{a,c,d}	17.7 ^{a,b,d}	26.3 ^{a,b,c}	6.3
Opioid/heroin use disorder	1.1 ^{b,c,d}	6.0 ^{a,d}	6.1 ^{a,d}	15.8 ^{a,b,c}	2.3
Other drug use disorders	2.3 ^{b,c,d}	9.3 ^{a,c,d}	12.2 ^{a,b,d}	26.9 ^{a,b,c}	4.4
Persistent depressive disorder	3.7 ^{b,c,d}	24.4 ^{a,c}	7.2 ^{a,b,d}	24.0 ^{a,c}	5.5
Major depressive disorder	16.7 ^{b,c,d}	58.8 ^{a,c}	25.8 ^{a,b,d}	53.2 ^{a,c}	20.6
Mood disorders					
None	81.3 ^{b,c,d}	31.2 ^{a,c}	67.7 ^{a,b,d}	27.2 ^{a,c}	76.1
Persistent depressive disorder only	1.0 ^{b,c,d}	4.0 ^{a,c}	1.6 ^{a,b}	3.3 ^a	1.2
Major depressive disorder only	14.0 ^{b,c,d}	38.5 ^{a,c,d}	20.3 ^{a,b,d}	32.4 ^{a,b,c}	16.3
Both major depressive disorder and persistent depressive disorder	2.7 ^{b,c,d}	20.4 ^{a,c}	5.5 ^{a,b,d}	20.8 ^{a,c}	4.3
Bipolar I disorder	1.0 ^{b,c,d}	5.9 ^{a,d}	4.8 ^{a,d}	16.3 ^{a,b,c}	2.1
Panic disorder	3.7 ^{b,c,d}	16.9 ^{a,c,d}	7.3 ^{a,b,d}	24.3 ^{a,b,c}	5.2

	Violence categories					Total (N=36,309) 100%
	None (N=29,481) 81.9%	Self-directed (N=1,730) 4.4%	Other-directed (N=4,038) 10.9%	Combined (N=1,060) 2.8%		
Background characteristics and potential risk factors						
Agoraphobia	1.2 ^{b,c,d}	8.1 ^{a,c}	2.7 ^{a,b,d}	11.5 ^{a,c}	1.9	
Specific phobia	5.5 ^{b,c,d}	14.1 ^{a,c}	7.7 ^{a,b,d}	16.4 ^{a,c}	6.4	
Social phobia	2.6 ^{b,c,d}	13.0 ^{a,c}	4.9 ^{a,b,d}	14.9 ^{a,c}	3.7	
Generalized anxiety disorder	5.7 ^{b,c,d}	22.3 ^{a,c}	11.5 ^{a,b,d}	27.0 ^{a,c}	7.7	
Posttraumatic stress disorder	3.5 ^{b,c,d}	22.6 ^{a,c,d}	11.5 ^{a,b,d}	35.1 ^{a,b,c}	6.1	
Schizotypal personality disorder	3.3 ^{b,c,d}	20.2 ^{a,c,d}	14.7 ^{a,b,d}	40.4 ^{a,b,c}	6.3	
Antisocial personality disorder	1.0 ^{b,c,d}	5.1 ^{a,c,d}	21.0 ^{a,b,d}	35.1 ^{a,b,c}	4.3	
Borderline personality disorder	5.7 ^{b,c,d}	40.2 ^{a,c,d}	27.0 ^{a,b,d}	71.8 ^{a,b,c}	11.4	

^aSignificantly different from “none” ($p < 0.01$).

^bSignificantly different from “self-directed” ($p < 0.01$).

^cSignificantly different from “other-directed” ($p < 0.01$).

^dSignificantly different from “combined” ($p < 0.01$).

Note: All p -values < 0.01 for chi-squared or adjusted Wald F tests of violence categories with respect to background characteristics and potential risk factors.

Table 2

Bivariate odds ratio among lifetime DSM-5 psychiatric disorders

Lifetime DSM-5 psychiatric disorders	Alcohol use disorder	Tobacco use disorder	Cannabis use disorder	Opioid/heroin use disorder	Other drug use disorders	Persistent depressive disorder only	Major depressive disorder only	Both major depressive disorder and persistent depressive disorder	Bipolar I disorder	Panic disorder	Agoraphobia	Specific phobia	Social phobia	Generalized anxiety disorder	Posttraumatic stress disorder	Schizotypal personality disorder	Antisocial personality disorder
Tobacco use disorder	4.7																
Cannabis use disorder	9.4	6.9															
Opioid/heroin use disorder	7.8	7.9	9.8														
Other drug use disorders	11.2	9.4	13.1	25.2													
Persistent depressive disorder only	2.7	2.1	3.3	5.3	4.0												
Major depressive disorder only	2.0	1.9	2.4	3.0	2.6												
Both major depressive disorder and persistent depressive disorder	2.8	2.9	3.8	5.7	5.8												
Bipolar I disorder	6.5	5.4	6.3	10.9	10.0												
Panic disorder	2.7	2.9	3.0	4.5	3.7	4.8	7.9	12.1	17.9								
Agoraphobia	2.6	3.2	2.9	5.1	3.6	5.6	9.5	16.0	23.8	28.2							
Specific phobia	1.9	2.0	1.9	2.5	2.3	2.6	2.5	4.6	5.9	5.0	11.0						
Social phobia	2.4	2.5	2.9	3.9	3.8	3.8	6.4	11.2	13.0	8.8	22.9	9.3					
Generalized anxiety disorder	2.3	2.3	2.8	3.3	3.6	5.2	6.9	19.4	14.6	7.6	10.7	5.5	9.0				
Posttraumatic stress disorder	2.8	3.0	3.6	5.8	5.0	5.6	6.0	13.3	22.1	8.1	8.9	4.4	6.8	7.7			
Schizotypal personality disorder	3.1	2.9	4.8	6.2	5.4	3.7	5.8	9.7	25.4	6.1	9.3	3.9	8.6	6.8	10.4		
Antisocial personality disorder	5.3	5.1	6.3	8.1	8.0	2.3	3.7	4.3	11.1	3.1	4.3	2.3	3.4	3.3	5.2	8.7	
Borderline personality disorder	4.2	3.8	5.1	7.1	6.4	4.8	7.2	13.6	32.3	7.1	9.5	4.4	8.7	7.7	11.2	28.5	9.4

Note: All odds ratios are significantly different from 1 ($p < 0.01$).

Table 3
Adjusted odds ratios for sociodemographics and lifetime *DSM-5* disorders, by contrast of violence categories.

Sociodemographics and <i>DSM-5</i> disorders	Contrast of Violence Categories																	
	Self-directed vs. none			Other-directed vs. none			Combined vs. none			Other-directed vs. self-directed			Combined vs. self-directed			Combined vs. other-directed		
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Sociodemographics																		
Gender																		
Male	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Female	1.6*	1.3–1.8	0.5*	0.4–0.5	1.3	1.0–1.6	0.3*	0.3–0.4	0.8	0.6–1.0	2.6*	2.1–3.3						
Race/ethnicity																		
White, non-Hispanic	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Black, non-Hispanic	0.9	0.7–1.1	1.6*	1.4–1.8	1.3	1.0–1.7	1.8*	1.5–2.2	1.4	1.0–2.0	0.8	0.6–1.0						
American Indian/Alaska Native, non-Hispanic	1.3	0.8–1.9	2.0*	1.4–2.7	1.2	0.8–2.0	1.6	0.9–2.6	1.0	0.5–1.8	0.6	0.4–1.0						
Asian/Native Hawaiian/Other Pacific Islander, non-Hispanic	0.7	0.5–1.0	0.4*	0.3–0.6	0.4*	0.2–0.8	0.6	0.4–0.9	0.6	0.3–1.1	0.9	0.5–1.7						
Hispanic, any race	1.1	0.9–1.3	0.8*	0.7–1.0	0.9	0.7–1.1	0.8	0.6–1.0	0.8	0.6–1.1	1.1	0.9–1.4						
Age																		
18–25	1.3	1.0–1.7	1.3*	1.1–1.6	1.6*	1.2–2.3	1.0	0.7–1.4	1.2	0.9–1.7	1.2	0.9–1.7						
26–34	1.4*	1.1–1.7	1.4*	1.2–1.6	1.7*	1.3–2.3	1.0	0.8–1.3	1.2	1.0–1.6	1.3	0.9–1.7						
35–49	1.2	1.0–1.4	1.4*	1.3–1.6	1.9*	1.4–2.4	1.2	1.0–1.5	1.6*	1.2–2.1	1.3	1.0–1.7						
50+	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Education																		
Less than high school	1.2	0.9–1.4	1.1	0.9–1.2	1.2	0.9–1.5	0.9	0.7–1.2	1.0	0.8–1.3	1.1	0.9–1.5						
High school graduate or GED	1.1	0.9–1.2	1.1	1.0–1.2	1.3	1.0–1.6	1.0	0.9–1.2	1.2	1.0–1.5	1.2	0.9–1.5						
Some college or higher	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Marital status																		
Married	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Divorced, separated, or widowed	1.1	0.9–1.2	1.3*	1.2–1.5	1.2	0.9–1.6	1.2	1.0–1.5	1.1	0.9–1.5	0.9	0.7–1.2						

Sociodemographics and DSM-5 disorders	Contrast of Violence Categories											
	Self-directed vs. none		Other-directed vs. none		Combined vs. none		Other-directed vs. self-directed		Combined vs. self-directed		Combined vs. other-directed	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Never married	0.9	0.8-1.1	0.9	0.8-1.0	0.9	0.7-1.2	1.0	0.8-1.2	1.0	0.7-1.4	1.1	0.8-1.4
Family income												
Less than \$10,000	1.8*	1.4-2.4	1.0	0.8-1.2	2.1*	1.4-3.3	0.6*	0.4-0.7	1.2	0.7-1.9	2.1*	1.3-3.2
\$10,000-\$29,999	1.5*	1.2-1.8	1.1	0.9-1.2	2.1*	1.5-2.9	0.7*	0.6-0.9	1.4	0.9-2.1	1.9*	1.4-2.7
\$30,000-\$79,999	1.2	1.0-1.4	1.2	1.0-1.4	1.4	1.0-2.0	1.0	0.8-1.2	1.2	0.8-1.8	1.2	0.8-1.7
\$80,000 or more	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.

Sociodemographics and DSM-5 disorders	Contrast of Violence Categories											
	Self-directed vs. none		Other-directed vs. none		Combined vs. none		Other-directed vs. self-directed		Combined vs. self-directed		Combined vs. other-directed	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Lifetime DSM-5 disorders												
Alcohol use disorder	1.3*	1.1-1.5	1.8*	1.6-2.0	2.2*	1.7-2.7	1.4*	1.2-1.7	1.7*	1.3-2.1	1.2	1.0-1.5
Tobacco use disorder	1.5*	1.3-1.8	1.8*	1.7-2.0	2.1*	1.7-2.7	1.2	1.0-1.4	1.4*	1.1-1.8	1.2	0.9-1.5
Cannabis use disorder	1.4	1.1-1.7	1.7*	1.5-1.9	1.5*	1.2-2.0	1.2	1.0-1.6	1.1	0.9-1.4	0.9	0.7-1.1
Opioid/heroin use disorder	1.6	1.1-2.3	1.4	1.0-1.8	1.8*	1.3-2.6	0.9	0.6-1.3	1.2	0.8-1.6	1.3	1.0-1.8
Other drug use disorders	1.2	0.9-1.6	1.6*	1.2-2.0	2.1*	1.6-2.7	1.3	1.0-1.8	1.7*	1.2-2.3	1.3	1.0-1.7
Mood disorders												
None	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Persistent depressive disorder only	5.6*	3.8-8.2	1.0	0.7-1.5	2.8*	1.5-5.0	0.2*	0.1-0.3	0.5	0.3-0.9	2.7*	1.5-4.7
Major depressive disorder only	4.4*	3.8-5.1	1.3*	1.1-1.5	2.9*	2.3-3.6	0.3*	0.2-0.4	0.7*	0.5-0.9	2.3*	1.8-2.9
Both major depressive disorder and persistent depressive disorder	7.8*	6.1-10.0	1.2	1.0-1.5	4.8*	3.2-7.0	0.2*	0.1-0.2	0.6	0.4-0.9	3.9*	2.6-5.7
Bipolar 1 disorder	3.6*	2.5-5.3	1.3	0.9-1.8	3.5*	2.4-5.1	0.4*	0.2-0.5	1.0	0.6-1.6	2.7*	1.8-3.9

Contrast of Violence Categories

Sociodemographics and DSM-5 disorders	Self-directed vs. none		Other-directed vs. none		Combined vs. none		Other-directed vs. self-directed		Combined vs. self-directed		Combined vs. other-directed	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Panic disorder	1.2	0.9–1.5	1.0	0.8–1.3	1.3	0.9–1.8	0.9	0.7–1.1	1.1	0.8–1.5	1.3	0.9–1.7
Agoraphobia	1.4	1.1–2.0	1.1	0.9–1.5	1.5	1.0–2.3	0.8	0.6–1.1	1.0	0.7–1.6	1.3	0.9–2.0
Specific phobia	0.9	0.7–1.2	0.9	0.7–1.0	0.8	0.6–1.1	0.9	0.7–1.3	0.9	0.7–1.2	1.0	0.7–1.3
Social phobia	1.1	0.9–1.4	0.7	0.6–0.9	0.7	0.5–1.0	0.6*	0.5–0.9	0.7*	0.5–0.9	1.0	0.8–1.4
Generalized anxiety disorder	1.0	0.8–1.2	1.0	0.8–1.2	0.8	0.6–1.1	1.0	0.8–1.2	0.8	0.6–1.1	0.8	0.6–1.1
Posttraumatic stress disorder	1.8*	1.5–2.2	1.6*	1.3–1.9	2.0*	1.6–2.5	0.9	0.7–1.1	1.1	0.9–1.4	1.3	1.0–1.6
Schizotypal personality disorder	1.4*	1.1–1.8	1.4*	1.2–1.8	1.7*	1.3–2.1	1.0	0.8–1.3	1.2	0.9–1.5	1.2	0.9–1.5
Antisocial personality disorder	2.3*	1.6–3.2	11.2*	9.1–13.8	14.6*	10.5–20.3	4.9*	3.6–6.5	6.4*	4.4–9.1	1.3	1.0–1.7
Borderline personality disorder	3.3*	2.8–3.9	2.6*	2.2–3.0	8.3*	6.5–10.7	0.8	0.6–1.0	2.5*	1.9–3.3	3.2*	2.5–4.1

* $p < 0.01$.

Note: All the covariates are significant ($p < 0.01$), except education ($p = 0.3132$), lifetime opioid/heroin use disorder ($p = 0.0117$), panic disorder ($p = 0.3779$), agoraphobia ($p = 0.0585$), specific phobia ($p = 0.2959$), social phobia ($p = 0.0100$), and generalized anxiety disorder ($p = 0.4985$).

Table 4

Adjusted odds ratios for sociodemographics and lifetime *DSM-5* disorders excluding major depressive disorder, antisocial personality disorder, and borderline personality disorder, by contrast of violence categories.

Sociodemographics and <i>DSM-5</i> disorders	Contrast of Violence Categories											
	Self-directed vs. none		Other-directed vs. none		Combined vs. none		Other-directed vs. self-directed		Combined vs. self-directed		Combined vs. other-directed	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Sociodemographics												
Gender												
Male	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Female	1.8*	1.6–2.2	0.4*	0.4–0.5	1.2	1.0–1.4	0.2*	0.2–0.3	0.6*	0.5–0.8	2.7*	2.2–3.3
Race/ethnicity												
White, non-Hispanic	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Black, non-Hispanic	0.8	0.7–1.0	1.6*	1.5–1.8	1.2	0.9–1.7	2.0*	1.7–2.5	1.6	1.1–2.2	0.8	0.6–1.0
American Indian/Alaska Native, non-Hispanic	1.2	0.8–1.8	2.2*	1.6–2.9	1.3	0.8–2.0	1.8	1.1–2.9	1.0	0.6–1.9	0.6	0.4–0.9
Asian/Native Hawaiian/Other												
Pacific Islander, non-Hispanic	0.7	0.4–1.0	0.5*	0.4–0.6	0.5*	0.3–0.8	0.7	0.5–1.0	0.7	0.4–1.4	1.1	0.6–1.9
Hispanic, any race	1.0	0.9–1.2	0.9	0.8–1.0	0.9	0.7–1.1	0.8	0.7–1.0	0.9	0.7–1.2	1.1	0.9–1.3
Age												
18–25	1.4*	1.1–1.8	1.4*	1.2–1.6	1.9*	1.4–2.6	1.0	0.7–1.3	1.3	1.0–1.8	1.4	1.0–1.9
26–34	1.5*	1.2–1.8	1.4*	1.3–1.6	1.9*	1.5–2.5	1.0	0.8–1.2	1.3	1.0–1.7	1.3	1.0–1.8
35–49	1.3*	1.1–1.5	1.5*	1.3–1.7	2.0*	1.6–2.6	1.2	1.0–1.4	1.6*	1.2–2.0	1.4	1.1–1.7
50+	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Education												
Less than high school	1.1	0.9–1.3	1.1	1.0–1.3	1.3	1.0–1.7	1.0	0.8–1.3	1.2	0.9–1.5	1.2	0.9–1.5
High school graduate or GED	1.1	0.9–1.2	1.1	1.0–1.2	1.3	1.1–1.6	1.0	0.9–1.2	1.2	1.0–1.5	1.2	0.9–1.5
Some college or higher	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Marital status												
Married	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.

Sociodemographics and DSM-5 disorders	Contrast of Violence Categories											
	Self-directed vs. none		Other-directed vs. none		Combined vs. none		Other-directed vs. self-directed		Combined vs. self-directed		Combined vs. other-directed	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Divorced, separated, or widowed	1.1	1.0-1.3	1.3*	1.2-1.5	1.3	1.0-1.7	1.2	1.0-1.4	1.1	0.9-1.5	1.0	0.8-1.2
Never married	0.9	0.8-1.1	0.9	0.8-1.0	1.0	0.7-1.3	0.9	0.8-1.1	1.0	0.8-1.4	1.1	0.8-1.4
Family income												
Less than \$10,000	2.0*	1.5-2.5	1.1	0.9-1.3	2.4*	1.5-3.6	0.6*	0.4-0.7	1.2	0.8-1.9	2.1*	1.4-3.2
\$10,000-\$29,999	1.5*	1.3-1.9	1.1	1.0-1.3	2.3*	1.6-3.2	0.7*	0.6-0.9	1.5	1.0-2.2	2.0*	1.5-2.8
\$30,000-\$79,999	1.2	1.0-1.5	1.2*	1.1-1.4	1.5	1.0-2.0	1.0	0.8-1.2	1.2	0.8-1.7	1.2	0.9-1.7
\$80,000 or more	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.

Sociodemographics and DSM-5 disorders	Contrast of Violence Categories											
	Self-directed vs. none		Other-directed vs. none		Combined vs. none		Other-directed vs. self-directed		Combined vs. self-directed		Combined vs. other-directed	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Lifetime DSM-5 disorders												
Alcohol use disorder	1.5*	1.3-1.7	2.0*	1.8-2.2	2.9*	2.3-3.6	1.3*	1.1-1.6	1.9*	1.5-2.4	1.4*	1.1-1.8
Tobacco use disorder	1.7*	1.5-2.0	2.0*	1.9-2.2	2.6*	2.0-3.2	1.2	1.0-1.4	1.5*	1.2-1.9	1.3	1.0-1.6
Cannabis use disorder	1.6*	1.2-2.0	1.9*	1.7-2.2	1.8*	1.4-2.3	1.2	1.0-1.5	1.1	0.9-1.5	1.0	0.8-1.2
Opioid use disorder	1.7*	1.2-2.4	1.6*	1.2-2.1	2.1*	1.5-3.0	0.9	0.7-1.3	1.3	0.9-1.8	1.3	1.0-1.8
Other drug use disorders	1.3	0.9-1.8	1.8*	1.5-2.3	2.5*	1.9-3.2	1.4	1.0-1.9	1.9*	1.4-2.6	1.3	1.0-1.8
Mood disorders												
None	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.	1.0	Ref.
Persistent depressive disorder	4.2*	3.5-5.1	1.3*	1.1-1.5	3.6*	2.6-4.9	0.3*	0.2-0.4	0.9	0.6-1.2	2.8*	2.0-3.8
Bipolar I disorder	2.2*	1.5-3.3	1.7*	1.2-2.3	3.5*	2.4-4.9	0.7	0.5-1.1	1.6	1.0-2.4	2.1*	1.5-3.0
Panic disorder	1.4*	1.1-1.8	1.1	0.9-1.4	1.5	1.1-2.1	0.8	0.6-1.0	1.1	0.8-1.4	1.4	1.0-1.9

Contrast of Violence Categories

Sociodemographics and DSM-5 disorders	Self-directed vs. none		Other-directed vs. none		Combined vs. none		Other-directed vs. self-directed		Combined vs. self-directed		Combined vs. other-directed	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Agoraphobia	1.5	1.1-2.0	1.1	0.9-1.5	1.6	1.1-2.4	0.8	0.5-1.1	1.1	0.7-1.7	1.4	1.0-2.1
Specific phobia	1.0	0.8-1.4	1.0	0.8-1.2	1.0	0.8-1.3	1.0	0.7-1.3	0.9	0.7-1.3	1.0	0.8-1.3
Social phobia	1.4*	1.1-1.8	0.8	0.7-1.0	1.0	0.7-1.3	0.6*	0.4-0.8	0.7	0.5-0.9	1.1	0.8-1.6
Generalized anxiety disorder	1.4*	1.1-1.7	1.2*	1.1-1.4	1.3	1.0-1.7	0.9	0.7-1.1	0.9	0.7-1.2	1.0	0.8-1.4
Posttraumatic stress disorder	2.6*	2.1-3.2	2.0*	1.7-2.4	3.2*	2.6-4.1	0.8	0.6-1.0	1.2	1.0-1.5	1.6*	1.3-2.0
Schizotypal personality disorder	2.7*	2.2-3.4	2.7*	2.3-3.2	5.0*	4.0-6.2	1.0	0.8-1.2	1.8*	1.4-2.3	1.8*	1.5-2.3

* $p < 0.01$.

Note: All the covariates are significant ($p < 0.01$), except education ($p = 0.1136$), lifetime panic disorder ($p = 0.0171$), agoraphobia ($p = 0.0464$), specific phobia ($p = 0.9893$).