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Childhood maltreatment and impulsivity as predictors of interpersonal violence, self-injury and suicide attempts: A national study

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Abstract

Prior research indicates that childhood maltreatment and impulsivity increase the risk for different types of violence, including violent behaviors directed toward the self and others. However, it is not known whether childhood maltreatment and impulsivity have independent effects on different violent behaviors. Therefore, this study examined the differential effects of childhood maltreatment and impulsivity on interpersonal violence, suicide attempts, and self-injury. Data were drawn from a nationally representative survey of 34,653 US adults, the 2004–2005 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). Structural equation modeling was used to simultaneously examine the shared and specific effects of five types of childhood maltreatment and impulsivity on the risk of different violent behaviors (i.e. interpersonal violence, suicide attempts, and self-injury). Analyses were stratified by gender and adjusted for age and ethnicity. Impulsivity and childhood maltreatment independently increased the risk of suicide attempt, self-injury, and interpersonal violence. Childhood maltreatment had stronger effects on violence directed towards the self than on interpersonal violence in both genders, while impulsivity had a stronger effect on self-injury than on suicide attempt or

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interpersonal violence in men. These findings indicate that childhood maltreatment and impulsivity relate differently to the risk of different types of violence.

Keywords

Childhood Maltreatment; Impulsivity; Self-Injury; Violence; Suicide; NESARC

1. Introduction

Violence is a serious public health problem and is a leading cause of mortality and morbidity worldwide (Krug et al., 2002; Rockett et al., 2012). Violence can be directed towards the self (e.g. suicidal behavior and non-suicidal self-injury) or others (e.g. fighting or destroying someone else's property). Suicidal behavior and non-suicidal self-injury are associated with each other (Nock et al., 2006; Hamza et al., 2012) and with violence towards others (Hillbrand, 1995; Malone et al., 1995; Grilo et al., 1999; Verona et al., 2001; Boyle et al., 2006; Abidin et al., 2013; Vaughn et al., 2015), suggesting that they may share common underlying risk factors (Krug et al., 2002). Although some individuals may engage in these different types of violence, others may be more likely to engage in a specific type of violent behavior. However, it is unknown whether risk factors increase the risk for violent behaviors similarly for all 3 types of violence (e.g. interpersonal violence, self-harm or suicidality) or more strongly for specific types of violence than for others. Therefore, research is needed to more precisely characterize the relative effects of risk factors on these violent behaviors to effectively prevent these threats to public health.

Childhood maltreatment (Brezo et al., 2008; Fergusson et al., 2008; Hoertel et al., 2015; Nock, 2009; Widom, 1989; Afifi et al., 2009; Harford et al., 2014; McMahon et al., 2015; Zatti et al., 2017) and impulsivity (Moeller et al., 2001; Dawe and Loxton, 2004; Malone et al., 1995; Mann et al., 1999; Mann, 2003; Nock et al., 2008; Nixon et al., 2008; Glenn and Klonsky, 2010; Barratt et al., 1997; Davidson et al., 2000; Meyer-Lindenberg et al., 2006) are two important risk factors and targets of investigation, as prior research has shown that they are strongly associated with interpersonal violence, suicidal behavior, and non-suicidal self-injury. Furthermore, recent research using a community sample has demonstrated the shared and differential effects of childhood maltreatment and impulsivity on interpersonally violent crimes, such as "injured others in a fight" (Shin et al., 2016). Results from this study suggest that a history of physical abuse in childhood was significantly related to both impulsivity and violent criminal behavior. However, impulsivity was not directly related to violent criminal behavior in this study (Shin et al., 2016). Although violence does not always constitute criminal behavior, these findings provide some evidence that both impulsivity and childhood maltreatment may have differential impacts on violence. However, to our knowledge, an unanswered question is whether these two factors are associated independently of each other with interpersonal violence, suicidal behavior and non-suicidal self-injury on a national scale. In addition, determining the extent to which childhood maltreatment types and impulsivity are associated with each of these violent behaviors may help guide preventive measures to reduce those risks.

To address this gap in the literature, we used data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) to examine the associations of childhood maltreatment types (i.e., sexual abuse, emotional abuse, physical abuse, emotional neglect, and physical neglect) and impulsivity with suicidal behavior, non-suicidal self-injury, and interpersonal violence. We hypothesized that childhood maltreatment types and impulsivity may be differentially associated with these three outcomes. In the NESARC, self-injury is assessed separately from suicide attempts because individuals may engage in self-injury with no intent to die (Nock, 2010). As such, suicide attempts and self-injury were considered distinct, yet potentially related outcomes in this study. Secondly, our previous research has shown that all types of childhood maltreatment increase the risk of suicide attempts (Hoertel et al., 2015) and intimate partner violence (McMahon et al., 2015) and exerted their effects mainly through a single broad vulnerability representing the shared effects of the different types of childhood maltreatment. Therefore, we modeled childhood maltreatment so that we can distinguish the effects that are shared by all types of childhood maltreatment (i.e., unspecific to any type of maltreatment) and those that are specific to each type of childhood maltreatment above their shared effect.

Furthermore, we aimed to account for the gender differences in these risk factors and violence outcomes. Childhood maltreatment, suicide attempts and non-suicidal self-injury are more common among women than men (Keyes et al., 2012; Pérez-Fuentes et al., 2013). By contrast, impulsivity and violence towards others are more prevalent among men than women (Eisenberg et al., 2009). Sexual abuse is also more strongly associated with suicidal behavior in women than in men (Bebbington et al., 2009). Taken together, these findings suggest that gender differences in childhood maltreatment and impulsivity may be associated with differences in the likelihood of engaging in violence towards the self vs. others. To account for these gender differences, our analyses were stratified by gender to account for these gender differences in the childhood risk factors and violent behavior outcomes. Additionally, because the risks of self-injury and suicide have been shown to vary across age and ethnic groups in the US (Krug et al., 2002), all analyses were adjusted for these variables.

2. Methods

2.1. Sample

Data were drawn from Wave 2 NESARC (2004–2005). The Wave 1 NESARC was a nationally representative face-to-face survey of 43,093 civilian non-institutionalized U.S. residents aged 18 years and older, conducted in 2001–2002 by the National Institute on Alcoholism and Alcohol Abuse (NIAAA) and described in detail elsewhere (Grant et al., 2009). For Wave 2, the overall survey response rate was 86.7% and included 34,653 completed interviews (Grant et al., 2009). The Wave 2 NESARC data were weighted to reflect design characteristics of the survey, to account for oversampling and to represent the U.S. civilian population based on the 2000 census (Grant et al., 2009). The research protocol, including written informed consent procedures, received full human subjects review and approval from the U.S. Census Bureau and the Office of Management and

Budget (Grant et al., 2009). Analyses were conducted on the full sample of 34,653 adults (male=14,564, female=20,089).

2.2. Measures

Childhood Maltreatment—Participants responded to 19 questions concerning their exposure to 5 types of childhood maltreatment before the age of 17. In line with prior work using these data (Hoertel et al., 2015; Keyes et al., 2012; Pérez-Fuentes et al., 2013; Sugaya et al., 2012), physical abuse and emotional abuse were measured by questions adapted from the Conflict Tactics Scale (CTS; Straus and Gelles, 1990). Physical neglect, sexual abuse, and emotional neglect were measured by questions adapted from the Childhood Trauma Questionnaire (CTQ; Keyes, et al., 2012; Wyatt, 1985; Bernstein et al., 1994). All response options ranged from “never” (1) to “very often” (5), except for emotional neglect, which ranged from “never” to “always” and was reverse coded. Examples of items that assessed for emotional neglect include: “My family was a source of strength and support” and “I felt that I was a part of a close-knit family.” Keyes et al. (2012) found that a 5-factor confirmatory factor analysis (CFA) model fit the 19 childhood maltreatment items very well in both genders (men: CFI = 0.99, TLI = 0.98 and RMSEA = 0.02; women: CFI = 0.99, TLI 0.98, and RMSEA = 0.02). Building upon this 5-factor CFA model, we performed a second-order CFA model to determine whether a shared childhood maltreatment factor fit the underlying structure of childhood maltreatment (Hoertel et al., 2015).

Impulsivity—Impulsivity was assessed with the question: “Most of the time throughout your life, regardless of the situation or whom you were with, have you often done things impulsively?” This question is drawn from the borderline personality disorder assessment module using the *NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV* (AUDADIS-IV; Grant et al., 2008). This item previously been shown to have high convergent and divergent validity (Chamorro et al., 2012).

Assessment of violence towards the self and others—A history of *suicide attempt* was assessed by asking participants whether they had ever attempted suicide (Hoertel et al., 2015; Nepon et al., 2010). *Self-injury* was assessed with the following question from the borderline personality disorder assessment: “Have you ever cut, burned, or scratched yourself on purpose?” (Abidin et al., 2013). Wave 2 participants also answered nine questions that assessed *interpersonal violence*, including starting fights, using a weapon, hitting or injuring someone, starting a fire on some else’s property, or getting into physical fights under the influence of drugs or alcohol (Hamza et al., 2012). Those who responded “yes” to any of the nine questions were considered to have engaged in interpersonal violence. All assessments were assessed on a lifetime basis.

Covariates—Age and ethnicity were assessed and categorized into 4 classes (i.e., 20y-29y, 30y-44y, 45y-64y and 65y) and 5 classes (i.e., White, non-Hispanic; Black, non-Hispanic; American Indian/Alaska Native, non-Hispanic; Asian/Native Hawaiian/Other Pacific Islander, non-Hispanic; and Hispanic), respectively. We chose to use the same age groups as described in a prior study describing the main findings of the Wave 2 NESARC in order to ensure comparability of results (Hasin and Grant, 2015).

2.3. Statistical Analysis

Because previous work has shown that the prevalence of interpersonal violence (McMahon et al., 2015; Archer, 2000; Blanco et al., 2010; Okuda et al., 2011) and suicide attempt (Krug et al., 2002; Hoertel et al., 2015) differs between men and women, all analyses were stratified by gender. Additionally, because the risks of self-injury and suicide have been shown to vary across age and ethnic groups in the US (Krug et al., 2002; Olfson et al., 2017), all analyses were adjusted for these variables. Weighted percentages of the different types of childhood maltreatment (dichotomized) and lifetime impulsivity were calculated, and their bivariate association with each violence outcome was summarized with odds ratios and 95% confidence intervals. Associations across the three violence outcomes were calculated and chi-square difference tests were used to test for differences in the strength of associations.

We used multiple-group structural equation modeling (SEM; Byrne, 2013) stratified by gender to assess shared and specific associations of different types of childhood maltreatment and impulsivity with each violence outcome. Specifically, while adjusting for age and ethnicity, we simultaneously examined (1) the association of the shared childhood maltreatment factor with each violent behavior outcome, (2) the associations of the five types of childhood maltreatment above and beyond the latent childhood maltreatment factor with each violent behavior outcome and (3) the association of impulsivity with each violent behavior. Residuals for the three violence outcomes were allowed to correlate in the models.

Relationships between the general childhood maltreatment factor and each violence outcome were interpreted as associations of the shared effect of the different types of childhood maltreatment with each specific violence outcome after adjusting for impulsivity. Similarly, the relationship between impulsivity and each violence outcome represented its direct association after adjusting for the shared association of the different types of childhood maltreatment. The relationships between each of the five specific childhood maltreatment factors and each violence outcome (sometimes called “direct effects” in this type of analysis) were interpreted as associations that were not mediated through the shared maltreatment factor. Modification indices (i.e. chi-square tests with 1 degree of freedom) were used to test for the associations of specific types of childhood maltreatment on violence outcomes. Standardized estimates indicated the number of standard deviations away from the mean of the latent variable underlying the binary outcome were expected to be for each standard deviation increase in the latent factor predictors or for changing from no to yes on the impulsivity measure while adjusting for the other factors and covariates. We evaluated statistical significance using a two-sided design with alpha set *a priori* at 0.05 and considered significant direct effects of specific childhood maltreatment factors with modification index greater or equal to 10 (Muthen and Muthen, 2010). Finally, we used chi-square difference tests to compare the associations of the general child maltreatment factor and the three violence outcomes with those of impulsivity and the violence outcomes.

Model fit indices examined included comparative fit index (CFI), the Tucker-Lewis Index (TLI) and the root mean squared error of approximation (RMSEA). CFI and TLI values above 0.95 and RMSEA values below 0.06 represent a good model fit (Hu and Bentler, 1999). All analyses were conducted in Mplus Version 7.4 (Muthen and Muthen, 2010) using

the delta parameterization and the variance-adjusted weighted least squares (WLSMV) estimator. WLSMV is a robust estimator appropriate for ordered categorical and dichotomous observed variables (Muthen and Muthen, 2010). All analyses accounted for the complex sampling design of the NESARC.

3. Results

3.1. Prevalence and co-occurrence of Violent Behaviors

The lifetime prevalence of suicide attempt, self-injury and interpersonal violence were 2.28% (SE=0.15), 1.85% (SE=0.16) and 27.50% (SE=0.64), respectively, in men, and 4.41% (SE=0.19), 2.16% (SE=0.13) and 12.82% (SE=0.37) in women. Suicide attempts, self-injury, and interpersonal violence were strongly correlated with each other in men and women (Table 1). Chi-square tests of differences in correlations indicated that within both genders, lifetime suicide attempts and self-injury were more strongly related to each other than they were to lifetime interpersonal violence (all $p<.05$).

3.2. Structure of childhood maltreatment

The second-order multiple-group CFA of the five childhood maltreatment factors measured by a single shared maltreatment factor provided an excellent fit in men (CFI=0.979, TLI=0.976, RMSEA=0.039) and in women (CFI=0.985, TLI=0.983, RMSEA=0.041). The correlation matrix and weighted percentages of childhood maltreatment categorical items and impulsivity are given in Table 2 and in supplemental eTable 1, respectively.

3.3. Associations of childhood maltreatment and impulsivity with violent behaviors

In bivariate analyses, impulsivity and the five types of childhood maltreatment each had a significant, positive effect on the risk for the three violent behaviors in men and women (Table 3). The five types of childhood maltreatment and impulsivity were significantly and positively associated with each other in both men and women (all $p<0.05$). After adjusting for age and ethnicity, associations between childhood maltreatment and each violent behavior occurred mostly through a latent variable representing the shared effects of the different types of childhood maltreatment ($p<0.01$; **Figures Fig1 and 2**). Impulsivity also had a significant, positive effect on all three violent behaviors in this adjusted model in men and women ($p<0.01$). Furthermore, beyond the associations of the maltreatment factor, childhood sexual abuse had an additional positive effect on suicide attempts and self-injury in both genders, and with interpersonal violence in women (all $p<0.05$). By contrast, after adjusting for the shared maltreatment factor, emotional abuse had a negative effect on suicide attempt in both genders ($p<0.05$). Physical neglect also had a negative direct effect on suicide attempts in women ($p<0.05$), after adjusting for the maltreatment factor. The total effect of these types of maltreatment on these violence outcomes is equal to the sum of these direct, negative effects and positive indirect effects through this maltreatment factor. Therefore, results indicate that emotional abuse and physical neglect in women have less of an impact on suicide attempts than the other forms of maltreatment.

Among men, childhood maltreatment had a stronger effect on self-injury and suicide attempts than on interpersonal violence (standardized $\beta=.36$ and $\beta=.42$ versus $\beta=.29$;

significance of differences in magnitude: $p=0.05$ and $p<0.001$, respectively), whereas impulsivity had a stronger effect on self-injury than on suicide attempt (standardized $\beta=.18$ versus $\beta=.13$; $p=0.039$) or interpersonal violence (standardized $\beta=.18$ versus $\beta=.13$, $p=0.027$). Among women, childhood maltreatment had a stronger effect on suicide attempt and self-injury than on interpersonal violence (standardized $\beta=.51$ and $\beta=.44$ versus $\beta=.34$; both $p<0.001$). However, there was no significant difference in the strength of associations between impulsivity and the three violent behaviors in women (all $p>0.05$).

4. Discussion

In a large nationally representative sample of U.S. adults, impulsivity and a history of childhood maltreatment were independently associated with increased risk of suicide attempt, self-injury, and interpersonal violence. History of childhood maltreatment had stronger effect on violence directed towards the self in both men and women, while impulsivity in men had a stronger effect on self-injury than on suicide attempt or interpersonal violence. However, there was no significant difference among the strength of associations with impulsivity and the three violent behaviors in women. Our results indicate that even when risk factors are shared across several outcomes, there is some specificity in those associations. Specifically, some risk factors may be more important for certain types of violent behaviors than for others. They may also explain why some individuals may be more likely to engage in different forms of violent behavior than other individuals, even when they share similar risk factors.

First, in line with previous research (Hillbrand, 1995; Malone et al., 1995; Grilo et al., 1999; Verona et al., 2001; Boyle et al., 2006; Abidin et al., 2013), we found that self-injury, suicide attempts and violence towards others often co-occur, indicating that individuals who engage in interpersonal violence may also be at increased risk for harming themselves as well. These findings are consistent with research demonstrating that internalizing and externalizing behaviors are not opposite poles of a spectrum, but rather positively correlated constructs (Krueger, 1999; Blanco et al., 2013). These findings have important clinical implications, as mental health providers assessing individuals who engage in self-directed or interpersonal violence should carefully assess for a history of other types of violence.

Secondly, childhood maltreatment was a stronger predictor of violence towards the self than violence towards others in both genders. Specifically, childhood maltreatment was more strongly related to suicide attempts and self-injury than interpersonal violence in men and women. This extends previous findings of an association between childhood maltreatment and suicide attempts (Hoertel et al., 2015; Harford et al., 2014) to self-injury. Childhood maltreatment often leads to depression, self-criticism (Glassman et al., 2007), posttraumatic stress symptoms (Weierich and Nock, 2008) and poor affect regulation (Nock, 2009), which may turn violence towards self. Furthermore, most of the association of maltreatment with self-directed violence occurred through a general maltreatment factor capturing the shared effects of all types of maltreatment.

Furthermore, the effects of sexual abuse on self-injury and suicide attempts was stronger than the effects of types of childhood maltreatment, in line with other previous research

(Afifi et al., 2006; Dube et al., 2005; Fergusson et al., 2008; Fliege et al., 2009; Hoertel et al., 2015; Lopez-Castroman et al., 2013; Peyre et al., 2017). Childhood sexual abuse may be a particularly harmful type of childhood adversity by causing uniquely harmful long-term damage to neurobiological structures involved in stress response and by increasing sensitivity to depression in response to stressful life experiences and susceptibility to adverse environmental influences (Kendler et al., 2004; Weiss et al., 1999). These findings have important clinical implications, as assessment for history of childhood maltreatment, particularly sexual abuse, and its association with current self-harm behaviors can better inform treatment planning and highlight the need for trauma-informed care.

We also found that impulsivity had a stronger effect on self-injury than on suicide attempts or interpersonal violence in men. This finding is in line with previous research demonstrating that suicide attempts and self-injury have different risk factors (Chartrand et al., 2012; Hamza et al., 2012) and should be regarded as highly related, yet distinct self-directed violent behaviors. Furthermore, these results extend previous findings demonstrating that the prevalence of impulsivity was higher in men than in women, and that impulsivity, in turn, increased the risk of engaging in several types of violent behaviors, including both violence towards the self (e.g. trying to hurt or kill themselves) and others (e.g. starting fights; Chamorro et al., 2012). Our results further show in men that impulsivity is a stronger predictor of self-injury than other types of violent behaviors. Gender differences in our findings may be partially explained by the way impulsivity is assessed in the NESARC interview, which asks if participants “have often done things impulsively,” which may capture risk-taking or other impulsive behaviors, which in turn may be associated with self-injurious behavior. Studies that measure multiple manifestations of impulsivity may help clarify gender differences in the associations among impulsivity and violent behaviors.

This study has several limitations. First, our results rely on cross sectional and retrospective self-report measures and may be subject to recall bias. Second, the stigmatizing nature of violence together with denial and minimization of deviant behavior could lead to underreporting (Arias and Beach, 1987; Schomerus et al., 2015). Third, the measures of violence and impulsivity were assessed on a lifetime basis and the lack of precise temporal ordering may limit our interpretation of the nature of these associations or to develop mediational models of causation. These results must therefore be interpreted as associations and further longitudinal research may test the causal relationships among these variables. Fourth, impulsivity in the NESARC was measured with only a single item. However, an affirmative response to this question has been associated with behavioral disinhibition, inattention, and lack of planning that increases risk for several psychiatric disorders (Chamorro et al., 2012; Blanco et al., 2014; Blanco et al., 2015). Finally, interpersonal violence in the NESARC was assessed with 9 items, whereas suicidal behavior and self-injury were each assessed with 1 question. However, prevalence rates of these outcomes were within the range of prior estimates from general population samples (Kessler et al., 1999) and reliability was found to be moderate to good (Palmetto and Link, 2010).

Despite these limitations, our findings increase our understanding of violence’s risk factors, as they indicate that childhood maltreatment and impulsivity are differentially associated

with the risk of violence towards others, suicide attempts, and self-injury. These results may help explain why these different violent behaviors often co-occur and why some people may be more prone to engage in different types of violence. This knowledge may help inform prevention measures for individuals who have been exposed to childhood maltreatment and should alert clinicians about a need to systematically assess childhood maltreatment and impulsivity among people presenting with violent behaviors towards others or themselves.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights for

- We studied the effects of childhood maltreatment (CM) and impulsivity on violence
- Outcomes were suicide attempt (SA), self-injury (SI) & interpersonal violence (IPV)
- CM had a stronger, positive effect on SA and SI than on IPV
- Impulsivity had a stronger effect on SI than on other types of violence in men
- Sexual abuse also had an effect on violence towards self in both genders

Fig1. Shared and specific effects of childhood maltreatment types and effect of impulsivity on suicide attempt, interpersonal violence, and self-injury in a general population sample of men (n = 14,564).

Ellipses are used to denote latent constructs, rectangles are used to denote the observed variables. Loadings and regression coefficients are standardized. Violence outcomes were allowed to have correlated residuals. Only significant effects (two-sided $p < .05$) are represented in the model. Dotted arrows indicate direct effects above and beyond effect of the general childhood maltreatment factor. There is no other specific childhood maltreatment type with modification index greater or equal to 10 to predict violent behaviors.

The model was adjusted for age and ethnicity

Fig2. Shared and specific effects of childhood maltreatment types and effect of impulsivity on suicide attempts, interpersonal violence, and self-injury in a general population sample of women (n = 20,089).

Ellipses are used to denote latent constructs, rectangles are used to denote the observed variables. Loadings and regression coefficients are standardized. Violence outcomes were allowed to have correlated residuals. Only significant effects (two-sided $p < .05$) are represented in the model. Dotted arrows indicate direct effects above and beyond effect of the general childhood maltreatment factor. There is no other specific childhood maltreatment type with modification index greater or equal to 10 to predict violent behaviors.

The model was adjusted for age and ethnicity.

Table 1.

Prevalence and correlations across types of lifetime violent behavior in the NESARC.

	Men (N=14,564)			Women (N=20,089)		
	Suicide Attempt	Interpersonal violence	Self-injury	Suicide Attempt	Interpersonal violence	Self-injury
Prevalence % (SE)	2.28 (0.15)	27.50 (0.64)	1.85 (0.16)	4.41 (0.19)	12.82 (0.37)	2.16 (0.13)
Suicide Attempt	1.00			1.00		
Interpersonal Violence	0.39 *	1.00		0.46 *	1.00	
Self-injury	0.69 *	0.45 *	1.00	0.80 *	0.46 *	1.00

* Significant at p-values<0.05

Associations among different types of violence are reported as tetrachoric correlation coefficients.

Table 2.

Correlation matrix across childhood maltreatment items and impulsivity in the NESARC.

WOMEN (N=20089)																		
	EN1	EN2	EN3	EN4	EN5	PN1	PN2	PN3	PN4	PN5	EA1	EA2	SA1	SA2	SA3	SA4	PA1	PA2
EN2	0.797																	
EN3	0.685	0.830																
EN4	0.603	0.741	0.904															
EN5	0.728	0.865	0.878	0.853														
PN1	0.333	0.370	0.453	0.434	0.415													
PN2	0.279	0.361	0.479	0.495	0.417	0.664												
PN3	0.368	0.411	0.521	0.511	0.457	0.628	0.647											
PN4	0.385	0.430	0.584	0.569	0.492	0.627	0.683	0.861										
PN5	0.405	0.464	0.594	0.581	0.519	0.666	0.680	0.809	0.849									
EA1	0.227	0.327	0.464	0.470	0.398	0.533	0.542	0.557	0.602	0.587								
EA2	0.305	0.412	0.587	0.597	0.486	0.618	0.623	0.642	0.697	0.692	0.818							
SA1	0.190	0.265	0.400	0.409	0.335	0.397	0.468	0.409	0.474	0.481	0.451	0.568						
SA2	0.184	0.253	0.372	0.391	0.324	0.382	0.442	0.401	0.473	0.461	0.429	0.544	0.932					
SA3	0.202	0.265	0.401	0.409	0.331	0.402	0.452	0.421	0.502	0.489	0.451	0.554	0.903	0.889				
SA4	0.199	0.266	0.384	0.407	0.324	0.387	0.426	0.406	0.477	0.460	0.422	0.537	0.865	0.852	0.950			
PA1	0.250	0.349	0.496	0.506	0.415	0.551	0.552	0.552	0.601	0.627	0.806	0.853	0.499	0.467	0.482	0.459		
PA2	0.338	0.419	0.567	0.569	0.493	0.621	0.603	0.615	0.674	0.692	0.768	0.867	0.551	0.530	0.535	0.517	0.888	
Impulsivity	0.082	0.094	0.153	0.165	0.135	0.187	0.216	0.171	0.179	0.166	0.241	0.243	0.265	0.245	0.264	0.253	0.242	0.248
MEN (N=14564)																		
	EN1	EN2	EN3	EN4	EN5	PN1	PN2	PN3	PN4	PN5	EA1	EA2	SA1	SA2	SA3	SA4	PA1	PA2
EN2	0.787																	
EN3	0.669	0.805																
EN4	0.560	0.702	0.874															
EN5	0.714	0.821	0.860	0.827														
PN1	0.188	0.247	0.287	0.313	0.268													
PN2	0.192	0.246	0.351	0.381	0.297	0.561												
PN3	0.313	0.362	0.434	0.407	0.381	0.537	0.594											
PN4	0.335	0.392	0.484	0.495	0.429	0.526	0.638	0.812										
PN5	0.344	0.418	0.487	0.448	0.432	0.566	0.600	0.774	0.813									
VB1	0.123	0.225	0.341	0.359	0.277	0.420	0.447	0.463	0.527	0.519								
VB2	0.188	0.294	0.44	0.468	0.367	0.489	0.516	0.548	0.616	0.617	0.785							
SA1	0.095	0.168	0.268	0.277	0.211	0.284	0.341	0.373	0.418	0.431	0.340	0.440						
SA2	0.140	0.173	0.274	0.272	0.214	0.274	0.318	0.358	0.390	0.403	0.313	0.412	0.941					
SA3	0.153	0.195	0.265	0.257	0.221	0.294	0.307	0.376	0.398	0.444	0.333	0.431	0.886	0.877				
SA4	0.173	0.190	0.257	0.242	0.211	0.277	0.305	0.370	0.366	0.447	0.296	0.376	0.871	0.865	0.943			
PA1	0.126	0.220	0.344	0.358	0.271	0.402	0.463	0.447	0.527	0.509	0.767	0.796	0.371	0.364	0.346	0.301		
PA2	0.195	0.309	0.429	0.444	0.353	0.477	0.502	0.549	0.623	0.609	0.712	0.796	0.427	0.416	0.418	0.392	0.840	
Impulsivity	0.005	0.046	0.130	0.159	0.082	0.133	0.177	0.125	0.136	0.120	0.204	0.233	0.241	0.242	0.244	0.172	0.186	0.212

Associations are reported as polychoric correlation coefficients.

Abbreviations: Emotional Neglect (EN): The extent to which respondents agreed with these statements about the family when growing up (items were reverse coded for analysis): EN1 : I felt there was someone in my family who wanted me to be a success; EN2 : There was someone in my family who helped me feel that I was important or special; EN3 : My family was a source of strength and support; EN4: I felt that I was part of a close-knit family; EN5: Someone in my family believed in me.

Physical Neglect (PN): PN1: How often were you made to do chores too difficult or dangerous for someone your age?; PN2: How often were you left alone or unsupervised when you were too young to be alone?; PN3: How often did you go without things you needed like clothing, shoes, or school supplies?; PN4: How often did a parent or other adult living in your home make you go hungry or not prepare regular meals?; PN5: How often did a parent or other adult living in your home ignore or fail to get you medical treatment when you were sick or hurt?

Emotional Abuse (EA): EA1: How often did a parent or other adult living in your home swear at you, insult you or say hurtful things?; EA2: How often did a parent or other adult living in your home act in any other way that made you afraid that you would be physically hurt or injured?

Sexual Abuse (SA): How often an adult engaged in the following when the respondent either did not want them to or was too young to know what was happening?; SA1: Touch or fondle you in a sexual way when you didn't want them to or when you were too young to know what was happening?; SA2: Have you touch their body in a sexual way when you didn't want to or you were too young to know what was happening?; SA3: Attempt to have sexual intercourse with you when you didn't want them to or you were too young to know what was happening?; SA4: Actually have sexual intercourse with you when you didn't want them to or you were too young to know what was happening?

Physical Abuse (PA): PA1: How often did a parent or other adult living in your home push, grab, shove, slap or hit you?; PA2: How often did a parent or other adult living in your home hit you so hard that you had marks or bruises or were injured?

Impulsivity was assessed with the question: "Most of the time throughout your life, regardless of the situation or whom you were with, have you often done things impulsively?" (yes/no).

Table 3.

Associations between types of childhood maltreatment, impulsivity, and lifetime violent behaviors in the NESARC, by gender.

		Suicide Attempt		Interpersonal Violence		Self-injury	
	Prevalence (%)	OR	95% CI	OR	95% CI	OR	95% CI
Men (n=14,564)							
Emotional Neglect^{a,b}	6.77	3.73	2.65–5.23	1.52	1.30–1.78	2.58	1.79–3.73
Physical Neglect^{a,c}	4.50	5.03	3.65–6.93	2.60	2.14–3.16	3.61	2.26–5.77
Emotional Abuse^{c,d}	18.51	3.88	2.99–5.05	2.45	2.20–2.73	3.69	2.55–5.34
Sexual Abuse^{a,e}	5.24	6.90	4.94–9.65	2.06	1.71–2.48	5.71	3.79–8.59
Physical Abuse^{c,d}	7.78	6.45	4.87–8.54	3.12	2.70–3.60	3.98	2.70–5.86
Impulsivity^f	19.31	3.82	2.90–5.03	2.38	2.15–2.63	5.71	4.22–7.72
Women (n=20,089)							
Emotional Neglect^{a,b}	9.09	4.83	3.96–5.90	2.31	1.98–2.69	3.69	2.78–4.90
Physical Neglect^{a,c}	5.69	5.68	4.58–7.05	3.32	2.79–3.95	5.24	3.90–7.04
Emotional Abuse^{c,d}	18.07	5.39	4.46–6.51	3.27	2.91–3.66	4.05	3.11–5.28
Sexual Abuse^{a,e}	14.76	7.56	6.33–9.04	3.16	2.78–3.59	6.02	4.71–7.69
Physical Abuse^{c,d}	8.51	7.08	5.80–8.64	3.97	3.44–4.58	5.05	3.80–6.72
Impulsivity^f	14.82	3.97	3.27–4.81	2.93	2.57–3.34	3.89	3.01–5.03

^a Items drawn from the Childhood Trauma Questionnaire.

^b Per cent reporting 'never' or 'almost never' true. Items reverse coded for analysis.

^c Per cent reporting 'sometimes', 'fairly often' or 'very often' true.

^d Items drawn from the Conflict Tactics Scale.

^e Per cent reporting at least one episode.

^f Impulsivity was assessed with the question: "Most of the time throughout your life, regardless of the situation or whom you were with, have you often done things impulsively?" (yes/no). Abbreviations: OR=odds ratio, CI=confidence interval; NESARC = National Epidemiologic Survey on Alcohol and Related Conditions.