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Adverse Childhood Experiences and Pathways to Violent Behavior for Women and Men

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Abstract

Childhood maltreatment is associated with risk for committing future violence, but the relationship between subgroups and biological sex is unknown. The relationship between adverse childhood experiences (ACEs), violence, and sex was examined using a nationally representative sample. Results from a latent class analysis suggested a four-class model (low adversity; moderate maltreatment with high household dysfunction; severe maltreatment with moderate household dysfunction; severe multi-type adversities). When compared to low adversity, all typology groups were at significantly higher risk to engage in violence (odds ratio > 2.10, ps < .013). The data supported a linear trajectory, meaning increased childhood trauma was associated with increased risk for violence. Although men endorsed more violent behavior, the relationship between ACEs and violence was significantly stronger among women. Prior findings identify that women are more negatively impacted by ACEs and the current findings newly identify that this extends to violent crime.

Keywords

child abuse; physical abuse; children exposed to domestic violence; domestic violence; violent offenders; women offenders

In a landmark study, Felitti et al. (1998) identified core stressful and traumatic adverse childhood experiences (ACEs), including emotional, physical, and sexual abuse; emotional and physical neglect; and household difficulties, including parental substance use, parental mental illness, witnessing domestic violence toward the child's mother, parent incarceration, and parental separation or divorce. The pervasive impacts of ACEs have been well-documented in scientific literature (Crandall et al., 2019), with poor physical and mental health outcomes strongly correlated with these traumatic exposures. Increased risk for substance use, smoking, heart disease, obesity, suicide attempts, absenteeism, and sexually

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transmitted diseases have been associated with ACEs (Felitti et al., 1998; Horan & Spatz Widom, 2015). Exposure to early childhood interpersonal trauma can also significantly alter relational patterns, biopsychosocial development, and learning, not just in childhood, but well into adulthood (van Dijke et al., 2010). Preclinical investigations have identified that exposure to early life stress alters microglial function, synaptogenesis, synaptic pruning, axonal growth, and myelination, leading to significant behavioral alterations into adulthood (Johnson & Kaffman, 2018).

Literature Review

Early childhood trauma

Researchers have consistently found evidence of a dose–response relationship between early childhood trauma and negative outcomes across diverse samples, indicating that children who have been exposed to trauma repeatedly are at heightened risk for negative outcomes (Ford & Delker, 2018; Horan & Spatz Widom, 2015; Reavis et al., 2013). Researchers have also investigated “polyvictimization,” a term coined by Finkelhor et al. (2007) to describe the status of children who have experienced multiple forms of trauma to differentiate them from children with repeated exposure to a single type of victimization. Interestingly, Finkelhor et al. (2007) found that children who were exposed to multiple forms of trauma were more symptomatic than children who experienced repeated exposure to the same kind of victimization. Ford et al. (2010) investigated polyvictimization among adolescents and found that children who had experienced multiple forms of trauma were at significantly higher risk for delinquency and psychiatric impairment.

Researchers have repeatedly explored the link between delinquency, behavioral dyscontrol, and ACEs. Studies have established the presence of poor behavioral control and emotion dysregulation in children that experience childhood abuse (Kerig & Becker, 2015). Children with more exposure to maltreatment are at significantly higher risk to display externalizing behaviors and meet criteria for behavioral disorders (Ford & Delker, 2018). In turn, juveniles with externalizing behaviors and behavioral disorders have been shown to be more likely to engage in delinquent behavior as they develop (Loeber & Burke, 2011).

Sex differences in the prevalence and outcome of ACEs have been well documented. Although both sexes experience childhood maltreatment, women overwhelmingly endorse experiencing more high-impact trauma at a younger age (Olff, 2017). While boys endorse disproportionate community violence exposure, girls are much more likely to endorse physical, emotional, and sexual abuse and household difficulties including parental substance use, parental mental illness, traumatic separation from caregiver including abandonment, incarceration, and death (Kerig, 2018). Women also experience heightened levels of psychosocial risk factors for poor outcomes, including inadequate social support, negative cognitions, and peritraumatic emotional responses including dissociation, intense fear, and horror (Christiansen & Hansen, 2015; Meng & D’Arcy, 2016; Thompson et al., 2004).

Neurobiological processes

In addition to documented sex differences among ACEs experiences, researchers have consistently demonstrated numerous neurobiological differences to the exposure to trauma, with women displaying a more severe reaction than their male counterparts. Bangasser and Valentino (2014) found significant differences in the neurobiological processes of women and men, with women being more than twice as likely to develop anxiety and trauma disorders, while also having higher rates of depression than their male counterparts. The researchers found that negative stimuli are more likely to activate the corticolimbic system in women, indicating that trauma in women will likely have a greater impact and leave women vulnerable to stress-related psychiatric disorders (Bangasser & Valentino, 2014).

Researchers have continually found that women also respond to stress differently than men. In the acute phase of stress, women generally struggle with stronger subjective stress responses that are more predictive of posttraumatic stress disorder (PTSD) (e.g., dissociation, threat perception, etc.) (Olff, 2017). Christiansen and Hansen (2015) similarly found that women are much more likely to experience more severe negative posttraumatic cognitions about themselves and the world; higher levels of peritraumatic fear, horror, and helplessness; and increased physical anxiety sensitivity than men. Additionally, rather than relying on fight-or-flight responses, women are much more likely to utilize tend-and-befriend coping styles, relying on attachment and social networks to survive trauma (Taylor et al., 2000). Women are much more inclined to seek and rely upon social support to help them cope with their trauma than men; lack of this support is the most consistent predictor of negative outcomes for women (Olff, 2017). They are also much more likely to engage in emotionally driven and avoidant coping styles, while men are more likely to utilize problem-focused coping (van der Meer et al., 2017). As an extension of avoidant coping preferences, women are more likely than their male counterparts to self-medicate to cope with their trauma symptoms, making them much more vulnerable to subsequent trauma (Saxena et al., 2014).

Criminal justice research

Researchers have explored the relationship between ACEs, incarceration, and antisocial behavior and have established a connection between exposure to childhood trauma and criminal behavior later in life (Kerig, 2018; Reavis et al., 2013). The cumulative impact of trauma extends to criminal behavior in adulthood, with adults who were exposed to more severe childhood maltreatment significantly more likely to commit violent behavior than those with less exposure (Horan & Spatz Widom, 2015).

Messina et al. (2007) explored the relationship of traumatic distress and childhood adverse events among incarcerated men and women and found that women had much greater exposure to childhood trauma than men and also reported ongoing sexual abuse into adulthood. Although the researchers found that both women and men experienced cumulative traumatic stress, women displayed higher levels of traumatic stress overall.

Kubiak et al. (2017) found different pathways to violence among incarcerated women with childhood adversity but did not find any direct pathways between violence and childhood

adversity. Rather, the researchers found that the effects of childhood adversity on violence were mediated by victimization, mental illness, substance use, and anger expression. Similarly, the study found that perpetration of violence by the women was mediated by victimization by those around them, with the target of the violence was similar to the type of victimization the participant had endured previously.

Saxena and Messina (2021) conducted a study utilizing more than one thousand incarcerated women and found a strong trajectory between ACEs experienced and violent behavior, with those experiencing more ACEs being at a higher likelihood of engaging in violent behavior toward others. The researchers also found that initial arrest prior to the age of 18 and polysubstance use similarly increased the risk of women engaging in violence, which is consistent with previous research that has found that earlier criminal involvement and substance use are strongly positively correlated with ACEs (Fazel et al., 2006; Grella et al., 2013; Messina & Grella, 2006; Poister Tusher & Cook, 2010; Saxena et al., 2016; Tripodi & Pettus-Davis, 2013).

Present Study

The purpose of this study is to assess the relationship between childhood maltreatment and violent behavior and to determine whether these effects are different for women and men. Although previous studies have separately investigated various associations among ACEs, sex, and criminal behavior, there is a paucity of published research evaluating all three in combination. This study utilized a nationally representative data set (the National Epidemiological Survey on Alcohol and Related Conditions-III [NESARC-III]) to provide results most applicable to the general population. Latent class analysis (LCA) was used to identify typologies of ACEs and to determine the relationship between sex and violent behavior among groups of childhood maltreatment sufferers. LCA has proven to be a useful method for identifying typologies by classifying groups of people who have experienced ACEs (Brown et al., 2017; Rebbe et al., 2017; Ross et al., 2018).

Methods

Participants

The NESARC-III served as the data source for this study. The NESARC-III is a survey conducted by the National Institute on Alcohol Abuse and Alcoholism between April 2012 and June 2013 that used multistage cluster sampling to recruit a representative sample of noninstitutionalized adults living in the United States (for more detail, see Grant et al., 2014). Of the 36,309 individuals who participated in the NESARC-III, 29,718 answered all ACEs items and were considered eligible for the latent class analysis.

Measures

All participants completed the Alcohol Use Disorder and Associated Disabilities Interview Schedule-5, a computer assisted interview that has been shown to have good reliability and fair to excellent convergence with other validated scales (Grant et al., 2015; Hasin et al., 2015).

Demographic information

Participants reported their sex, race, income, and age. Participants were queried whether their sex was female or male, thus we focused on sex, rather than gender, differences in the present study.[1] The NESARC-III asks about the following five racial categories: White, Non-Hispanic; Black, Non-Hispanic; American Indian/Alaska Native, Non-Hispanic; Asian/Native Hawaiian/Other Pacific Islander, Non-Hispanic; and Hispanic, Any Race.

Adverse childhood experiences

Participants reported on a number of items from the Childhood Trauma Questionnaire (Bernstein et al., 1994) and the Conflict Tactics Scale (Straus et al., 1996). Although typically used to identify violence among adults, the researchers of the NESARC-III altered items of the Conflict Tactics Scale to assess for the presence of emotional and physical abuse endured by the participants as children (Keyes et al., 2012). Both of these measures are very widely used and have generally been shown to have good psychometric properties, including test-retest reliability, internal consistency, and/or convergent validity (Cascardi et al., 1999; Newton et al., 2001; Scher et al., 2001), although potential issues related to spousal nonconsensus and issues with underreporting on the Conflict Tactics Scale have been noted (Schafer, 1996).

For the present study, we used responses on the Childhood Trauma Scale and Conflict Tactics Scale to examine the ten ACEs that correspond to those outlined in the Adverse Childhood Experiences scale (Felitti et al., 1998). NESARC-III items were dichotomized into each of the 10 ACE items in line with the coding scheme outlined by Elliott et al. (2014), which outlined coding for physical abuse (i.e., *fairly often* or *very often* being pushed, grabbed, shoved, slapped OR ever experiencing injury or bruising from being hit), emotional abuse (i.e., *fairly often* or *very often* having a caregiver swear, insult, or say hurtful things or threaten to hit or throw something, or *sometimes* being fearful of physical injury based on an adult's behavior), sexual abuse (i.e., ever being touched/fondled, being forced to touch/fondle others, and/or having another individual attempt or complete intercourse), physical neglect (i.e., at least *sometimes* being forced to do dangerous/difficult chores, being left alone or unsupervised at a young age, going without needed items, not having regular meals or receiving needed medical treatment), and emotional neglect (i.e., describing that their family was *rarely* or *never* close-knit, or that they *rarely* or *never* had someone in their family believe in them, want them to be successful, make them feel important/special, or be a source of strength).

Additionally, in line with Alegria et al. (2013), the following parental factors were also considered: (1) ever witnessing domestic violence against one's mother or another adult female (i.e., the respondent had ever seen one's mother being pushed, grabbed, slapped, had something thrown at them, kicked, bit, or hit with a first, ever having seen one's mother repeatedly hit, or ever having seen one's mother threatened/attacked with a knife or gun), (2) parental separation/divorce, (3) parental drug or alcohol problems, (4) parental mental

[1]The researchers of the NESARC-III recorded participant biological sex only. Gender was not gathered; results may not be reflective of the full spectrum of trauma experienced by transgender and gender nonconforming populations.

illness or suicide (i.e., parent or other adult was treated for mental illness, attempted suicide, and/or completed suicide), and (5) parental incarceration. In the present sample, respondents reported experiencing 1.52 ACEs on average.

Adulthood violent behavior

Nine violent behaviors were considered in the present study. Participants reported if they had ever, since the age of 15, engaged in any of the following: (1) forcing someone to have sex; (2) starting fights; (3) physically harming another person on purpose; (4) harassing, threatening, or blackmailing someone; (5) interpersonal violence (IPV; i.e., getting into a physical fight with a romantic partner); (6) using a weapon in a fight; (7) hitting someone so hard that they were injured or required medical attention; (8) hurting an animal or pet on purpose; or (9) using intimidation to get someone to engage in a behavior. These outcomes were examined independently (i.e., to examine correlates of engaging in each of the nine violent behavior) and collectively (i.e., to examine correlates of engaging in any of the nine violent behaviors). On average, respondents in the present sample reported engaging in 0.25 violent behaviors.

Data Analysis

Data were analyzed with Mplus version 8.6 (Muthén & Muthén, 1998) and SPSS version 27 (IBM Corp, 2017). All analyses incorporated data weights to account for the complex sample design used in the NESARC-III. LCA is a statistical method used to identify subgroups within samples utilizing unobserved variables (Porcu & Giambona, 2017). Model fit was evaluated using the Akaike's information criterion (AIC), Bayesian information criterion (BIC), and the Pearson χ^2 test, such that lower values indicate better fit. Model dispersion was assessed by examining entropy values. The smallest class size was also considered as latent classes <5% could indicate model overfitting.

First, sex differences between demographic characteristics and study variables were examined at the bivariate level using *t*-tests and χ^2 tests as appropriate. Next, regressions examining latent class membership on violent behavior outcomes were conducted. Non-stratified logistic regression analyses were conducted to examine interactions between sex and latent class membership in predicting adulthood violent behavior. Each condition was entered with demographic characteristics (race, age, income) to adjust for potential confounding effects. Race was included as a categorical covariate. Age was included as a continuous covariate. Income was coded into 21 continuous income range categories by the NESARC-III ranging from 1 = Less than $5,000 to 21 = Over $200,000 and was also included as a continuous covariate. Next, where interactions were significant, a series of sex-stratified logistic regression analyses were conducted in order to examine how the relationship between latent class membership and violent behavior differs for men and women. A small number of individuals (<0.5% of the sample) had missing data for some of the violent crime questions but were not excluded from the regression analyses in order to maximize power.

Of note, although forced sex was considered as a violent offense and was included in coding whether an individual had perpetrated a violent crime, sex-stratified analyses were not

conducted for this variable due to the small number of men (0.2%) and women (0.0%) who reported engaging in this behavior. Similarly, physically harming an animal was considered as a violent offense, but was not run in the sex-stratified analysis focusing only on women due to the small number of women reporting this behavior (0.2%).

Results

Descriptive information about the sample is presented in Table 1. The weighted frequencies of men and women were 48.6% and 51.4%, respectively. Data was weighted to allow estimates to reflect the national population of the United States more adequately. The sample consisted of respondents who reported their race/ethnicity as Caucasian (69.3%), African American (9.3%), American Indian (1.4%), Asian/Pacific Islander (6.5%), or Hispanic (14.5%). The average weighted age of the sample was 47.23, where women in the sample were slightly older than men. Overall, women were slightly more likely to belong to the latent class represented by high ACEs relative to men (7.2% vs. 5.6%) and the moderate maltreatment, high household dysfunction group (14.0% vs. 11.8%). Men were slightly more likely to belong to the latent class represented by low adversities (72.5% vs. 69.1%) and the severe maltreatment, moderate household dysfunction class (10.1% vs. 9.6%)

Approximately 13.3% of the sample reported engaging in any violent behavior. Men were more likely to engage in violent offenses, with approximately twice as many men reporting engagement in any violent behavior than women (17.8% vs. 9.1%). The most commonly reported violent behavior was causing intentional physical harm (approximately 6.1% of the sample; 9.1% of men and 3.2% of women). Other commonly endorsed violent behavior included interpersonal violence (5.2%; 6.0% of women and 4.3% of men) and causing an injury requiring medical attention (5.2%; 8.8% of men and 1.8% of women). In contrast, hurting an animal and forced sex were less common, each reported by less than 1% of the sample.

Latent Class Analysis

Similar to results reported by others (i.e., Ross et al., 2018), and as shown in Table 2, AIC, BIC, and χ^2 values improved with increasing numbers of latent classes. However, improvements in fit were marginal above four latent classes. Notably, however, entropy decreased in models beyond four latent class. Additionally, the smallest class size was <5% beyond four classes, which may suggest model overfitting. Thus, a four-class solution was identified as the optimal solution.

Probabilities of endorsing ACEs in each latent class are presented in Table 3. The solution identified in the present study was similar to a solution identified in the paper by Ross et al. (2018) that used NESARC-III data to conduct a latent class analysis of the ACEs measure among a subsample of veterans. Thus, the labels for the latent classes in the present sample correspond with the previously defined labels outlined by this study.

Class 1 consisted of participants with *low adversities* that had low likelihood of experiencing any of the ACEs items (probabilities ranged from 0.002 to 0.139). Class 2 consisted of participants reporting *moderate maltreatment and high household dysfunction*, or

participants who had a high likelihood of reporting parental substance use (probability = 0.664) and household dysfunction (probabilities ranged from 0.169 to 0.472), but lower (though still notable) rates of abuse and neglect (probabilities of endorsing abuse and neglect ranged from 0.087 to 0.22). Class 3 consisted of participants reporting *severe maltreatment and moderate household dysfunction.* Participants in this latent class had a high likelihood of reporting emotional and physical abuse and neglect (probabilities ranged from 0.345 to 0.716), and slightly lower likelihood of reporting parental substance use (probability = 0.216), IPV (probability = 0.368), and parental separation/divorce (probability = 0.22). Class 4 consisted of participants reporting a high likelihood of most ACEs items (probabilities ranged from 0.282 to 0.913) or *severe multi-type adversities*. Approximately two thirds of the sample (70.8%) belonged to the low adversities latent class, 13.0% reported moderate maltreatment and high household dysfunction, 9.8% reported severe maltreatment and moderate household dysfunction, and 6.4% belonged to the severe multi-type adversities group.

Logistic Regression Analysis

Interactions between sex and ACEs and sex stratified analyses examining correlates of engaging in each violent crime are presented in Table 4. For all violent offenses, membership in the *severe multi-type adversities* latent class was associated with the highest likelihood of engaging in violent offenses after age 15, relative to the *low adversities* group among both men and women [odds ratio (ORs) = 4.54–10.53]. The severe maltreatment, moderate household dysfunction group had the second highest odds (ORs = 2.30–6.76), followed by the *moderate maltreatment and high household dysfunction* group (ORs = 1.66–3.32). Men with a history of ACEs, and in particular men with a history of experiencing severe multi-type adversities, reported the highest rates of engaging in violent behaviors. However, in the sex-stratified analyses, the relationships between severe ACEs and violent behavior tended to be stronger in women (ORs = 7.27–10.53) than in men (ORs = 4.54–8.41).

Discussion

The current study was the first to examine the relationship between ACEs, sex, and violent behavior in non-incarcerated adults. Although men were more likely to report violent behavior, the relationship between ACEs and violent behavior was significantly stronger in women. This result was consistent across all typologies of ACEs, with a pronounced linear effect. These findings build upon other studies in which researchers have found that childhood trauma puts women at higher risk for a more severe traumatic response than men, increasing the likelihood of more pervasive negative long-term outcomes and creating more pronounced neurobiological stress response, psychopathology, and vulnerability to stress-related psychiatric disorders in women (Bangasser & Valentino, 2014; Hollanders et al., 2017; Olff, 2017). This, combined with the fact that women without trauma are more prone to heightened stress responses than their male counterparts (Mather et al., 2010), put women with trauma at a significantly higher risk for engaging in violent behavior.

Similar to previous latent class analysis studies utilizing NESARC data (Roos et al., 2016; Ross et al., 2018), results indicate a best fit model of four distinct latent classes. The latent classes identified were low adversities, moderate maltreatment with high household dysfunction, severe maltreatment with moderate household dysfunction, and severe multi-type adversities. Findings from this study indicate a positive relationship between ACEs and violent criminal behavior, corroborating decades of previous research that have consistently found the presence of a dose–response relationship between early childhood trauma and negative outcomes (Ford & Delker, 2018; Horan & Spatz Widom, 2015; Reavis et al., 2013). Specifically, the severity of poorer outcomes increased as exposure to ACEs increased; the severe multi-type adversities class was much more likely to endorse committing violent crimes than the low adversity group.

Although this study did not seek to identify causation of violent behavior, a strong correlation with ACEs was well-established. There are several likely contributions of trauma to violent behavior, both biological and psychosocial. Researchers have consistently found that children learn their coping skills by observing their parents (Detweiler et al., 2014). Bandura (1977) confirmed that children exhibit the behavior modeled for them, particularly aggressive behavior that is reinforced over time. It is likely that children in abusive households have learned that violence is an acceptable means of problem-solving and an effective coping strategy, in the absence of other prosocial coping skills. A lack of prosocial problem solving, combined with an environment that reinforces aggression, increases the likelihood of violent behavior later in life. However, research has repeatedly demonstrated that physical aggression is more normalized and reinforced in male childhood development (Ostrov & Godleski, 2010). As such, the mechanism responsible for increasing violent behavior among women may be more complex and nuanced than social learning theory.

Numerous studies have identified the importance of early childhood trauma exposure and the effects on the brain (Tiwari & Gonzalez, 2018). Researchers have demonstrated that these effects are associated with altered levels of cortisol and lower ability to manage stress, both of which are evident among adult survivors of childhood trauma (De Bellis & Zisk, 2014). These alterations become permanently integrated into brain function and heavily impact adulthood stress responses (De Bellis & Zisk, 2015). Decreased distress tolerance is linked with impulsive behavior, likely due to difficulty assessing long-term solutions for immediate problems (Brem et al., 2018). These brain changes and associated deficits increase the likelihood of poor behavioral choices when faced with high-stress situations. Impaired ability to manage stress, paired with abnormal levels of cortisol that increase the stress response, heighten the probability that the sufferer will become overwhelmed by emotion, interpret situations as more stressful and dangerous, and lack the ability to adequately manage impulsive behavior.

Similarly, adults who have suffered complex trauma as children display higher levels of emotional dysregulation and deficits in self-regulation (Alink et al., 2012; Levenson & Socia, 2016). ACEs have been repeatedly linked to poor self-regulation and underdeveloped decision-making abilities (Lackner et al., 2018). Additionally, childhood trauma significantly impedes the development of executive function, putting sufferers at clinically significant risk for externalizing behavioral problems (Ford & Delker, 2018).

Impaired self-regulation has been consistently linked with violence, aggression, and criminal behavior (Bridgett et al., 2015; DeWall et al., 2007). It is unsurprising that adults struggling with poor self-regulation, high emotion dysregulation, and impairment in sound decision-making ability are vulnerable to impulsive decisions when experiencing strong, aversive emotional states. These difficulties contribute to quick decision making, exposing the adult to negative and severe long-term outcomes.

Limitations and Future Directions

Although the study yielded important data regarding the relationship between ACEs, sex, and violent behavior, the findings should be interpreted with consideration of some limitations. Childhood maltreatment in the NESARC-III was defined as occurring prior to the age of 18. Notably, violent behavior was assessed as beginning during or after the age of 15. The 3-year overlap leaves the possibility that participants could have been engaging in violent behavior prior to experiencing any ACEs. In this article, we present associations between ACEs, sex, and violent crime. Because participants retroactively reported on ACEs in the present study, longitudinal research is needed to address the issue of causation.

The present study highlights sex differences and contributes to diversity by adhering to the National Institute of Health's sex as a biological variable mandate urging researchers to investigate sex differences to improve the quality and generalizability of research (Bale, 2019). Additionally, the population of the present study was intended to be representative of adults in the United States and a large proportion of respondents are White and there is insufficient power to examine latent classes and race or ethnicity. Replication in diverse samples is needed in future work to determine whether the structure of latent classes is consistent in other samples. Additionally, the NESARC-III does not include individuals who are institutionalized and non-civilians; thus replication in these populations is critical. Participants consisted of non-incarcerated adults; there may be potential differences in patterns of violence and ACEs when assessed in incarcerated samples of women and men.

Additionally, although ACEs were assessed in the survey, duration and intensity of the ACEs were not assessed. For example, some ACEs were scored dichotomously *yes/no* (parental substance use, parental mood disturbance, parental incarceration, etc.), while others were rated on a rating scale of *never, almost never, sometimes*, etc. (sexual abuse, physical abuse, etc.). The impact of chronic parental substance use is likely significantly more pronounced than that of a parent who received treatment for substance use quickly after developing an addiction. Similarly, sexual abuse varies dramatically, as does the participant's interpretation of *almost never* and *sometimes*. Future researchers would benefit from including more rigorous measures that identify the age of the child when the abuse began, details about the relationship of the abuser to the child, instances of multiple episodes of maltreatment, and the frequency and severity of type of abuse. There are likely nuances present among participants who endorsed maltreatment that were not adequately captured by these dichotomous items.

Furthermore, the ACEs ask only if the child ever witnessed their mother being physically victimized by another male in the home. Interestingly, the only violent behavior that women in this sample endorsed perpetrating more than men was intimate partner violence. It is

likely that the ACEs questions do not adequately identify the subset of children who witnessed their mother perpetrate domestic violence against her romantic partner, whether male or female.

There is also little information in the NESARC to assess resilience. It would be beneficial to identify protective factors present in participants that experienced cumulative ACEs and did not go on to engage in violent behavior. Similarly, research to identify risk factors that increased participant likelihood of committing violent crime would be useful to assist future efforts to accurately identify at-risk children and create prevention planning to reduce likelihood of future violence.

Given the correlation between emotional dysregulation, ACEs, and criminal behavior, it may be useful to utilize dialectical behavioral therapy with this population to see if skills that promote self-regulation and emotional control help reduce the risk of impulsivity and violence. Although researchers have been studying the importance of trauma-informed treatment among women populations, treatment has not historically been focused on identifying the link between women, ACEs, and aggression (Hien et al., 2020). Messina and Schepps (2021) are currently examining the efficacy of evidence-based trauma treatments among justice-involved populations, while using gender responsive programming and measuring ACEs on outcomes. Given the marked differences in the way that women experience, perceive, and cope with trauma, gender-specific treatment is imperative. Women are much more likely to have heightened fear responses and more significant negative cognitions after surviving different traumatic experiences, so they would benefit from treatment that address these specific factors that contribute to increased risk of the development of PTSD (Christiansen & Hansen, 2015). Similarly, women cope with trauma by relying on emotion-focused coping, avoidance, and social support, indicating that treatment that addresses these specific coping styles leads to better long-term outcomes than treatment that is not gender-responsive (Hien et al., 2020).

Finally, it is important to note that the findings in this study were analyzed using only biological sex. Transgender and gender nonconforming individuals experience ACEs that are unique to their gender expression, including rejection and bullying by their own family members (Malone, 2017). Future research would benefit from understanding the additional layers of complexity created by trauma experienced due to gender identification and expression and how these experiences impact risk for violence in the future.

In conclusion, findings from this study extend previous research that has found that women are more negatively impacted by childhood trauma than men and that ACEs and criminal behavior are positively correlated. Results also confirm the linear trajectory of cumulative trauma and negative outcomes. This study demonstrates the utility of latent class analysis for determining unique classes of adults among ACEs responders. Researchers should continue to investigate the link between ACEs and violent behavior to focus on risk and protective factors to help increase resiliency and reduce likelihood of future violence.

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Sarah Phillips, PhD, is a Staff Psychologist in the VA Eastern Colorado Health Care System. Her research interests include issues related to psychology and law, perceptions of stigma among individuals involved in the criminal justice system, and addiction.

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Table 1.

Weighted Descriptive Information.

	Overall	Men	Women		
	% or *M* [95% CI]	% or *M* [95% CI]	% or *M* [95% CI]	χ^2 or *t*	*p*-Value
Race				23.87	.001
Caucasian	69.3%	69.8%	68.8%		
African American	9.3%	8.7%	9.9%		
American Indian	1.4%	1.2%	1.7%		
Asian/Pacific Islander	6.0%	6.0%	6.0%		
Hispanic	14.0%	14.3%	13.7%		
Age	47.25 [46.87, 47.63]	46.54 [46.06, 47.01]	47.93 [47.48, 48.37]	-5.25	<.001 *
Family income[a]	11.48 [11.30, 11.66]	11.91 [11.70, 12.11]	11.06 [10.87, 11.24]	11.62	<.001 *
Latenc class membership				70.16	<.001 *
Low adversities	70.8%	72.5%	69.1%		
Moderate maltreatment, high household dysfunction	13.0%	11.8%	14.0%		
Severe maltreatment, moderate household dysfunction	9.8%	10.1%	9.6%		
Severe multi-type adversities	6.4%	5.6%	7.2%		
Endorsed engaging in any violent crime	13.3%	17.8%	9.1%	480.87	<.001 *
Started fights	2.3%	3.7%	1.0%	228.57	<.001 *
Intentional physical harm	6.1%	9.1%	3.2%	449.05	<.001 *
Harass/threaten/blackmail	1.5%	2.0%	1.0%	51.52	<.001 *
Interpersonal violence	5.2%	4.3%	6.0%	44.38	<.001 *
Used a weapon in a fight	2.5%	3.7%	1.3%	168.07	<.001 *
Caused an injury requiring medical attention	5.2%	8.8%	1.8%	719.93	<.001 *
Hurt an animal	0.7%	1.2%	0.2%	95.92	<.001 *
Intimidation	1.1%	1.5%	0.7%	41.07	<.001 *
Forced sex	0.1%	0.2%	0.0%	21.69	<.001 *

[a] Income was coded into 21 continuous income range categories by the NESARC-III ranging from (l = Less than $5,000 to 21 = Over $200,000).

* $p < .05$

Table 2.

Fit Indices for Each Latent Class.

	AIC	BIC	Sample Size Adjusted BIC	Pearson χ^2	Entropy	Smallest Class Size (Most Likely Class Membership)
Class 2	216,617.005	216,791.295	216,724.557	8,665.1 25	0.841	0.206
Class 3	213,876.706	214,142.290	214,040.594	4,352.652	0.768	0.128
Class 4	**212,293,298**	**212,650.177**	**212,513.523**	**2,166.837**	**0.773**	**0.064**
Class 5	212,061.399	212,509.572	212,337.961	1,947.689	0.749	0.028
Class 6	211,830.192	212,369.660	212,163.091	1,732.13	0.737	0.024

Note. AIC = Akaike's information criterion; BIC = Bayesian information criterion; CI = confidence interval. The bolded values indicate that the four-class model was selected.

Table 3.

Probability of Endorsing ACEs by Class Membership.

	Low Adversities	Moderate Maltreatment, High Dysfunction	Severe Maltreatment, Moderate Dysfunction	Severe Multi-Type Adversities
Emotional abuse	0.014	0.087	0.658	0.913
Physical abuse	0.033	0.120	0.716	0.833
Sexual abuse	0.042	0.165	0.213	0.412
Emotional neglect	0.069	0.151	0.345	0.566
Physical neglect	0.079	0.220	0.493	0.730
Separated/divorced	0.139	0.472	0.222	0.560
IPV (mother)	0.029	0.396	0.368	0.789
Parental substance use	0.091	0.664	0.216	0.850
Parental mental illness	0.020	0.169	0.079	0.282
Household member went to prison	0.002	0.256	0.011	0.412

Note. ACE = adverse childhood experience; IPV = interpersonal violence.

Table 4.

Correlates of Engaging in Typologies of Violent Crime, Stratified by Sex.

	Sex × Latent Class Interaction	Men	Women
Variable	Wald χ^2	*OR* [95% Cl]	*OR* [95% Cl]
Any violent crime	1,584.59 *		
Moderate maltreatment, high household dysfunction		2.54 [2.16–2.98]	2.78 [2.35–3.29]
Severe maltreatment, moderate household dysfunction		3.33 [2.76–4.01]	4.29 [3.45–5.32]
Severe multi-type adversities		7.90 [6.41–9.74]	8,07 [6.81–9.56]
Started fights	414.12 *		
Moderate maltreatment, high household dysfunction		2.83 [2.14–3.74]	3.28 [1.87–5.77]
Severe maltreatment, moderate household dysfunction		3.14 [2.30–4.28]	4.73 [2.50–8.95]
Severe multi-type adversities		8.38 [6.25–11.24]	10.53 [6.63–16.73]
Intentional physical harm	756.03 *		
Moderate maltreatment, high household dysfunction		2.48 [2.01–3.06]	3.06 [2.27–4.13]
Severe maltreatment, moderate household dysfunction		3.12 [2.53–3.85]	5.26 [3.84–7.21]
Severe multi-type adversities		7.07 [5.65–8.83]	8.05 [6.02–10.77]
Harass/threaten/blackmail	275.90 *		
Moderate maltreatment, high household dysfunction		2,14 [1,41–3,26]	3,07 [1.82–5.19]
Severe maltreatment, moderate household dysfunction		4.32 [2.85–6.55]	5.60 [3.30–9.53]
Severe multi-type adversities		8.14 [5.37–12.33]	10.19 [6.84–15.18]
Interpersonal violence	596.65 *		
Moderate maltreatment, high household dysfunction		3.33 [2.52–4.39]	2.99 [2.44–3.67]
Severe maltreatment, moderate household dysfunction		3.40 [2.57–4.50]	4.34 [3.50–5.39]
Severe multi-type adversities		6.72 [4.90–9.22]	8.73 [6.99–10.90]
Used a weapon in a fight	554.84 *		
Moderate maltreatment, high household dysfunction		2.64 [1.95–3.58]	2.99 [2.10–4.26]
Severe maltreatment, moderate household dysfunction		3.80 [2.82–5.11]	5.33 [3.53–8.04]
Severe multi-type adversities		8.41 [6.40–11.06]	9.85 [6.91–14.05]
Caused injury requiring medical attention	883.63 *		
Moderate maltreatment, high household dysfunction		2.31 [1.91–2.78]	3.22 [2.30–4.51]
Severe maltreatment, moderate household dysfunction		3.10 [2.52–3.80]	4.40 [2.89–6.70]
Severe multi-type adversities		7.89 [6.09–10.24]	9.92 [6.68–14.72]
Hurt an animal[a]	111.93 *		
Moderate maltreatment, high household dysfunction		1.89 [1.14–3.14]	–
Severe maltreatment, moderate household dysfunction		2.40 [1.46–3.95]	–
Severe multi-type adversities		4.54 [2.60–7.93]	–
Intimidation	282.75 *		
Moderate maltreatment, high household dysfunction		1,66 [0,86–3,20]	2,36 [1.16–4.80]
Severe maltreatment, moderate household dysfunction		3.48 [2.22–5.46]	6.76 [3.64–12.57]

	Sex × Latent Class Interaction	Men	Women
Severe multi-type adversities		8.28 [5.58–12.31]	7.27 [4.46–11.86]

Note. First, interactions between sex and latent classes were examined. Wald χ^2 values are reported for each analysis. Sex-stratified logistic regressions are also included in this table. Low adversities served as the reference group in each analysis. Each of the nine logistic regression analyses were adjusted for race, age, and income. *OR* = odds ratio; *CI* = confidence intervals.

[a]The analysis examining correlates of hurting an animal was not run for women, because only a small number of women (i.e., <50) reported engaging in this behavior.

*$p < .05$.