Trauma exposure and eating disorders: Results from a United States nationally representative sample

Alexandra D. Convertino MS1 | Leslie A. Morland PsyD1,2,3,4 | Aaron J. Blashill PhD1,5

Abstract

Objective: Sexual assault, child abuse, and combat have been linked to eating disorders (EDs). However, noninterpersonal trauma is relatively understudied, and therefore it is unknown whether noninterpersonal trauma is associated with EDs. Furthermore, most previous studies do not account for multiple trauma exposures, or the relative association of traumatic events with EDs in the same statistical model.

Method: Multinomial regression was used to examine the association of lifetime ED diagnosis (anorexia nervosa [AN], bulimia nervosa [BN], binge eating disorder [BED]) with trauma type (sexual interpersonal, other interpersonal, war/combat, and noninterpersonal) in a nationally representative dataset of US adults in bivariate and multivariable (i.e., with all trauma types) models.

Results: Sexual interpersonal trauma was significantly positively associated with AN and BED in bivariate and multivariable models. In the multivariable model, only BED was found to be equally associated with sexual interpersonal, other interpersonal, and noninterpersonal trauma.

Discussion: These results indicate a strong positive association between sexual trauma and EDs, even when controlling for experiences of other trauma events. Future research should examine longitudinal mediators between trauma and EDs, especially sexual trauma, to identify what factors may explain this relationship.

Public significance statement: Individuals with eating disorders often experience traumatic events but it is unclear whether specific trauma types are more or less common in this population. This study found that only events such as rape and sexual assault are associated with anorexia nervosa, but that most trauma types are associated with binge eating disorder. Therefore, the relationship between trauma and binge eating disorder may function differently than other eating disorders.

KEYWORDS
anorexia nervosa, binge-eating disorder, bulimia nervosa, feeding and eating disorders, psychological trauma, sexual trauma
1 | INTRODUCTION

Traumatic events have been linked to eating pathology, such that exposure to traumatic events has been associated with later eating disorder symptoms (Zelkowitz et al., 2021). Furthermore, exposure to traumatic events may have deleterious effects on severity of eating pathology and eating disorder treatment efficacy. Exposure to traumatic events has been associated with more severe disordered eating (Backholm et al., 2013; Scharff et al., 2021; Tagay et al., 2014) and premature termination from eating disorder treatment (Anderson et al., 1997; Carter et al., 2006; Rodríguez et al., 2005). Therefore, investigating the association of specific trauma events and eating pathology to determine potential mechanisms conferring this greater risk are of paramount importance.

While most research examining traumatic events in relation to eating pathology has focused on sexual assault (Madowitz et al., 2015), childhood abuse (e.g., Afifi et al., 2017; Forrest et al., 2021), and combat exposure (Jacobson et al., 2009), this leaves a range of traumatic experiences (e.g., life-threatening illness, car accident, general physical assault) uninvestigated. Previous research (e.g., Chung & Breslau, 2008; Huang et al., 2017; Thomas et al., 2021) has differentiated trauma events into two broad categories: interpersonal and noninterpersonal trauma. Interpersonal trauma can be defined as assault or abuse that are perpetrated by another person (e.g., sexual assault, physical abuse) as compared to noninterpersonal trauma that are adverse events that do not necessarily involve another person (e.g., accidents, disasters, illness; Forbes et al., 2012; Ford et al., 2011). These two broad trauma classifications have been supported by findings that interpersonal traumas lead to more adverse psychological outcomes as compared to noninterpersonal trauma (Charuvastra & Cloitre, 2008; Kessler et al., 2005; Kilpatrick et al., 2013). The current study will therefore examine both interpersonal and noninterpersonal traumas in their association with eating pathology.

Few previous studies examined the association between noninterpersonal trauma and eating pathology with contradictory results; some have found that only sexual assault was associated with eating pathology in multivariable models (e.g., Gomez et al., 2021) and some have found that other noninterpersonal events were associated with eating pathology in bivariate models (e.g., Lie et al., 2021; Meyer & Stanick, 2018). In addition, studies only rarely examine whether other interpersonal traumas (e.g., physical assault, stalking) were associated with eating pathology. Again, the results are largely mixed such that some find a positive association with disordered eating (e.g., Hazzard et al., 2019) and some do not (e.g., Arditte Hall et al., 2018; Lie et al., 2021; Quilliot et al., 2019). Therefore, the literature examining associations of nonsexual interpersonal and noninterpersonal trauma has found mixed results depending on methods.

In addition, most previous studies rely on the bivariate association between specific traumatic events and eating disorders. While this is informative, a history of multiple trauma events are common (Kilpatrick et al., 2013) and these studies do not examine whether specific trauma experiences are more likely to associated with eating disorders. For example, while combat exposure has been found to be associated with eating pathology (Arditte Hall et al., 2017, 2018), another study found that combat exposure was not associated with eating pathology when accounting for the association between military sexual trauma and eating pathology (Breland et al., 2018). This finding demonstrates the importance of examining trauma experiences in their association with eating disorders, when including other trauma events in the same model. If specific trauma events or classes of events are more likely to be associated with eating disorders, this highlights the importance of early intervention for such trauma events.

It is theoretically feasible that sexual assault alone would be associated with eating pathology. Previous research in childhood sexual assault has found a robust relationship with eating disorder diagnoses in both men and women (Afifi et al., 2017; Micali et al., 2017). Specific mechanisms have been proposed to explain this association include body dissatisfaction and shame (Madowitz et al., 2015). For example, body dissatisfaction has been found to mediate the association between childhood sexual assault and eating disorder symptoms (Preti et al., 2006). Given that victims of sexual assault frequently develop body dissatisfaction post-trauma (Kremer et al., 2013), individuals may seek to alleviate their negative body image by altering their body with disordered eating. Victims of sexual assault also routinely endorse feelings of shame after assault (Feiring & Taska, 2005; Negrao et al., 2005; Sable et al., 2006) and shame has been implicated in the onset of disordered eating (Blythin et al., 2020). These two proposed mechanisms may not occur solely following sexual-based trauma but may be more likely to occur in sexual trauma as compared to other trauma types. Interpersonal traumas such as physical assault can lead to body dissatisfaction (Kremer et al., 2013), but this effect has been less robustly found in the literature and more well-documented among individuals who experience residual injury after physical assault (Weaver & Resick, 2014). Therefore, sexual assault alone may be associated with eating pathology, but it is also possible that interpersonal traumas broadly may be associated with eating pathology through similar purported mechanisms. Therefore, in the current study, sexual interpersonal trauma was separated from other interpersonal trauma for analyses, both for comparison with previous studies (e.g., Breland et al., 2018; Gomez et al., 2021) and for the aforementioned theoretical reasons.

The primary aims of the current study were to: (1) assess the independent association of sexual interpersonal (both childhood and adult), other interpersonal (e.g., physical assault, stalking), war/combat (e.g., active military combat, relief worker), and noninterpersonal (e.g., natural disasters, serious injury/illness) traumas and eating disorder diagnoses and (2) assess the association of the aforementioned trauma types with eating disorder diagnoses when including all trauma types in a single model (i.e., accounting for exposure to other trauma types) to determine which trauma types are more likely to be associated with eating disorders. Based on prior research, we hypothesize that all trauma types will be associated with eating disorders in bivariate models, but only sexual interpersonal trauma will be associated with eating pathology in multivariable models.
2 | METHOD

2.1 | Design

The current study used a publicly available dataset from the National Epidemiologic Survey of Alcohol and Related Conditions-III (NESARC-III; National Institute on Alcohol Abuse and Alcoholism, 2019), a nationally representative sample of 36,309 US noninstitutionalized adults (Grant et al., 2014, 2016). The NESARC-III respondents were selected through multistage probability sampling. Primary, secondary, and tertiary sampling units were counties or groups of contiguous counties, groups of Census-defined blocks, and households, respectively. Black, Asian, and Hispanic household members were oversampled such that, within each household, two respondents were selected. The household response rate was 72%, and the person-level response rate was 84%, for an overall response rate of 60.1% (Grant et al., 2016). Data were adjusted for nonresponse and weighted to represent the civilian US population based on the 2012 American Community Survey.

2.2 | Measures

2.2.1 | Sociodemographic characteristics

Respondents provided sociodemographic information, including age, race/ethnicity, sex assigned at birth, census region, country of birth, sexual orientation, household income, and highest education level achieved. See Table 1 for sociodemographic characteristics by lifetime eating disorder diagnosis.

2.2.2 | Eating disorder diagnoses

Eating disorder diagnoses were given based on interviews conducted using the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5; Grant et al., 2011). Interviewers were 970 lay assessors with an average of 5 years of field experience with health-related and other surveys. Given that prior researchers have found errors in the coding of eating disorder diagnoses (Udo & Grilo, 2018), diagnoses were recorded based on the procedures established by Udo and Grilo (2018) for meeting DSM-5 criteria for anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED). Since this study examined lifetime diagnoses of an eating disorder, categorization for an eating disorder was based on previous studies (Udo & Grilo, 2018) and the well-established diagnostic “hierarchy” of AN > BN > BED (i.e., lifetime BN excludes those with lifetime AN, lifetime BED excludes those with lifetime AN/BN). Other Specified Feeding and Eating Disorder (OSFED) diagnoses were not examined because the relevant items for assessing these diagnoses were not administered per NESARC protocol (e.g., if participants were never low weight, they were not administered the other items for assessing AN symptoms).

2.2.3 | Trauma exposure

As part of the interview protocol, all participants were asked whether they had experienced 20 specific and potentially traumatizing events. In an effort to facilitate comparison of different types of traumatic events, the events were grouped into four theoretically derived categories ([1] sexual interpersonal; [2] other interpersonal; [3] noninterpersonal; and [4] war/combat).

2.3 | Analysis

Analyses were performed using IBM SPSS Version 28 and accounted for the sample design of the NESARC-III by using the complex sampling with the procedures with the Taylor series Linearization variance estimation method. Weighted frequencies and cross-tabulations were conducted for eating disorder diagnoses and trauma exposure. For all regression analyses, the reference group for each trauma exposure type was no exposure to that trauma type; therefore, trauma groupings are not mutually exclusive. Binary logistic regression was used to calculate if the odds of experiencing each type of trauma was higher in those diagnosed with any eating disorder, with no eating disorder diagnosis as the reference group. Multinomial logistic regression was used to calculate odds ratios, adjusting for the NESARC complex sampling design, to compare the risk of lifetime diagnosis for each type of eating disorder as a function of trauma type. The outcome was lifetime diagnosis of each type of eating disorder; no eating disorder diagnosis was the reference group. For bivariate multinomial model results, each trauma exposure type was entered as an independent variable in four different multinomial logistic regression models. For multivariable multinomial model results, all trauma exposure types were entered as independent variables into the one multinomial logistic regression model. If more than one trauma type was significant in multivariable model, the strength of the association between the trauma type and eating disorder outcome was compared. Point estimates for the difference between parameters were calculated and then the delta method (Greene, 2012, pp. 1083–1084) was used to calculate the standard error of this difference. Z-score was calculated by dividing the point estimate by its standard error. Bonferroni corrections for multiple testing were applied by dividing .05 by the overall number (92) of comparisons. The level of significance was set at .00054. Effect sizes are discussed using Funder and Ozer (Funder & Ozer, 2019)'s metrics of effect size for psychological research which are converted to odds ratios as follows: OR = 1.20 as very small, OR = 1.44 as small, OR = 2.10 as medium, OR = 3.13 as large, and OR = 4.87 as very large.

Potential demographic covariates were reviewed for inclusion based on guidance from prior research, such that confounding variables (i.e., variables that may connote a common cause for both the independent variable and outcome) were controlled for, but collider variables (i.e., variables that are caused by both the independent variable and outcome) and mediator variables were not (see Rohrer, 2018 for further explanation). Sex assigned at birth was included as a
covariate, given that men report greater trauma exposure as compared to women (Frans et al., 2005) and women are more often diagnosed with eating disorders than men (Hudson et al., 2007; Udo & Grilo, 2018). Sexual orientation was also included as a covariate as sexual minority individuals are more likely to experience trauma (Roberts et al., 2010) and eating pathology (Calzo et al., 2017; Kamody et al., 2020) as compared to their heterosexual counterparts. Age was included as a covariate because older individuals are more likely to be diagnosed with BED (Mangweth-Matzek & Hoek, 2017) and are more likely to accumulate traumatic experiences as they age (Ogle

### TABLE 1  Lifetime prevalence of DSM-5 eating disorder diagnosis by sociodemographic characteristics

| Sociodemographic characteristic | AN | | BN | | BED | | Any ED | | No ED diagnosis |
|----------------------------------|----|---|----|---|----|---|----|---|----------------|
| n | % (SE) | n | % (SE) | n | % (SE) | n | % (SE) | n | % (SE) |
| Age, M (SE) | 41.83 (0.96) | 39.05 (2.45) | 45.26 (1.21) | 42.82 (0.83) | 46.60 (0.19) |
| Total | 276 | 0.8 (0.1) | 77 | 0.2 (0.1) | 247 | 0.7 (0.1) | 600 | 1.7 (0.1) | 35,709 | 98.3 (0.1) |
| Sex | | | | | | | | | |
| Male | 23 | 7.5 (2.2) | 11 | 15.3 (4.9) | 62 | 28.1 (3.6) | 96 | 16.6 (1.9) | 15,766 | 48.6 (0.3) |
| Female | 253 | 92.5 (2.2) | 66 | 84.7 (4.9) | 185 | 71.9 (3.6) | 504 | 83.4 (1.9) | 19,943 | 51.4 (0.3) |
| Race or ethnicity | | | | | | | | | |
| Non-Hispanic White | 206 | 79.2 (2.8) | 42 | 68.4 (7.0) | 160 | 72.9 (3.5) | 408 | 75.3 (2) | 18,786 | 66 (0.8) |
| Non-Hispanic Black | 17 | 2.8 (0.7) | 12 | 10.3 (3.7) | 33 | 9.1 (2.2) | 62 | 6.2 (1.0) | 7704 | 11.9 (0.7) |
| Non-Hispanic American Indian/Alaska Native | 8 | 5.5 (2.3) | 2 | 2.1 (1.5) | 2 | 0.9 (0.7) | 12 | 3.3 (1.2) | 499 | 1.5 (0.1) |
| Non-Hispanic Asian/Native Hawaiian/ Other Pacific Islander | 9 | 4.1 (1.5) | 2 | 2.3 (1.7) | 9 | 3.9 (1.8) | 20 | 3.8 (1.1) | 1781 | 5.8 (0.5) |
| Hispanic | 36 | 8.5 (1.5) | 19 | 16.8 (5.3) | 43 | 13.2 (2.9) | 98 | 11.4 (1.5) | 6939 | 14.8 (0.7) |
| Born in the United States | | | | | | | | | |
| Yes | 247 | 91.1 (1.9) | 71 | 94.3 (2.8) | 220 | 89.4 (2.1) | 538 | 90.9 (1.2) | 29,358 | 83.9 (0.5) |
| No* | 29 | 8.9 (1.9) | 6 | 5.7 (2.8) | 27 | 10.6 (2.1) | 62 | 9.1 (1.2) | 6342 | 16.1 (0.5) |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 (0.0) |
| Census Region | | | | | | | | | |
| Northeast | 39 | 17.1 (3.3) | 11 | 18.4 (7.0) | 22 | 14.3 (2.7) | 72 | 16.2 (2.2) | 5108 | 18.3 (0.5) |
| Midwest | 57 | 22.4 (3.4) | 15 | 18.3 (4.9) | 63 | 24.9 (3.3) | 135 | 22.9 (2.3) | 7431 | 21.5 (0.4) |
| South | 88 | 30.5 (4.1) | 20 | 67.5 (5.4) | 84 | 16.8 (3.5) | 192 | 39.9 (2.4) | 14,340 | 37.2 (0.9) |
| West | 92 | 30 (4.1) | 31 | 36.6 (6.0) | 78 | 28.7 (3.5) | 201 | 30.4 (2.5) | 8830 | 23.1 (0.9) |
| Sexual Identity | | | | | | | | | |
| Heterosexual or straight | 256 | 92.8 (2.0) | 66 | 87.3 (4.2) | 231 | 94.3 (1.6) | 553 | 92.7 (1.3) | 34,091 | 96 (0.2) |
| Gay or lesbian | 5 | 1.5 (0.8) | 2 | 2.5 (1.5) | 7 | 3.1 (1.3) | 14 | 2.3 (0.7) | 572 | 1.4 (0.1) |
| Bisexual | 10 | 4 (1.4) | 5 | 3.9 (2.7) | 5 | 1.4 (0.7) | 20 | 3.2 (0.9) | 546 | 1.3 (0.1) |
| Not sure | 4 | 1.6 (1.1) | 3 | 3.2 (1.7) | 4 | 1.2 (0.7) | 11 | 1.6 (0.7) | 188 | 0.5 (0.0) |
| Unknown | 1 | 0.2 (0.2) | 1 | 0.7 (0.7) | 0 | 0 | 2 | 0.2 (0.1) | 312 | 0.8 (0.1) |
| Education Level | | | | | | | | | |
| Less than high school | 22 | 7.7 (1.5) | 13 | 11.7 (3.9) | 32 | 12.3 (2.3) | 67 | 10 (1.2) | 5423 | 13.1 (0.4) |
| High school or GED | 48 | 15.4 (2.4) | 16 | 20.5 (6.8) | 53 | 23.2 (3.4) | 117 | 19.1 (1.9) | 9682 | 25.9 (0.5) |
| Some college or higher | 206 | 76.9 (2.9) | 48 | 67.8 (7.2) | 162 | 64.5 (3.9) | 416 | 70.9 (2.1) | 20,604 | 61 (0.8) |
| Household income level | | | | | | | | | |
| <$25,000 | 75 | 19.5 (2.5) | 26 | 26.3 (5.8) | 92 | 28.6 (2.8) | 193 | 23.9 (1.8) | 12,627 | 27.4 (0.6) |
| $25,000–39,999 | 47 | 14.1 (2.5) | 21 | 21.6 (4.8) | 44 | 17.4 (2.5) | 112 | 16.3 (1.8) | 6736 | 17.1 (0.3) |
| $40,000–69,999 | 59 | 25.3 (3.0) | 12 | 13.3 (4.2) | 57 | 21.5 (2.9) | 128 | 22.3 (2.1) | 7742 | 22.8 (0.3) |
| ≥$70,000 | 95 | 41.1 (3.8) | 18 | 38.8 (8.0) | 54 | 32.6 (4.2) | 167 | 37.5 (2.8) | 8604 | 23.7 (0.6) |

Note: All analyses adjusted for complex survey design of the National Epidemiologic Survey of Alcohol and Related Conditions-III study. Abbreviations: AN, anorexia nervosa; BN, bulimia nervosa; BED, binge eating disorder; ED, eating disorder; M, mean; SE, standard error. *In the eating disorder group, the most common other country of birth was Mexico (n = 21). Forty-one participants identified other countries of birth; no one birth country was represented by more than five participants.
| Traumatic event                                                      | AN (n = 276)    | BN (n = 77)     | BED (n = 247)   | Any ED (n = 600) | No ED diagnosis (n = 35,709) | ED vs. no ED diagnosis<sup>a</sup> |
|---------------------------------------------------------------------|-----------------|-----------------|-----------------|------------------|-------------------------------|----------------------------------|
|                                                                    | n (%) (SE)      | n (%) (SE)      | n (%) (SE)      | n (%) (SE)       | n (%) (SE)                     | AOR 95% CI                        |
| Any war-related trauma                                              | 8 (2.0 (0.8))   | 3 (2.2 (1.5))   | 2 (1.4 (1.2))   | 13 (1.8 (0.6))   | 1272 (3.9 (0.2))              | 0.45 (0.22; 0.94)                 |
| Active military combat                                               | 3 (1.0 (0.6))   | 0 (0)           | 1 (1.1 (1.1))   | 4 (0.9 (0.5))    | 856 (2.7 (0.1))               | 0.33 (0.10; 1.07)                 |
| Peacekeeper/relief worker                                            | 1 (0.1 (0.1))   | 0 (0)           | 0 (0)           | 1 (0.0 (0.0))    | 158 (0.4 (0.0))               | 0.09 (0.01; 0.72)                 |
| Civilian in war zone/place of terror                                | 4 (1.1 (0.6))   | 3 (2.2 (1.5))   | 0 (0)           | 7 (0.8 (0.3))    | 194 (0.6 (0.0))               | 1.38 (0.61; 3.15)                 |
| Refugee                                                             | 2 (0.5 (0.3))   | 1 (0.4 (0.4))   | 0 (0)           | 3 (0.3 (0.2))    | 112 (0.4 (0.0))               | 0.77 (0.22; 2.65)                 |
| Prisoner of war                                                     | 0 (0)           | 0 (0)           | 1 (0.3 (0.3))   | 1 (0.1 (0.1))    | 54 (0.2 (0.0))                | 0.68 (0.90; 5.04)                 |
| Any sexual interpersonal trauma                                      | 85 (34.0 (3.0)) | 25 (24.3 (5.8)) | 64 (27.2 (3.4)) | 174 (30.1 (2.0)) | 3378 (9.1 (0.2))              | 4.32 (3.58; 5.21)*                |
| Sexually abused before age 18                                       | 68 (26.7 (2.8)) | 19 (17.7 (4.6)) | 52 (22.6 (3.2)) | 139 (23.9 (1.8)) | 2817 (7.7 (0.2))              | 3.80 (3.11; 4.64)*                |
| Sexually assaulted as an adult                                      | 30 (11.2 (2.3)) | 10 (9.2 (3.4))  | 18 (6.4 (1.3))  | 58 (9.1 (1.2))   | 864 (2.1 (0.1))               | 4.59 (3.40; 6.19)*                |
| Any other nonsexual interpersonal trauma                             | 99 (34.2 (3.5)) | 29 (35.6 (6.8)) | 94 (37.8 (3.4)) | 222 (35.8 (2.4)) | 6627 (17.7 (0.3))             | 2.60 (2.12; 3.20)*                |
| Physically abused before age 18                                      | 22 (6.5 (1.4))  | 9 (15.2 (6.4))  | 29 (13.9 (3.0)) | 60 (10.5 (1.6))  | 1258 (3.6 (0.1))              | 3.17 (2.27; 4.43)*                |
| Beaten up by spouse/romantic partner                                 | 50 (18.2 (2.8)) | 14 (14.3 (4.1)) | 34 (10.7 (1.8)) | 98 (14.8 (1.6))  | 2337 (5.6 (0.2))              | 2.92 (2.23; 3.82)*                |
| Beaten up by someone else                                           | 19 (6.1 (1.8))  | 7 (14.0 (6.5))  | 13 (6.4 (1.9))  | 39 (7.2 (1.5))   | 1523 (4.2 (0.1))              | 1.76 (1.14; 2.70)                 |
| Kidnapped/held hostage                                               | 5 (2.3 (1.3))   | 3 (2.4 (1.5))   | 6 (2.1 (0.8))   | 14 (2.2 (0.7))   | 252 (0.6 (0.0))               | 3.78 (1.96; 7.31)*                |
| Stalked                                                             | 20 (6.6 (1.6))  | 4 (3.8 (2.1))   | 17 (6.5 (1.8))  | 41 (6.2 (1.1))   | 983 (2.4 (0.1))               | 2.67 (1.81; 3.94)*                |
| Mugged, held up, threatened with a weapon or assaulted in any other way | 21 (6.7 (2.0))  | 3 (2.3 (1.5))   | 21 (9.1 (1.8))  | 45 (7.1 (1.3))   | 2007 (5.4 (0.2))              | 1.34 (0.90; 1.98)                 |
| Any noninterpersonal trauma                                          | 195 (71.2 (3.1)) | 55 (66.9 (7.1)) | 200 (82.8 (2.8)) | 450 (75.2 (2.1)) | 21,097 (62.2 (0.7))          | 1.85 (1.47; 2.31)*                |
| Serious or life-threatening injury                                   | 33 (10.8 (1.8)) | 7 (7.4 (3.4))   | 40 (16.2 (2.9)) | 80 (12.5 (1.5))  | 3806 (11.2 (0.3))             | 1.13 (0.86; 1.48)                 |
| Serious or life-threatening illness                                  | 44 (16.1 (2.7)) | 13 (19.4 (5.4)) | 44 (17.2 (2.7)) | 101 (16.9 (1.7)) | 4260 (13.1 (0.3))             | 1.35 (1.05; 1.74)                 |
| Saw a dead body or body parts                                       | 56 (24.4 (3.4)) | 11 (11.7 (4.0)) | 71 (28.8 (3.4)) | 138 (24.5 (2.1)) | 6253 (18.5 (0.4))             | 1.42 (1.13; 1.79)                 |
| Injured in a terrorist attack                                       | 0 (0)           | 0 (0)           | 2 (1.8 (1.3))   | 2 (0.7 (0.5))    | 158 (0.4 (0.0))               | 1.57 (0.36; 6.87)                 |
| Natural disaster, like flood, fire, earthquake, hurricane            | 35 (13.1 (2.9)) | 8 (9.1 (3.6))   | 20 (7.9 (1.9))  | 63 (10.5 (1.6))  | 3170 (9.6 (0.5))              | 1.11 (0.79; 1.56)                 |
| Juvenile detention or jail                                          | 9 (3.3 (1.1))   | 5 (4.1 (2.1))   | 15 (6.4 (1.9))  | 29 (4.6 (1.1))   | 1196 (3.1 (0.1))              | 1.50 (0.92; 2.42)                 |
| Number of trauma events                                             | 86 (28.8 (2.5)) | 26 (35.2 (6.0)) | 63 (26.2 (3.3)) | 175 (28.6 (1.7)) | 18,449 (50.5 (0.6))           |                                 |
| 0                                                                   | 74 (28.1 (3.6)) | 16 (25.4 (6.9)) | 71 (27.6 (3.7)) | 161 (27.6 (2.4)) | 8572 (24.5 (0.3))             |                                 |
| 1                                                                   | 44 (17.4 (2.7)) | 15 (21.5 (7.3)) | 54 (21.4 (2.9)) | 113 (19.5 (1.9)) | 4338 (12.8 (0.3))             |                                 |
| 2                                                                   | 28 (11.3 (2.6)) | 9 (6.8 (2.7))   | 31 (12.2 (2.2)) | 68 (11.1 (1.6))  | 2390 (6.7 (0.2))              |                                 |
| 3                                                                   | 44 (14.4 (2.4)) | 11 (11.1 (3.3)) | 28 (12.6 (2.7)) | 83 (13.1 (1.6))  | 1960 (5.4 (0.2))              |                                 |
| 4+<sup>b</sup>                                                      | 86 (28.8 (2.5)) | 26 (35.2 (6.0)) | 63 (26.2 (3.3)) | 175 (28.6 (1.7)) | 18,449 (50.5 (0.6))           |                                 |

(Continues)
et al., 2013). Sex, sexual orientation, and age are included as covariates in bivariate and multivariate models.

3 | RESULTS

3.1 | Prevalence of trauma events by eating disorder diagnosis

In the current sample, 43.8% of individuals diagnosed with an eating disorder and 24.9% of individuals without an eating disorder diagnosis reported more than one traumatic event. In terms of trauma exposure types, 35.8% of individuals diagnosed with an eating disorder and 16.7% of individuals without an eating disorder diagnosis reported trauma of more than one type. The most common type of trauma was noninterpersonal. Approximately 71% of individuals diagnosed with AN, 67% of individuals diagnosed with BN, and 75% of individuals diagnosed with BED had experienced a noninterpersonal trauma. The least common trauma type was war-related. Approximately 2% of individuals diagnosed with AN, 2.2% of individuals diagnosed with BN, and 1.4% of individuals diagnosed with BED had experienced war-related trauma. See Table 2 for full prevalence of traumatic events by eating disorder diagnosis.

3.2 | Association of trauma with eating disorder diagnoses

3.2.1 | Bivariate results

When examining the bivariate association between trauma classes and eating disorder diagnoses, war-related trauma was not significantly associated with lifetime diagnosis of AN (OR = 1.00, p = .999), BN (OR = 0.98, p = .977), or BED (OR = 0.48, p = .378). Sexual interpersonal trauma was significantly associated with higher odds of lifetime diagnosis of AN (OR = 3.23, p < .001) and BED (OR = 3.04, p < .001), but not BN (OR = 1.97, p = .032). Other nonsexual interpersonal trauma was significantly associated with higher odds of lifetime diagnosis of AN (OR = 2.11, p < .001) and BED (OR = 2.66, p < .001), but not BN (OR = 2.20, p = .008). Noninterpersonal trauma was associated with higher odds of lifetime diagnosis of AN (OR = 1.78, p = .001) and BED (OR = 2.05, p < .001), but not BN (OR = 1.23, p = .450). See Table 3 for full results.

3.2.2 | Multivariable results

When including all trauma classes in a single model, sexual interpersonal (OR = 2.64, p < .001) was significantly associated with higher odds of AN lifetime diagnosis, but war-related (OR = 0.80, p = .618), nonsexual interpersonal (OR = 1.45, p = .039), and noninterpersonal (OR = 1.49, p = .018) traumas were not. Lifetime BN diagnosis was not associated with any trauma class, including war-related

### Table 2 (Continued)

| Traumatic event | AN \( n = 276 \) (n = 35,709) | BN \( n = 77 \) (n = 86) | BED \( n = 247 \) (n = 600) | Any ED \( n = 600 \) (n = 35,709) | No ED diagnosis \( n = 35,709 \) |
|-----------------|---------------------------|-----------------|-----------------|-----------------|--------------------------|
| Number of trauma event types | n | % (SE) | n | % (SE) | n | % (SE) | n | % (SE) | n | % (SE) |
| 0 | 86 | 28.8 (6.0) | 26 | 1.8 (1.3) | 26 | 1.1 (1.4) | 175 | 28.6 (1.7) | 18,449 | 50.5 (0.6) |
| 1 | 93 | 35.2 (6.1) | 26 | 3.2 (1.3) | 26 | 3.6 (1.9) | 175 | 28.6 (1.7) | 18,449 | 50.5 (0.6) |
| 2 | 66 | 25.3 (6.6) | 22 | 2.7 (1.0) | 22 | 2.0 (1.0) | 175 | 28.6 (1.7) | 18,449 | 50.5 (0.6) |
| 3 | 30 | 10.4 (2.3) | 17 | 2.1 (1.1) | 17 | 2.3 (1.2) | 175 | 28.6 (1.7) | 18,449 | 50.5 (0.6) |
| 4 | 1 | 0.3 (0.3) | 0 | 0 | 0 | 0 | 1 | 0.1 (0.1) | 37 | 0.1 (0.0) |

Note: All analyses adjusted for complex survey design of the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) study. Abbreviations: AN, anorexia nervosa; BN, bulimia nervosa; BED, binge eating disorder; ED, eating disorder; M, mean; SE, standard error.

*Odd ratios are the odds of experiencing the specific trauma event for individuals with an eating disorder as compared to individuals without an eating disorder. Reference group for the specific trauma event is no exposure to that specific trauma event.

**In the NESARC study design, only four potentially traumatic events are inquired about. Therefore, individuals that may have had four or more trauma events are classified into a single group.

p < .001; significant finding following Bonferroni correction.
TABLE 3  Lifetime exposure to potentially traumatizing event by eating disorder

| Traumatic event                        | Bivariate adjusted odds ratios (95% CI) | Multivariable adjusted odds ratios (95% CI) |
|----------------------------------------|----------------------------------------|--------------------------------------------|
|                                        | AN         | BN          | BED          | AN         | BN          | BED          |
| Any war-related trauma                 | 1.00 (0.42, 2.37) | 0.98 (0.24, 3.95) | 0.48 (0.09, 2.52) | 0.80 (0.34, 1.92) | 0.86 (0.21, 3.46) | 0.38 (0.07, 1.98) |
| Any sexual interpersonal trauma        | 3.23 (2.44, 4.27)* | 1.97 (1.06, 3.66) | 3.04 (2.13, 4.34)* | 2.67 (1.95, 3.64)* | 1.55 (0.75, 3.21) | 2.22 (1.54, 3.22)*<sup>a,b</sup> |
| Any other nonsexual interpersonal trauma | 2.11 (1.55, 2.85)* | 2.20 (1.23, 3.94) | 2.67 (2.00, 3.55)* | 1.45 (1.02, 2.06) | 1.95 (0.97, 3.94) | 1.96 (1.46, 2.62)*<sup>a,c</sup> |
| Any noninterpersonal trauma            | 1.78 (1.31, 2.42)* | 1.23 (0.72, 2.12) | 2.05 (1.56, 2.70)* | 1.49 (1.07, 2.07) | 1.04 (0.56, 1.91) | 1.72 (1.30, 2.26)*<sup>b,c</sup> |

Note: All analyses control for age, sexual identity, and sex assigned at birth, as well as the complex survey design of the National Epidemiologic Survey of Alcohol and Related Conditions-III study. Effect sizes are interpreting using Funder and Ozer (Funder & Ozer, 2019)'s metrics of effect size for psychological research which are converted to odds ratios as follows: OR = 1.20 as very small, OR = 1.44 as small, OR = 2.10 as medium, OR = 3.13 as large, and OR = 4.87 as very large. CI, confidence interval; AN, anorexia nervosa; BN, bulimia nervosa; BED, binge eating disorder.

*For individuals with binge eating disorder, there is no significant difference between the odds of experiencing sexual interpersonal trauma and the odds of experiencing nonsexual interpersonal trauma (z = −0.50, p = .618).

*For individuals with binge eating disorder, there is no significant difference between the odds of experiencing sexual interpersonal trauma and the odds of experiencing noninterpersonal trauma (z = −1.05, p = .296).

*For individuals with binge eating disorder, there is no significant difference between the odds of experiencing nonsexual interpersonal trauma and the odds of experiencing noninterpersonal trauma (z = 0.63, p = .531).

p < .001; significant finding following Bonferroni correction.

(O.R = 0.86, p = .831), sexual interpersonal (O.R = 1.55, p = .230), nonsexual interpersonal trauma (O.R = 1.95, p = .062), and noninterpersonal trauma (O.R = 1.04, p = .903). Finally, war-related trauma was not associated with lifetime diagnosis of BED (O.R = 0.38, p = .246), but sexual interpersonal (O.R = 2.22, p < .001), nonsexual interpersonal (O.R = 1.96, p < .001), and noninterpersonal trauma were (O.R = 1.72, p < .001). For BED, the difference in odds ratios was compared, given that more than one trauma type was significant. The difference in odds ratios between sexual interpersonal trauma and nonsexual interpersonal trauma (z = 1.53, p = .125), sexual interpersonal trauma and noninterpersonal trauma (z = 1.22, p = .223), and nonsexual interpersonal trauma and noninterpersonal trauma (z = 0.23, p = .821) was not significant. See Table 3 for full results.

4  DISCUSSION

The primary aims of the current study were to: (1) assess the bivariate association of four classes of trauma exposure and eating disorder diagnoses and (2) assess the association of these trauma classes with eating disorder diagnoses to account for multiple trauma type exposures. Results indicated that war-related trauma was not associated with any eating disorder diagnosis. Noninterpersonal trauma was associated with diagnosis of AN and BED in bivariate models with a small effect size, but only BED with a small effect size when controlling for other trauma types. Nonsexual interpersonal trauma was associated with diagnosis of AN and BED in bivariate models with a medium effect size, but only BED with a small effect size when controlling for other trauma types. Finally, sexual interpersonal trauma was associated with AN and BED with a large and medium effect size respectively in bivariate models, but not BN. In multivariate models AN and BED were associated with sexual interpersonal trauma with a medium effect size, but BN was not.

In line with most research (Breland et al., 2018; Gomez et al., 2021; Madowitz et al., 2015), sexual trauma was found have a medium association with eating pathology (controlling for sex, sexual identity, and age), both in bivariate models and within the context of other trauma exposure for AN and BED, though not with BN. Given that prior meta-analyses have found that the association between childhood sexual assault is less robust for AN as compared to BN and BED (Solmi et al., 2021), this finding provides further support that sexual assault is associated with AN diagnosis, but also contradicts previous findings that binge and/or purge-spectrum behaviors may be more likely associated with eating pathology (Caslini et al., 2016; Molendijk et al., 2017). However, the current study had a relatively small sample size of individuals with BN. Further, given our hierarchical classification of eating disorders, the AN category may have included individuals that were also diagnosed with BN or BED at some point during their life. Therefore, the current null findings should be considered tentative. Regarding sexual trauma, Madowitz et al. (2015) hypothesized two potential etiological pathways that may explain the association between sexual assault and eating disorders: (1) body perceptions, including potential mediators such as body dissatisfaction (Preti et al., 2006) and sexual dysfunction (Castellini et al., 2013); and (2) management of psychological difficulties, including potential mediators such as emotion regulation (Burns et al., 2012) and impulsivity (Dworkin et al., 2014). Another potential mediator that might explain this relationship is PTSD as sexual trauma survivors are at higher conditional risk of developing PTSD as compared to other trauma survivors (Hetzel-Riggin & Roby, 2013) and previous studies have found that posttraumatic stress is a significant mediator in the relationship between sexual trauma and eating disorder symptoms.
cross-sectionally (Holzer et al., 2008). Future research should examine the association between sexual trauma and eating disorders longitudinally to test the theorized mediation paths.

War-related trauma was not associated with any eating disorder diagnosis, both in bivariate models and accounting for other trauma types. However, caution is warranted in interpreting the current findings due to potential concerns about statistical power given the low unweighted sample size of individuals who both had an eating disorder and war-related trauma. It may be that individuals with eating disorders are less likely to experience war-related trauma, or the NESARC-III dataset may not fully capture the war-related experiences of the general population. Prior research examining eating pathology in veteran populations found that combat trauma was significant when accounting for experiences of sexual assault in men (Arditte Hall et al., 2017) but not in women (Breland et al., 2018). Therefore, future research may seek to replicate the findings of Arditte Hall et al. (2017) and Breland et al. (2018) in a sample with greater exposure to war-related trauma as well as examining perhaps a moderating role of gender.

In the current study, noninterpersonal trauma was found to be associated with diagnosis of AN and BED with a small effect size, controlling for covariates, in bivariate models but was only associated with BED with a small effect size when accounting for other trauma exposures. This contradicts prior work that finds no significant association between noninterpersonal trauma and eating pathology (Gomez et al., 2021). Of note, the Gomez et al. (2021) study examined the association of noninterpersonal trauma (i.e., wreck, crash, accident; serious body-related accident; and life-threatening illness or injury) with an overall measure of eating pathology (Eating Disorder Diagnostic Scale; Stice et al., 2004), accounting for combat exposure and sexual trauma. Given the use of an overall eating pathology measure, diagnosis-specific differences such as those observed in the current study may have been obscured. Indeed, a recent study by Lie et al. (2021) found a significant association between experiences of a life-threatening illness or disease and lifetime diagnosis of AN binge/purge subtype as well as mixed eating disorder history (i.e., a history of AN and BN and/or BED diagnosis). However, Lie et al. (2021) did not account for the experience of multiple trauma types; therefore, it is unknown whether this association would have remained significant after accounting for other trauma types such as sexual assault.

Interestingly, sexual interpersonal, nonssexual interpersonal, and noninterpersonal trauma were associated with BED diagnosis in bivariate models and multivariable models, and with relatively equal association strength (small to medium). This finding is similar to previous studies that have found that any potentially traumatic event is associated with BED (Brewerton, 2007; Brewerton et al., 2014). This may indicate that the etiology of trauma in BED functions differently than AN and BN. A potential mechanism of interest in conferring this association may be overvaluation of shape and weight, which is required for AN or BN diagnosis but not BED (American Psychiatric Association, 2013). However, prior research has suggested that overvaluation of shape and weight is similar between BED and BN patients (Ahrberg et al., 2011). Future research should examine the association between trauma and BED longitudinally to identify potential mechanisms of interest to explain the observed differences by diagnosis.

There are some important limitations of the current study to note. Given that this study was cross-sectional, no causal conclusions about the association between various trauma types and eating disorder onset can be made. Future research is needed to investigate the prospective association between trauma events and eating disorders, particularly to identify important mediators between trauma and eating pathology. In addition, results regarding war-related trauma should be considered tentative due to the potential low power afforded by the small, unweighted sample size of individuals with both an eating disorder and war-related trauma. Future research should consider replicating the current study with a larger sample size at the cross-section of eating disorders and war-related trauma exposure. Another limitation of note is the potential for underreporting of trauma events. Due to the sensitive nature of trauma, individuals in the current study may not have felt comfortable disclosing said trauma (Andresen & Blais, 2019). Alternatively, research has found that trauma memories are subject to significant recall bias (Hirst et al., 2015) which may also lead to underreporting. Therefore, trauma in the current study may be a lower estimate of actual exposure. A further potential limitation is that the current study was not able to separate exposure to trauma as a child as compared to adult exposure. A robust literature has found a strong relationship between childhood trauma and eating pathology (Caslini et al., 2016; Molendijk et al., 2017; Pignatelli et al., 2017). Prior research has found differences in eating pathology based on timing of trauma exposure (Vidaña et al., 2020) as well as the effect of cumulative trauma over time (Molendijk et al., 2017); therefore, future research should consider disentangling these associations by eating disorder diagnosis. Finally, the sample size for AN and BED were much larger than that of BN. This may have led our analyses to be underpowered to detect effects in the BN group, as compared to the AN and BED groups; therefore, the null results in BN should be considered with caution. Despite these limitations, we consider the current study to be an important addition to the existing literature.

The current study demonstrates a meaningful extension of prior work in multiple ways. First, this study examines similar questions of interest to Breland et al. (2018), Gomez et al. (2021), and Lie et al. (2021) but employs a nationally representative sample of US adults, as compared to samples of predominantly White female veterans, food insecure individuals, and Swedish nationals respectively. Second, the current study builds upon Lie et al. (2021) by including comparisons of trauma exposure in a single model, which is important for determining whether specific types of trauma are more likely to be associated with eating disorders.

The present study has implications for clinical work in the field of eating disorders. Individuals with eating disorders are more likely to have experienced traumatic events that the general population. Therefore, clinicians that work with eating disorders should consider incorporating trauma assessment into their intake evaluations to ascertain an accurate clinical picture and determine whether trauma-
informed care is needed. Given that trauma has been found to predict premature treatment termination (Anderson et al., 1997; Carter et al., 2006; Rodríguez et al., 2005), clinicians should be aware of this possibility and work to adapt treatment to these patients’ needs. Conversely, given the higher rate of trauma exposure in eating disorder populations, these individuals may also present to trauma clinics. Clinicians that work in the field of PTSD and trauma should consider assessing for eating pathology.

AUTHOR CONTRIBUTIONS
Alexandra D Convertino: Conceptualization; data curation; formal analysis; methodology; visualization; writing – original draft; writing – review and editing. Leslie Morland: Conceptualization; methodology; writing – review and editing. Aaron J Blashill: Conceptualization; methodology; resources; supervision; writing – review and editing.

ACKNOWLEDGMENTS
This article was prepared using a limited access dataset obtained from the NIAAA. This article has not been reviewed or endorsed by NIAAA and does not necessarily represent the opinions of NIAAA, who is not responsible for the contents. This material is based upon work supported by the National Science Foundation Graduate Research Fellowship under Grant No. 1842470. Any opinion, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

CONFLICT OF INTEREST
The authors have no conflict to declare.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from National Institute on Alcohol Abuse and Alcoholism (NIAAA). Restrictions apply to the availability of these data, which were used under license for this study. Data are available at https://www.niaaa.nih.gov/research/nesarc-iii with the permission of the NIAAA.

ORCID
Alexandra D. Convertino https://orcid.org/0000-0003-0073-6053
Leslie A. Morland https://orcid.org/0000-0003-2032-6553
Aaron J. Blashill https://orcid.org/0000-0002-4727-3888

REFERENCES
Affifi, T. O., Sareen, J., Fortier, J., Taillieu, T., Turner, S., Cheung, K., & Henriksen, C. A. (2017). Child maltreatment and eating disorders among men and women in adulthood: Results from a nationally representative United States sample. International Journal of Eating Disorders, 50(11), 1281–1296. https://doi.org/10.1002/eat.22783
Ahrberg, M., Trojca, D., Nasrawi, N., & Vocks, S. (2011). Body image disturbance in binge eating disorder: A review: Body image disturbance. European Eating Disorders Review, 19(5), 375–381. https://doi.org/10.1002/erv.1100
American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders: DSM-5 (5th ed.). American Psychiatric Association.
Anderson, K. P., LaPorte, D. J., Brandt, H., & Crawford, S. (1997). Sexual abuse and bulimia: Response to inpatient treatment and preliminary outcome. Journal of Psychiatric Research, 31(6), 621–633. https://doi.org/10.1016/S0022-3956(97)00026-5
Andersen, F. J., & Blais, R. K. (2019). Higher self-stigma is related to lower likelihood of disclosing military sexual trauma during screening in female veterans. Psychological Trauma: Theory, Research, Practice, and Policy, 11(4), 372–378. https://doi.org/10.1037/trap0000406
Arditte Hall, K. A., Bartlett, B. A., Iverson, K. M., & Mitchell, K. S. (2017). Military-related trauma is associated with eating disorder symptoms in male veterans. International Journal of Eating Disorders, 50(11), 1328–1331. https://doi.org/10.1002/eat.22782
Arditte Hall, K. A., Bartlett, B. A., Iverson, K. M., & Mitchell, K. S. (2018). Eating disorder symptoms in female veterans: The role of childhood, adult, and military trauma exposure. Psychological Trauma: Theory, Research, Practice, and Policy, 10(3), 345–351. https://doi.org/10.1037/trap0000301
Backholm, K., Isomaa, R., & Birgégård, A. (2013). The prevalence and impact of trauma history in eating disorder patients. European Journal of Psychotraumatology, 4(1), 22482. https://doi.org/10.3402/ejt.v4i0.22482
Blythin, S. P. M., Nicholson, H. L., Macintyre, V. G., Dickson, J. M., Fox, J. R. E., & Taylor, P. J. (2020). Experiences of shame and guilt in anorexia and bulimia nervosa: A systematic review. Psychology and Psychotherapy: Theory, Research and Practice, 91(1), 134–159. https://doi.org/10.1111/papt.12198
Brelad, J. Y., Donalson, R., Li, Y., Hebenstreit, C. L., Goldstein, L. A., & Maguen, S. (2018). Military sexual trauma is associated with eating disorders, while combat exposure is not. Psychological Trauma: Theory, Research, Practice, and Policy, 10(3), 276–281. https://doi.org/10.1037/trap0000276
Brewerton, T. D. (2007). Eating disorders, trauma, and comorbidity: Focus on PTSD. Eating Disorders, 15(4), 285–304. https://doi.org/10.1080/1064026070145311
Brewerton, T. D., Rance, S. J., Dansky, B. S., O’Neil, P. M., & Kilpatrick, D. G. (2014). A comparison of women with child-adolescent versus adult onset binge eating: Results from the National Women’s study. International Journal of Eating Disorders, 47(7), 836–843. https://doi.org/10.1002/eat.22309
Burns, E. E., Fischer, S., Jackson, J. L., & Harding, H. G. (2012). Deficits in emotion regulation mediate the relationship between childhood abuse and later eating disorder symptoms. Child Abuse & Neglect, 36(3), 32–39. https://doi.org/10.1016/j.chiabu.2011.08.005
Calzo, J. P., Blashill, A. J., Brown, T. A., & Argenal, R. L. (2017). Eating disorders and disordered weight and shape control behaviors in sexual minority populations. Current Psychiatry Reports, 19(8), 49. https://doi.org/10.1007/s11920-017-0801-y
Carter, J. C., Bewell, C., Blackmore, E., & Woodside, D. B. (2006). The impact of childhood sexual abuse in anorexia nervosa. Child Abuse & Neglect, 30(3), 257–269. https://doi.org/10.1016/j.chiabu.2005.09.004
Caslini, M., Bartoli, F., Crocamo, C., Dakanalis, A., Clerici, M., & Carrà, G. (2016). Dissentaging the association between child abuse and eating disorders: A systematic review and meta-analysis. Psychosomatic Medicine, 78(1), 79–90. https://doi.org/10.1097/PSY.0000000000000233
Castellini, G., Lo Sauro, C., Lelli, L., Godini, L., Vignozzi, L., Rellini, A. H., Faravelli, M., Maggi, M., & Ricca, V. (2013). Childhood sexual abuse moderates the relationship between sexual functioning and eating disorder psychopathology in anorexia nervosa and bulimia nervosa: A 1-year follow-up study. The Journal of Sexual Medicine, 10(9), 2190–2200. https://doi.org/10.1111/jsm.12232
Charuvastra, A., & Clotire, M. (2008). Social bonds and posttraumatic stress disorder. Annual Review of Psychology, 59(1), 301–328. https://doi.org/10.1146/annurev.psych.58.110405.085650
Hetzel-Riggin, M. D., & Roby, R. P. (2013). Trauma type and gender effects on PTSD, general distress, and Peritraumatic dissociation. *Journal of Loss and Trauma*, 18(1), 41–53. https://doi.org/10.1080/15325024.2012.679119

Hirst, W., Phelps, E. A., Meksins, R., Vайдыа, C. J., Johnson, M. K., Mitchell, K. J., Buckner, R. L., Budson, A. E., Gabrieli, J. D. E., Lustig, C., Mather, M., Ochsner, K. N., Schacter, D., Simons, J. S., Lyle, K. B., Cuc, A. F., & Olsson, A. (2015). A ten-year follow-up of a study of memory for the attack of September 11, 2001: Flashbulb memories and memories for flashbulb events. *Journal of Experimental Psychology: General*, 144(3), 604–623. https://doi.org/10.1037/xge0000055

Holzer, S. R., Uppala, S., Wonderlich, S. A., Crosby, R. D., & Simichon, H. (2008). Mediational significance of PTSD in the relationship of sexual trauma and eating disorders. *Child Abuse & Neglect*, 32(5), 561–566. https://doi.org/10.1016/j.chiabu.2007.07.011

Huang, Y.-L., Chen, S.-H., Su, Y.-J., & Kung, Y.-W. (2017). Attachment dimensions and post-traumatic symptoms following interpersonal traumas versus impersonal traumas in young adults in Taiwan: Attachment and PTSD in interpersonal trauma. *Stress and Health*, 33(3), 233–243. https://doi.org/10.1002/smi.2702

Hudson, J. I., Hiripi, E., Pope, H. G., & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biological Psychiatry*, 61(3), 348–358. https://doi.org/10.1016/j.biopsych.2006.03.040

Jacobson, I. G., Smith, T. C., Smith, B., Keel, P. K., Amoroso, P. J., Wells, T. S., Bathalon, G. P., Boyko, E. J., Ryan, M. A. K., & for the Millennium Cohort Study Team. (2009). Disordered eating and weight changes after deployment: Longitudinal assessment of a large US military cohort. *American Journal of Epidemiology*, 169(4), 415–427. https://doi.org/10.1093/aje/kwn366

Kamody, R. C., Grilo, C. M., & Udo, T. (2020). Disparities in DSM-5 defined eating disorders by sexual orientation among U.S. adults. *International Journal of Eating Disorders*, 53(2), 278–287. https://doi.org/10.1002/eat.23193

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(6), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Kilpatrick, D. G., Resnick, H. S., Milanak, M. E., Miller, M. W., Keyes, K. M., & Friedman, M. J. (2013). National Estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *Journal of Traumatic Stress*, 26(3), 537–547. https://doi.org/10.1002/jts.21848

Kremer, I., Orbach, I., & Rosenbloom, T. (2012). Body image among victims of sexual and physical abuse. *Violence and Victims*, 28(2), 259–273. https://doi.org/10.1891/0886-6708.VV-D-12-00015

Lie, S. Ø., Bulik, C. M., Andreassen, O. A., Re, O., & Bang, L. (2021). Stressful life events among individuals with a history of eating disorders: A case-control comparison. *BMC Psychiatry*, 21(1), 501. https://doi.org/10.1186/s12888-021-03499-2

Madowitz, J., Matheson, B. E., & Liang, J. (2015). The relationship between eating disorders and sexual trauma. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, 20(3), 281–293. https://doi.org/10.1007/s00519-015-0195-y

Mangweth-Matzek, B., & Hoek, H. W. (2017). Epidemiology and treatment of eating disorders in men and women of middle and older age. Current Opinion in Psychiatry, 30(6), 446–451. https://doi.org/10.1097/YCO.0000000000000356

Meyer, L. K., & Stanick, C. F. (2018). College Students' relationship between trauma and disordered eating. *Journal of College Student Psychotherapy*, 32(3), 242–250. https://doi.org/10.1080/08866708.2017.1396517

Miceli, N., Martini, M. G., Thomas, J. J., Eddy, K. T., Kothari, R., Russell, E., Bulik, C. M., & Treasure, J. (2017). Lifetime and 12-month prevalence of eating disorders amongst women in mid-life: A population-based study of diagnoses and risk factors. *BMJ Medicine*, 15(1), 12. https://doi.org/10.1186/s12916-016-0766-4

Molendijk, M. L., Hoek, H. W., Brewerton, T. D., & Elzinga, B. M. (2017). Childhood maltreatment and eating disorder pathology: A systematic review schedule-diagnostic and statistical manual of mental disorders, fifth edition version (AUDADIS-5). National Institute on Alcohol Abuse and Alcoholism.

Grant, B. F., Saha, T. D., Ruan, W. J., Goldstein, R. B., Chou, S. P., Jung, J., Zhang, H., Smith, M. S., Pickering, R. P., Huang, B., & Hasin, D. S. (2016). Epidemiology of DSM-5 drug use disorder: Results from the National Epidemiologic Survey on alcohol and related conditions-III (NEXAR-III). *Journal of Substance Abuse Treatment*, 43(1), 111–120. https://doi.org/10.1016/j.jsat.2015.09.010

Greene, W. H. (2012). *Econometric analysis* (7th ed.), Prentice Hall.

Hazzard, V. M., Bauer, K. W., Mukherjee, B., Miller, A. L., & Sonnevile, K. R. (2019). Associations between childhood maltreatment latent classes and eating disorder symptoms in a nationally representative sample of young adults in the United States. *Child Abuse & Neglect*, 98, 104171. https://doi.org/10.1016/j.chiabu.2019.104171

Hetzel-Riggin, M. D., & Roby, R. P. (2013). Trauma type and gender effects on PTSD, general distress, and Peritraumatic dissociation. *Journal of Loss and Trauma*, 18(1), 41–53. https://doi.org/10.1080/15325024.2012.679119
Sable, M. R., Danis, F., Mauzy, D. L., & Gallagher, S. K. (2005). Shame, humiliation, and childhood sexual abuse: Distinct contributions and emotional coherence. *Child Maltreatment*, 10(4), 350–363. https://doi.org/10.1177/1077559505279366

Ogle, C. M., Rubin, D. C., Bernsten, D., & Siegler, I. C. (2013). The frequency and impact of exposure to potentially traumatic events over the life course. *Clinical Psychological Science*, 1(4), 426–434. https://doi.org/10.1177/2167702613485076

Pignatelli, A. M., Wampers, M., Loriedo, C., Biondi, M., & Vanderlinden, J. (2017). Childhood neglect in eating disorders: A systematic review and meta-analysis. *Journal of Trauma & Dissociation*, 18(1), 100–115. https://doi.org/10.1080/15299732.2016.1198951

Preti, A., Incani, E., Camboni, M. V., Petretto, D. R., & Masala, C. (2006). Sexual abuse and eating disorder symptoms: The mediator role of bodily dissatisfaction. *Comprehensive Psychiatry*, 47(6), 475–481. https://doi.org/10.1016/j.comppsych.2006.03.004

Quilliot, D., Brunaud, L., Mathieu, J., Quenot, C., Sirveaux, M.-A., Kahn, J.-P., Ziegler, O., & Witkowski, P. (2019). Links between traumatic experiences in childhood or early adulthood and lifetime binge eating disorder. *Psychiatry Research*, 276, 134–141. https://doi.org/10.1016/j.psychres.2019.05.008

Roberts, A. L., Austin, S. B., Corliss, H. L., Vandermornis, A. K., & Koenen, K. C. (2010). Pervasive trauma exposure among US sexual orientation minority adults and risk of posttraumatic stress disorder. *American Journal of Public Health*, 100(12), 2433–2441. https://doi.org/10.2105/AJPH.2009.168971

Rodríguez, M., Pérez, V., & García, Y. (2005). Impact of traumatic experiences and violent acts upon response to treatment of a sample of Colombian women with eating disorders. *International Journal of Eating Disorders*, 37(4), 299–306. https://doi.org/10.1002/eat.20091

Rohrer, J. M. (2018). Thinking clearly about correlations and causation: Graphical causal models for observational data. *Advances in Methods and Practices in Psychological Science*, 1(1), 27–42. https://doi.org/10.1177/2515245917745629

Sable, M. R., Danis, F., Mauzy, D. L., & Gallagher, S. K. (2006). Barriers to reporting sexual assault for women and men: Perspectives of college students. *Journal of American College Health*, 55(3), 157–162. https://doi.org/10.3200/JACH.55.3.157-162

Scharff, A., Ortiz, S. N., Forrest, L. N., & Smith, A. R. (2021). Comparing the clinical presentation of eating disorder patients with and without trauma history and/or comorbid PTSD. *Eating Disorders*, 29(1), 88–102. https://doi.org/10.1080/10640266.2019.1642035

Solmi, M., Radua, J., Stubbs, B., Ricca, V., Moretti, D., Busatta, D., Carvalho, A. F., Dragioti, E., Favaro, A., Monte Leone, A. M., Shin, J. L., Fusar-Poli, P., & Castellini, G. (2021). Risk factors for eating disorders: An umbrella review of published meta-analyses. *Brazilian Journal of Psychiatry*, 43(3), 314–323. https://doi.org/10.1590/1516-4446-2020-1099

Stice, E., Fisher, M., & Martinez, E. (2004). Eating disorder diagnostic scale: Additional evidence of reliability and validity. *Psychological Assessment*, 16(1), 60–71. https://doi.org/10.1037/1040-3590.16.1.60

Tagay, S., Schlotthbohm, E., Reyes-Rodriguez, M. L., Repic, N., & Senf, W. (2014). Eating disorders, trauma, PTSD, and psychosocial resources. *Eating Disorders*, 22(1), 33–49. https://doi.org/10.1080/10600266.2014.857517

Thomas, E. A., Owens, G. P., & Keller, E. M. (2021). Relationships among non-interpersonal and interpersonal trauma types, posttraumatic stress, and posttraumatic growth. *Journal of Clinical Psychology*, 77(11), 2592–2608. https://doi.org/10.1002/jclp.23190

Udo, T., & Grilo, C. M. (2018). Prevalence and correlates of DSM-5-defined eating disorders in a nationally representative sample of U.S. adults. *Biological Psychiatry*, 84(5), 345–354. https://doi.org/10.1016/j.biopsych.2018.03.014

Vidaña, A. G., Forbush, K. T., Barnhart, E. L., Mildrum, Chana, S., Chapa, D. A. N., Richson, B., & Thomeczek, M. L. (2020). Impact of trauma in childhood and adulthood on eating-disorder symptoms. *Eating Behaviors*, 39, 101426. https://doi.org/10.1016/j.eatbeh.2020.101426

Weaver, T. L., & Resick, P. A. (2014). Injury dimensions in female victims of intimate partner violence: Expanding the examination of associations with symptoms of posttraumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy*, 6(6), 683–690. https://doi.org/10.1037/a0036063

Zellowitz, R. L., Zerubavel, N., Zucker, N. L., & Copeland, W. E. (2021). Longitudinal associations of trauma exposure with disordered eating: Lessons from the Great Smoky Mountains study. *Eating Disorders*, 29(3), 208–225. https://doi.org/10.1080/10640266.2021.1921326

How to cite this article: Convertino, A. D., Morland, L. A., & Blashill, A. (2022). Trauma exposure and eating disorders: Results from a United States nationally representative sample. *International Journal of Eating Disorders*, 55(8), 1079–1089. https://doi.org/10.1002/eat.23757