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Adverse Childhood Experiences and Intimate Partner Violence: A Meta-Analysis

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Associations between Adverse Childhood Experiences and Intimate Partner Violence:

A Meta-Analysis

by

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Abstract

Background: Intimate partner violence (IPV) represents a significant public health concern that impacts individuals globally. Exposure to adverse childhood experiences (ACEs) represents one risk factor for IPV involvement. However, the results of existing research on the association between ACEs and IPV have demonstrated somewhat mixed results. Given the heterogeneity of existing findings, the overall effect size of the association between ACEs and IPV was examined, to in turn inform policy, knowledge translation, prevention, and intervention efforts.

Objectives: The present research sought to meta-analytically examine the association between ACEs and (1) IPV perpetration and (2) IPV victimization. Additionally, moderator analyses were conducted to determine demographic factors and study characteristics that may impact the association between ACEs and IPV involvement

Method: Electronic searches were conducted in MEDLINE, Embase, and PsycINFO in August of 2021. One-hundred and twenty-three records were screened for inclusion. All studies must have included a measure of ACEs (i.e., 8-item, 10-item, or other composite measure) and a measure of IPV victimization or perpetration (e.g., physical, sexual, or psychological abuse).

Results: Among the 27 studies and 41 samples included in the present meta-analysis, 65,330 participants were included. Across all included studies, 33.84% of participants identified as male and the mean age was 32.10 years (age range, 14-56.9). The results of the meta-analyses demonstrated that ACEs were positively associated with IPV perpetration [$k = 15$, $r = .172$, (95% CI: .119, .223), $p < .001$], and victimization [$k = 26$, $r = .200$, (95% CI: .143, .255) $p < .001$]. Results of the moderator analysis demonstrated that the association between ACEs and IPV perpetration and victimization was stronger among studies that examined mixed IPV (i.e., more than one type of IPV) compared to physical IPV exclusively. The association between ACEs and

IPV victimization was also stronger among studies that included younger participants and among more recently published studies.

Conclusions: The present meta-analyses demonstrate a need for trauma-informed and early approaches to IPV screening, prevention, and intervention. Further, significant moderators identified in the present meta-analyses contribute to a stronger understanding of factors that amplify or attenuate risk for IPV among individuals with ACEs exposure. Future research should build upon these results to help inform resiliency factors that may mitigate risk for IPV.

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Associations between Adverse Childhood Experiences and Intimate Partner Violence: A Meta-Analysis

Intimate partner violence (IPV), which can include physical, sexual, and/or emotional harm toward a current or former intimate partner (CDC, 2012), is a public health issue of epidemic proportions that impacts individuals of all genders and socioeconomic statuses globally. IPV typically distinguishes between IPV victimization and perpetration, whereby IPV victimization refers to having an intimate partner engage in aggression or violence and IPV perpetration refers to aggressing against an intimate partner. Research has estimated that the global prevalence of lifetime IPV victimization and IPV perpetration is 30% and 19%, respectively (Devries et al., 2013; Singh et al., 2014). Previous research has suggested that males were more commonly the perpetrators of IPV compared to females (e.g., Hester, 2013), however more recent literature suggests that rates of IPV perpetration may be comparable for males and females (e.g., Dim & Elabor-Idemudia, 2020). It is important to note that sex differences in reported rates of IPV are nuanced. For example, Johnson (2010) described a typology of IPV that includes intimate terrorism (i.e., behaviors with the goal of coercive control and more commonly enacted by males), violent resistance (i.e., acts of violence typically in self-defence and more commonly enacted by females), and situation couple violence (i.e., conflict between partners that escalates to IPV and is enacted by both males and females).

Both IPV victimization and perpetration are multi-determined and past research has identified several risk factors that contribute to IPV involvement, including those at the level of the community (e.g., neighborhood chaos; e.g., Kirst et al., 2015), peer and family (e.g., peer deviance, witnessing IPV in the home; e.g., Jung et al., 2019), and individual (e.g., gender, socioeconomic status; e.g., Abramsky et al., 2011). One commonly suggested risk factor for IPV in adulthood is having experienced abuse, neglect, and/or family dysfunction in childhood,

which collectively are known as Adverse Childhood Experiences (ACEs; Felitti et al., 1998). Specifically, ACEs include family dysfunction experiences such as parent mental illness, substance use, incarceration, and/or witnessing domestic violence, as well as maltreatment experiences such as physical, sexual, and emotional abuse and neglect, experienced prior to the age of 18 years (Felitti et al., 1998; Ports et al., 2020). Over the last two decades, concerted empirical attention has examined associations between ACEs and IPV victimization and perpetration, yielding somewhat mixed results. Thus, the overarching goal of the present research was to clarify existing literature by ascertaining an overall effect size of the association between ACEs and IPV. Further, moderator analyses were conducted to better understand which populations may be at greater risk. A stronger understanding of the risk factors that contribute to both IPV victimization and perpetration is critical for prevention strategies seeking to identify individuals most at-risk of becoming a victim or perpetrator of later IPV, and to develop trauma-informed intervention efforts to mitigate the impact of ACEs on IPV.

The Economic and Psychological Burden of Intimate Partner Violence

IPV is associated with a range of far-reaching and negative implications both to society broadly and the individual specifically. From a societal perspective, the costs of IPV victimization are extensive. Among these costs include those related to greater healthcare utilization, such as emergency room and physician visits, costs related to legal services, those associated with lost productivity and absenteeism, job instability, and diminished educational attainment (Adams et al., 2013; Adams et al., 2012; Varcoe et al., 2011). The annual cost of IPV using a sample of Canadian participants who have left abusive relationships was estimated to be \$6.9 billion in 2004 dollars (Varcoe et al., 2011). More recent research conducted in the U.S has estimated the lifetime economic burden of IPV among U.S. adults to be \$3.6 trillion in 2014

dollars (Peterson et al., 2018). While research on the economic costs of IPV perpetration is limited, the estimated annual criminal justice expenditure alone for convicted perpetrators in the U.S was \$5.7 billion in 2012 dollars (Peterson et al., 2018).

On an individual level, exposure to IPV has been associated with negative impacts to social functioning, mental health, and physical health (Bonomi et al., 2006). The mental health correlates of IPV victimization and perpetration may differ, however. For example, research has found that IPV victimization among females was associated with greater emotional distress and suicide attempts, more severe anxiety and depressive symptoms, greater chronic health conditions and disabilities, lower self-rated health, and significant potential years of life lost compared to females who did not report IPV victimization (Ellsberg et al., 2008; Plichta & Falik, 2001). In contrast, IPV perpetration has been linked to antisocial personality and borderline personality disorders, PTSD, and self-reported unmet mental healthcare needs (Lipsky et al., 2010; Machisa et al., 2016; Spencer et al., 2019). Additional sequelae of IPV includes those related to intergenerational harms. That is, IPV may be witnessed by children inside the home, who may experience negative health outcomes associated with IPV exposure as a result. For example, exposure to caregiver IPV has been associated with post-traumatic stress symptoms among children (Telman et al., 2016). Overall, the importance of understanding the risk factors associated with IPV is highlighted by the vast economic toll, harms to individual health, and lasting implications to wellbeing across generations.

Adverse Childhood Experiences and Intimate Partner Violence

According to Anda and colleagues (2007), more than 6 in 10 people have experienced at least one ACE. Exposure to ACEs has been identified as a risk factor for negative outcomes to both physical and mental health across the lifespan (e.g., Felitti et al., 1998). The association

between ACEs and negative health outcomes may be explained by the impact of ACEs on the body's regulation systems and stress response (Buss et al., 2017). Individuals who are exposed to ACEs, especially those that are severe and chronic, may experience repeated physiological dysregulation, or elevated allostatic load. This refers to the overstimulation or malfunctioning of the activation of neural, neuroendocrine, and immune responses that can occur when faced with stressful situations (McEwan, 1998). Allostatic load can lead to 'wear and tear' on the body that can increase susceptibility to poor health and disease (McEwen, 1998). In the original ACEs study by Felitti and colleagues (1998), individuals who had experienced 4 or more ACEs were 4.6-10.3 times more likely to experience health risks such as depression, alcohol and illicit drug misuse, and 1.9-2.4 times more likely to experience diseases such as cancer, heart disease, and stroke. Collectively, the aforementioned negative health outcomes are among the strongest risk factors for, and leading causes of death in adults (Mokdad et al., 2000). Moreover, the associations between ACEs and negative health outcomes tend to occur in a dose-response manner; as the number of ACEs increase, so too does morbidity and mortality (Gilbert et al., 2015).

Previous research suggests that there is overlap between IPV victims and perpetrators, such that an individual can be both a victim and perpetrator of IPV (Tillyer & Wright, 2014). As such, the conceptual roots for the association between ACEs and IPV victims and perpetrator may differ. Social learning theory suggests that individuals learn how to behave through observing and modelling the behavior of others (Bandura, 1997). With respect to IPV perpetration, exposure to ACEs may lead to modelling violent behaviors observed between adults that were seen during childhood (Voith et al., 2020). This was supported by research that found that witnessing the abuse of one's mother was the strongest predictor of perpetrating

physical IPV compared to all other ACEs items (Fonseka et al., 2015). In terms of ACEs and IPV victimization, it has been suggested that exposure to ACEs may lead victims of IPV to develop more tolerant attitudes towards IPV in their own relationships. For example, Ames and colleagues (2013) demonstrated that ACEs exposure was associated with both normative beliefs about IPV and greater IPV involvement. Overall, however, examination of social learning as a mechanism in the association between exposure to ACEs and IPV victimization has received little empirical attention.

In terms of empirical evidence, the majority of existing studies have found support for the association between ACEs and later IPV involvement (e.g., Fanslow et al., 2021; Mair et al., 2012); however, a handful of studies have found weak or no support (e.g., Lunnemann et al., 2019; Nikulina et al., 2021). The heterogeneity of past findings points to the need to examine moderator variables to determine when effect sizes for the association between ACEs and IPV may be stronger or weaker, which can in turn help to identify important targets for prevention and intervention efforts. In this thesis, sample moderators (e.g., sex, age, race/ethnicity), as well as study characteristics (e.g., type of IPV examined, study year) were explored in an effort to explain between-study variability. Each of these potential moderators are discussed in turn below.

Sex. The prevalence of IPV perpetration and victimization among males and females is mixed in existing literature. Historically, it has been suggested that females were most commonly the victims of IPV, whereas males were most commonly the perpetrators (e.g., Hester, 2013). However, emerging research suggests the association between sex and IPV is nuanced, such that many studies show mixed findings. Indeed, current literature suggests that rates of IPV show sex symmetry and are comparable between males and females (e.g., Chan,

2011; Dim & Elabor-Idemudia, 2020), with some research finding higher rates of IPV physical perpetration among females (Capaldi et al., 2007) and others finding that females perpetrated physical abuse not requiring clinical intervention more often than males, however females were more likely to require medical treatment for injury following IPV (Ehrensaft et al., 2004).

However, it is important to acknowledge that the discussion of sex differences in IPV victimization and perpetration is complex and may be impacted by additional factors, such as sex differences in IPV reporting (Chan, 2011). Further, the strength of the association between ACEs and IPV may differ among males and females. Mair and colleagues (2012) demonstrated that, among females, a significant association between ACEs and both IPV victimization and perpetration was found. However, among males, only IPV perpetration was significantly associated with ACEs. Differences found in the prevalence of IPV perpetration and victimization based on sex, as well as differences in the strength of the association between ACEs and IPV based on sex, highlight the importance of investigating sex as a moderating variable that may explain between-study heterogeneity.

Age. Previous research has found that rates of IPV involvement vary across the lifespan. For example, Johnson and colleagues (2015) found IPV in adolescence and young adulthood peak at an older age for males compared to females and overall decrease with age for both sexes. Further, adolescents and young adults may experience unique risks that are associated with IPV, including developmental and environmental factors. Previous research has suggested that alcohol use is a risk factor for IPV (Quigley & Leonard, 2000) and adolescence and young adulthood represent a developmental time period where social motivations to engage in substance use may be particularly impactful (Anderson et al., 2011). Additionally, researchers have suggested that patterns of IPV follow general patterns of antisocial behavior, which tend to peak in late

adolescence and decline with age (Sweeten et al., 2013). While there is limited research examining the strength of the association between ACEs and IPV across the lifespan, exploration of the role of age on the association between ACEs and IPV may be important for informing and targeting prevention and intervention strategies, and therefore, were explored as a moderator herein.

Race/Ethnicity. Past research has found that ACEs are experienced differentially across racial and ethnic groups, such that White individuals experience fewer ACEs compared to groups exposed to systemic oppression and disadvantage, such as Black and Latinx individuals (Maguire-Jack et al., 2020). Additionally, previous research suggests that rates of IPV differ among racial and ethnic groups (Caetano et al., 2000). These findings may be related to racism, discrimination, and social desirability that impact an individuals' willingness to report IPV (Holliday et al., 2020; Wolf et al., 2003). For example, Pro and colleagues (2020) demonstrated that the association between ACEs and IPV can differ based on race and ethnicity, such that Alaskan Native/American Indian women were at particularly elevated risk for IPV based on ACEs exposure compared to Asian, Native Hawaiian, Pacific Islander, Latinx, Black, and White women. Overall, however, there is limited research exploring the associations between ACEs and IPV based on race/ethnicity. Given that higher levels of ACEs confer greater risk for negative health outcomes, paired with the limited findings on rates of IPV among racial and ethnic groups, it will be important to examine the role of race/ethnicity in the association between ACEs and IPV.

Type of IPV. Existing research on the association between ACEs and IPV have frequently examined the association between ACEs and specific types of IPV (e.g., Cprek et al., 2020; Jones et al., 2018; Miller-Graff et al., 2017; Nikulina et al., 2017). Results suggest that findings

are mixed, such that most studies have found significant associations between ACEs and various types of IPV, including physical, sexual, and psychological IPV (Jones et al., 2018; Visser et al., 2016), whereas others have not. For example, Miller-Graff and colleagues (2017) did not find a significant association between ACEs and sexual IPV victimization. Similarly, Nikulina and colleagues (2017) did not find a significant association between ACEs and sustaining IPV-related injuries. Ascertaining an overall effect size of the association between ACEs and specific types of IPV will be useful for understanding which forms of IPV may have the greatest risk conferred by exposure to ACEs.

Year of Publication. Previous research has found that rates of IPV may change over time. For example, Bott and colleagues (2019) demonstrated that national reported rates of sexual and physical IPV have declined in some countries and increased in others. Similarly, concerted efforts have been made to implement routine ACEs screening, such as in primary care offices (e.g., Dobson et al., 2020; van Roessel et al., 2021), which may lead increased awareness and knowledge of ACEs among healthcare providers and greater uptake of routine screening (Bryant & Van Graafeiland, 2020). Taken together, changes in the reporting of IPV and ACEs over time may influence the magnitude of associations. Thus, it was important to examine whether year of study publication moderated the strength of the association between ACEs and IPV in the present meta-analysis.

Current study

The existing literature assessing the association between ACEs and IPV has led to mixed results, such that some effect sizes in existing research range from small to large (Alvarez et al., 2015; Cunradi et al., 2013), while others do not find a relationship at all (e.g., Johnson et al., 2017; Nikulina et al., 2021). To advance knowledge and inform future directions in the field, as

well as prevention and intervention efforts, the present meta-analysis had two central aims. First, this meta-analysis sought to resolve discrepancies in the literature by deriving pooled effect size estimates on the association between ACEs prior to age 18 and later IPV. Given that previous research has identified that mechanisms explaining the link between ACEs and IPV victimization and perpetration may differ (Afifi et al., 2012; Spencer et al., 2021), two separate meta-analyses examining (i) ACEs to IPV victimization and (ii) ACEs to IPV perpetration were conducted. It was hypothesized that ACEs would be positively associated with both IPV victimization and perpetration. A second aim was to conduct exploratory analyses to determine whether the effect size for the association between ACEs and IPV varied based on potential moderator variables.

Methods

Definitions of Constructs

Adverse Childhood Experiences (ACEs) were assessed using cumulative retrospective self-reports. Exposure to child adversity included maltreatment and household dysfunction experienced prior to age 18. Child adversity was typically measured using either the original 8-item ACEs (Felitti et al., 1998), which included physical abuse, sexual abuse, emotional abuse, parent substance use, parent mental health issues, parent divorce or separation, parent incarceration, and exposure to domestic violence, or the 10-item measure, which included additional items assessing physical and emotional neglect, or an alternative composite measure of ACEs. *Intimate partner violence* included either victimization or perpetration of physical aggression, injury, psychological aggression, and/or sexual violence or coercion measured using either a self-report questionnaire or from review of police records.

Search Strategy

The present meta-analysis used PRISMA guidelines (Moher et al., 2015) and conducted searches using MEDLINE, Embase, and PsycINFO, with the search strategy developed by a health sciences librarian. Articles included in the present meta-analysis were drawn from the ACEs Data Catalogue, developed in the Determinants of Child Development Lab at the University of Calgary. This detailed catalogue includes all studies ever conducted using the 8-item or 10-item ACEs measure (± 2) and documents each predictor and outcome variable for each ACEs study in an inventory format for ease of conducting meta-analyses. This catalogue was initiated in November 2018 and updated in 2021. The search used to derive this catalogue includes the acronym ACEs and “adverse childhood event or experiences”. The year of publication has been limited to 1998, the year that the original ACEs study was published (Felitti et al., 1998), to August 2, 2021. Language or date restrictions were not applied.

Study Inclusion and Exclusion Criteria

All titles and abstracts yielded from the search strategy were reviewed by two independent coders. All full text articles of studies that potentially met inclusion criteria were examined.

Inclusion Criteria. Studies included in this meta-analysis included those that had (1) an ACEs questionnaire measured using self-report, interviews, or official child protection records; (2) an outcome measure of intimate partner violence perpetration and/or victimization that was measured using self-report, interviews, or police records; (3) sufficient information necessary for the calculation of an effect size; (4) published in English.

Exclusion Criteria. Articles were excluded based on: (1) non-empirical publications, including descriptive reports, case studies, or book and narrative reviews; (2) utilized a qualitative study design.

Data Extraction

In studies that met inclusion criteria, the following variables were extracted: mean participant age, sex (% male in a sample), race/ethnicity, methodological factors, type of IPV [i.e., physical, psychological, sexual, mixed IPV (more than one type of IPV was assessed)], and whether the study assessed IPV victimization or perpetration (see Table 1). All data was extracted by the first author and one additional coder for the purpose of establishing interrater reliability of data extraction. Any discrepancies in data extraction were resolved via consensus.

Data Synthesis

One effect size per sample was included within each meta-analysis (IPV perpetration; IPV victimization) to ensure independence of effect sizes. In cases where more than one study was based on a single dataset, the study which possessed the largest sample size and most complete data was included.

Data Analysis

Effect size estimation. Meta-analyses were conducted to determine the pooled effect size for each of the associations between ACEs and IPV perpetration and victimization via comprehensive Meta-Analysis Software, Version 3.0 (CMA; Bornstein, 2013). Each study could present effect sizes in different formats, such as odds ratios, correlations, and chi-squares (Borenstein, et al., 2021). Using CMA, effect sizes were transformed into a common metric of correlations (r) using CMA's standard transformation formulas. All analyses were performed using random effect models to account for expected differences in population parameters across studies.

Publication bias testing. The selection process for study publication is not random and can favor studies with positive effects (Scheel et al., 2021). Thus, there is the potential for

publication bias in systematic reviews of the literature. Accordingly, funnel plots inspection was used to assess publication bias. In instances where no publication bias was present, effect sizes were represented symmetrically around the pooled effect size in the funnel plot. When a larger number of studies fell to the right of the pooled effect size in the funnel plot, relative to those that fell toward the left, it suggested that studies were likely missing from the analyses (i.e., publication bias). In such cases, the Duval and Tweedie trim and fill procedure was used, which imputed symmetrical values to balance the funnel plot, and provided an adjusted pooled effect size that accounted for missing studies on the left-hand side of the funnel plot.

Moderator Analyses. Q and I^2 statistics were used to examine the heterogeneity of effect sizes. Examination of moderator variables are warranted when the Q statistic is significant and/or when the I^2 statistics is greater than 50% (Borenstein, 2009). Further, significance of categorical and continuous moderators were determined by the Q statistic and by mixed-effects model meta-regressions, respectively (Thompson & Higgins, 2002). Categorical moderators with more than three studies per cell were examined (Borenstein et al., 2009).

Results

Studies Included

The PRISMA diagram (Figure 1) demonstrates that 123 non-duplicate records were yielded by the initial search. Subsequently, all full text articles were reviewed, and 27 studies (41 samples, 65,330 participants) were included in the present meta-analysis. In total, $n = 12$ studies reported on IPV perpetration and $n = 23$ studies reported on IPV victimization.

Sample Characteristics

All study characteristics can be found in Table 2. Nineteen (70.37%) studies were conducted in North America, four (14.81%) in Europe, and one (3.70%) study in each of Asia, Africa, Oceania, and a multi-country study, respectively. Across all included studies, 33.84% of

participants identified as male and the mean age was 32.10 years (age range, 14-56.9). The breakdown of race/ethnicity across studies with available data was as follows: White (44.78%), Black (20.21%), Latinx (11.2%), Asian (14.80%), Indigenous (1.96%), Mixed race/ethnicity (1.23%), and Other race/ethnicity (2.15%).

Meta-analytic Results for ACEs and IPV Perpetration

Pooled Effect Size. A total of 15 samples were available for this random-effects meta-analysis, which produced a significant pooled effect size of $r = .172$, (95% CI: .119, .223), $p < .001$; see Figure 2). Examination of the funnel plot revealed symmetry, suggesting that no publication bias was detected.

Moderator Analyses. Between study heterogeneity was indicated ($Q = 253.57$, $p < .001$ and $I^2 = 94.48$) and thus, moderators were explored (see Table 3). Type of IPV was significant, such that the correlation between ACEs and mixed IPV (i.e., more than one type of IPV measured) was $r = .280$, (CI: .153, .398), $p < .001$, and the association between ACEs and physical IPV was $r = .105$, (CI: .063, .147), $p < .001$. Racial minority status, publication year, participant mean age, and sex were not significant moderators.

Meta-analytic Results for ACEs and IPV Victimization

Pooled Effect Size. A total of 26 samples were available for this random-effects meta-analysis, which produced a significant pooled effect size of $r = .200$, (95% CI: .143, .255) $p < .001$, (see Figure 3). Examination of the funnel plot revealed symmetry, suggesting no publication bias.

Moderator Analyses. Between study heterogeneity was indicated ($Q = 489.743$, $p < .001$ and $I^2 = 94.90$) and moderators were explored (see Table 4). Participant age and year of publication emerged as significant moderators. Results demonstrated that effect sizes were

stronger among studies with younger participants $r = -.006$, (CI: $-.012, -.0003$), $p = .041$. The moderator analysis also demonstrated that the year of publication was significant, such that effect sizes were stronger in more recently published studies $r = .024$, (CI: $.011, .037$), $p < .001$. Type of IPV was significant, such that the association between ACEs and mixed IPV $r = .266$, (CI: $.191, .338$), $p < .001$) was stronger than between ACEs and physical IPV $r = .064$, (CI: $.032, .097$), $p < .001$), respectively. Racial minority status and sex did not emerge as significant moderators.

Discussion

The present meta-analyses examined the association between ACEs and both IPV victimization and perpetration. Results demonstrated that higher ACEs score, referring to abuse, neglect, and household dysfunction experienced prior to the age of 18, was associated with greater IPV victimization ($r = .17$) and perpetration ($r = .20$) experiences. These findings are consistent with previous literature hypothesizing that ACEs are associated with greater involvement in IPV (e.g., Anda et al., 2006; Cunradi et al., 2013). The results of moderator analyses demonstrated that the association between ACEs and both IPV perpetration and victimization were stronger among studies that examined mixed IPV (i.e., multiple forms of IPV) compared to physical IPV alone. Moreover, the association between ACEs and IPV victimization specifically was stronger among more recently published studies and studies that included younger participants. Overall, results contribute to a stronger understanding of the association between exposure to ACEs and later IPV and, more generally, the body of literature that supports the far-reaching negative implications of ACEs on wellbeing.

There are several possible mechanisms proposed to account for the association between ACEs and IPV involvement. It has been proposed that parent-child attachment may play a role,

such that abuse perpetrated by a caregiving figure (e.g., father; stepfather) towards the child or the child's attachment figure (e.g., mother) may impact the child's sense of safety and security. When a child's safety and security is threatened, they may develop the perception that the world is hostile and engage in more aggressive tendencies towards others as an adaptation process (Ainsworth 1989; Egeland, 1993; Widom & Wilson, 2015). The association between ACEs and IPV may also be explained through neurophysiological mechanisms. De Bellis (2001) indicated that the association between violence experienced during childhood and physiological changes may lead to violent behavior perpetration. Specifically, repeated exposure to stress can lead to physiological stress responses that have negative implications for neurological development. This, in turn, can lead to impairments in stress responses and coping, and the management of emotional arousal, thereby increasing the likelihood of engaging in violent behavior. Finally, it is also possible that ACEs may be related to IPV through behavioral genetics, such that genes associated with violent behaviors may be shared between parents and offspring. For example, past research has identified negative emotionality to be a heritable personality trait and has been associated with IPV involvement (Blonigen et al., 2005; Moffitt et al., 2000). As such, genetics may explain the tendency for individuals who are maltreated by parents to perpetrate maltreatment in adulthood (Hines & Saudino, 2002). Further, critical theory may also help conceptualize the association between ACEs and IPV, such that both ACEs and IPV may occur as a result of intersecting sources of oppression including those related to racism and sexism (Kelly 2011; Williams-Butler et al., 2022). Overall, these potential viable mechanisms are currently largely untested empirically. Thus, stronger understanding of the mechanisms accounting for the association between ACEs and IPV are needed.

The present finding that exposure to ACEs is positively associated with later IPV involvement may serve as a starting point for future research that examines the cycle of risk and violence across generations. Two concepts that have been used to explain risks transmitted between generations include homotypic and heterotypic continuity (Berzenski et al., 2014). Homotypic continuity refers to children who experience the same form of maltreatment as their parents. For example, a parent who was physically abused as a child then has a child who also experiences physical abuse. In the case of homotypic continuity, the same form of maltreatment is transmitted across generations. In terms of the homotypic continuity of IPV, previous research has shown that witnessing IPV among one's parents was associated with being 1.96-3.01 times more likely to be a victim of IPV and 1.86-2.96 times more likely to perpetrate IPV in one's own relationship (Ehrensaft et al., 2003; Franklin et al., 2012; Islam et al., 2014).

In contrast, heterotypic continuity refers to parents who experience a different form of maltreatment compared to their own children. In the case of heterotypic continuity across generations, both the parent and child have been maltreated, albeit in different ways. A meta-analysis examining the association between childhood maltreatment and current IPV found that childhood abuse (i.e., physical, sexual, and emotional abuse) and witnessing IPV in the family of origin were both significantly correlated with adult experiences with IPV (Spencer et al., 2019). A separate meta-analysis conducted by Godbout and colleagues (2019) similarly found that witnessing IPV, as well as experiencing physical, psychological, and sexual abuse, were all significantly associated with IPV perpetration. When transformed to odds ratios, the results of the present meta-analyses demonstrated that exposure to ACEs was associated with 2.10-fold increased odds of experiencing IPV victimization and 1.88-fold increased odds of experiencing IPV perpetration. As such, the present research demonstrates that rates of heterotypic continuity

were generally consistent with those of homotypic continuity of IPV demonstrated in previous studies. It stands to reason that while a history of IPV in one generation will increase risk for IPV in the next generation, ACEs will also confer risk for later IPV via heterotypic continuity. Overall, these findings are important for strengthening our understanding of risk factors for IPV, which may help inform prevention efforts.

The association between ACEs and both IPV victimization and perpetration was significantly moderated by type of IPV, such that the effect size was larger among studies that examined mixed IPV (i.e., more than one form of IPV) compared to studies that examined physical IPV exclusively. The stronger association between ACEs and studies that examined mixed IPV may be due to the opportunity for participants to endorse multiple forms of IPV, which allows for the possibility of capturing higher rates of IPV. Further, the risk for IPV may be impacted by the intersection of various childhood adversities. For example, past research has found that ACEs tend to cluster together, such that exposure to one ACE is associated with exposure to other types of ACEs (Lacey et al., 2022). Indeed, Felitti and colleagues (1998) found support for the association between witnessing parent IPV and the experience of other ACEs. These authors determined that in a sample of 9508 participants, 86% of individuals who had witnessed the abuse of one's mother also reported experiencing at least one additional ACE. Specifically, among individuals who witnessed the abuse of their mother, the prevalence rate of also experiencing psychological, physical, and sexual abuse were 34%, 31%, and 41%, respectively. Thus, the results of the present meta-analysis are in line with the notion of a "mediated net of adversity", whereby maltreatment and disadvantage during childhood co-occur, and are associated with various forms of adversity across the lifespan (Atkinson et al, 2015).

Overall, this may account for the stronger association between ACEs and mixed IPV, given that individuals may endorse more than one type of IPV, thereby strengthening the effect size.

Several additional moderators were identified for the association between ACEs and IPV victimization specifically. First, the association was stronger among studies that included younger participants. The direction of this finding is consistent with existing research that has found antisocial behavior tends to peak in early adulthood and decrease with age (Farrington, 1986). The concept of an age-crime curve has been used to describe the typical pattern of delinquent behavior generally, which suggests that crime and delinquency peak in late adolescence and decline throughout adulthood (Sweeten et al., 2013; Johnson et al., 2014). The finding that the association between ACEs and IPV was weaker among studies with older participants may also be explained by the fact that adulthood is associated with greater responsibility, including those related to careers and parenthood, and this transition generally leads to a decrease in crime (Massoglia & Uggen, 2010). Further, older adulthood is associated with several protective factors for IPV, such as increased social capital and financial stability (Zweig, 2004).

Second, the association between ACEs and IPV victimization was stronger among more recently published studies. This finding may be due to increased screening for both ACEs and IPV, which may have implications for reducing stigma surrounding disclosure of both experiences when participating in research studies. Previous literature has demonstrated that self-stigmatization of IPV involvement was associated with concealment of IPV (Overstreet et al., 2017). However, more recent efforts may help to decrease stigma. For example, ACEs screening has been implemented in routine primary care (Glowa et al., 2016; van Roessel et al., 2021) and has been rated with a high degree of acceptability by participants, possibly speaking to more

frequent discussion of, and greater openness towards previous experiences of adversity (Glowa et al., 2016). Similarly, efforts to increase IPV screening and the development of intervention efforts may serve to decrease stigma surrounding IPV disclosure (Burnett et al., 2019), possibly accounting for the stronger association between ACEs and IPV found in more recent studies.

Clinical Implications

The results of the present meta-analyses help to clarify existing mixed findings on the association between ACEs and IPV involvement. Given the positive association between ACEs and both IPV perpetration and victimization, these findings demonstrate that trauma-informed care regarding IPV screening, intervention, and prevention may be necessary. Specifically, past research had identified that inquiring about past traumatic experiences, minimizing distress and increasing autonomy, and appropriate knowledge of trauma symptoms are important tenets of trauma-informed care (Reeves, 2015). Further, these findings serve as a starting point for future research examining mechanisms that may account for the association between ACEs and IPV. Stronger understanding of this relationship may inform targets of intervention.

The results of the present study also identify moderators of the association between ACEs and IPV. These findings serve to better understand factors that may lead to elevated risk for IPV among individuals with a history of ACEs. For example, the finding that the association between ACEs and IPV victimization was stronger among younger participants supports the continued need for early prevention efforts that incorporate IPV education and skills building for healthy relationships in school curriculums and parenting interventions (e.g., Exner-Cortens et al., 2019). Further, the finding that the association between ACEs and IPV perpetration and victimization was stronger among studies that examined mixed IPV types compared to physical IPV exclusively suggests a need for comprehensive assessment of various types of IPV to fully

capture exposure to violence. In all, the present research suggests that early education and prevention efforts, use of IPV screening, and trauma-focused intervention will be necessary to mitigate the risk of IPV and bolster wellbeing.

Limitations

The present meta-analysis is not without its limitations. First, all included studies were cross-sectional, which precludes the examination of risk factors and sequelae of IPV. Additionally, all studies included in the present meta-analyses utilized retrospective recall of ACEs, which may be impacted by memory inaccuracies associated with recall of childhood events or biased by personality traits (Usher & Neisser, 1993; Reuben et al., 2016). Further, the present study includes an overrepresentation of studies conducted in North America. This may limit the generalizability of the findings given that previous data collected by the Global Health Observatory Data Repository (2019) has found variation in prevalence rates of IPV globally, such that the highest rates were found in Central sub-Saharan Africa, West sub-Saharan Africa, and South Asia. In contrast, the lowest rates of reported IPV were found in East Asia, Western Europe, and North America. Thus, future research should seek to ascertain prevalence rates of reported IPV using representative global samples to increase generalizability of results.

Future Directions

Existing literature assessing the association between ACEs and IPV have largely utilized participants that identify as heterosexual. In comparison, little is known about IPV among LGBTQ+ individuals. Existing research has presented mixed results, such that some literature suggests LGBTQ+ populations experience rates of IPV similar to that of heterosexual women (Ard & Makadon, 2011) and others found both LGBTQ+ youth and adults reported more frequent experiences of IPV compared to heterosexual individuals (Dank et al., 2013; Kattari et

al., 2022). Beyond this, LGBTQ+ individuals may face unique risks related to IPV. For example, past research suggests that LGBTQ+ individuals experience elevated risk for violence generally (Hein & Scharer, 2013). Previous literature has also found that instances of IPV among transgender individuals were less frequently reported to police compared to cisgender individuals (Langenderfer-Magruder et al., 2016). Given higher rates of IPV and violence generally, in addition to possible reluctance to report violence due to stigma and heterosexism (Brown, 2008), examining the association between ACE and IPV among LGBTQ+ individuals will be critical for informing intervention and prevention.

Future avenues of research should also seek to identify resiliency factors that buffer the risk for IPV among individuals who have experienced ACEs. A stronger understanding of resiliency factors is important, as ACEs are not deterministic of poor outcomes for all individuals. For example, past research has found that the association between ACEs and marital conflict was stronger when individuals reported lower rates of social support; however, the association between ACEs and marital conflict was comparatively weaker when higher levels of social support were reported (Madigan et al., 2016). Thus, social support can act as a potential resiliency factor that can offset the negative consequences of having experienced ACEs. Not only can social support mitigate the risk of conflict within intimate relationships, but greater social support has also been associated with leaving an abusive relationship (Johnson & Johnson, 2013). Previous research has found that interventions that promote social support and community advocacy improved mental health outcomes among survivors of IPV (e.g., Constantino et al., 2005; Ogbe et al., 2020). Thus, enhancing social support, for example, by including community members as a resource (e.g., Ogbe et al., 2020), may be a beneficial prevention strategy for IPV among individuals with elevated ACEs scores. Indeed, past research has demonstrated that IPV

screening alone may not be sufficient without the implementation of intervention for individuals identified to be experiencing IPV (MacMillan et al., 2006). Further, benevolent childhood experiences, which refer to positive experiences prior to the age of 18, including a sense of safety, security, and predictability within the home, can protect against the negative impact of ACEs (Hou et al., 2022) and represent an area of future research to better understand resiliency factors that buffer the association between ACEs and IPV.

Future avenues of research should also focus on lesser researched forms of IPV. For example, economic abuse, which serves to exert control over intimate partners by limiting an individual's control over their finances is associated with experiencing other forms of IPV, including psychological and physical IPV (Adams et al., 2008). Not only can economic IPV lead to psychological distress (Antai et al., 2014; Kutin & Reid, 2017), but may critically limit an individual's access to the necessary resources to leave an abusive relationship, possibly leading to prolonged IPV involvement. Further, given the prominence of electronic forms of communication in the 21st Century, future research should also examine the association between ACEs and electronically transmitted IPV. For example, Smith-Darden and colleagues (2017) found a significant association between ACEs and electronic dating aggression, including cyberstalking, online harassment, and coercive sexting among a sample of middle- and high-school students. However, an understanding of the association between ACEs and electronic IPV and its correlates is currently quite limited in adult samples, despite the fact that many adults are now meeting and engaging with potential partners via online dating apps and services (Hogan & Dutton, 2011).

Conclusions

The results of the current study provide support for the notion that ACEs confer risk for IPV victimization and perpetration to a similar degree. The present meta-analysis clarified the mixed findings in existing research by providing a pooled effect size for the association between ACEs and IPV perpetration and victimization among published studies globally. The results suggest that moving forward, a trauma-informed approach to IPV screening, prevention, and intervention are important to consider.

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**Indicates study was included in the meta-analysis*

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Table 1*Coding System of Study Variables*

Variable	Coding
ACEs Measure	1 = 8-item measure 2 = 10-item measure 3 = Other comprehensive ACEs measure
ACEs Informant	1 = Self-report 2 = Child abuse records 3 = Other
IPV Role	1 = Victim 2 = Perpetrator
IPV Informant	1 = Self-report 2 = Hospital/Police records 3 = Other
IPV Type	1 = Physical 2 = Psychological 3 = Sexual 4 = Mixed (i.e., more than one type of IPV) 5 = Other

Race/Ethnicity	1 = % White 2 = % Black 3 = % Asian 4 = % Latinx 5 = % Indigenous 6 = % Other
Participant Sex	% Male
Participant Age	Continuous (age in months)
Study Design	0 = Cross-sectional 1 = Longitudinal
Publication Year	Continuous (Year)

Table 2*Characteristics of Studies Included*

First Author, Year, Reference	<i>N</i>	Mean Age (years)	% Male	Country	IPV Involvement	Type of IPV	Name of IPV measure	Type of ACEs measure
Ames, 2003	970	39.8	50	USA	Victim, Perpetrator	Physical Assault	CTS	Other
Anda, 2006	8692	56.9	46	USA	Perpetrator	Mixed	Other	8-item
Brown, 2015	25,654	-	50.8	USA	Perpetrator	Mixed	Other	Other
Cprek, 2020	2900	-	41.5	USA	Victim	Mixed	Other	10-item
Cunradi, 2009	1696	-	50	USA	Victim, Perpetrator	Physical	CTS	Other
Cunradi, 2013	3506	41.89	50	USA	Victim, Perpetrator	Physical	CTS	Other
Daugherty, 2022	55	40.79	0	Spain	Victim	Mixed	CAS-SF	10-item
Fanslow, 2021	2786	-	51.63	New Zealand	Victim	Mixed	Other	8-item
Fonseka, 2015	1252	-	100	Sri Lanka	Perpetrator	Mixed	Other	Other
Gerke, 2018	164	25.01	100	USA	Victim	Mixed	IPV-GBM	Other

Johnson, 2017	32	-	0	USA	Victim	Mixed	HARK-C	10-item
Jones, 2018	355	36.6	0	USA	Victim	Mixed	CTS-Revised	10-item
Kidman, 2020	586	14	-	Malawi	Victim, Perpetrator	Mixed	Adapted WHO VAWI	Other
Lee, 2021	1127	42.05	100	USA	Perpetrator	Physical	Other	10-item
Li, 2020	475	32.6	0	USA	Victim	Mixed	Chinese AAS- C	10-item
Lipscomb, 2019	4231	-	0	USA	Victim	Mixed	Other	Other
Mair, 2012	3722	41.8	50	USA	Victim, Perpetrator	Physical	Other	Other
Miller-Graff, 2017	101	26	0	USA	Victim	Mixed	Revised CTS	10-item
Musa, 2018	400	20.4	41.5	Bosnia and Herzegovina	Victim	Mixed	Other	Other
Nukulina, 2021	284	20.05	32	USA	Victim, Perpetrator	Mixed	CTS-2	Other
Paulson, 2019	83	26.59	0	USA	Victim	Mixed	Revised CTS	10-item
Riedl, 2021	2392	-	45.99	Austria	Victim	Mixed	German HITS Scale	Other
Scrafford, 2019	76	26.4	0	USA	Victim	Mixed	Revised CTS	10-item

Son, 2020	575	22.72	20.4	USA/Canada	Victim	Mixed	Other	Other
Stokes, 2020	3030	-	50	Brazil, Bulgaria, China, Lebanon, Nigeria, USA	Victim, Perpetrator	Physical	Revised CTS	Other
Suarez, 2021	131	-	0	USA	Victim	Mixed	Other	Other
Visser, 2016	55	-	0	Netherlands	Victim, Perpetrator	Mixed	Dutch Revised CTS	10-item

Table 3*Moderator Analyses for the Association Between ACEs and IPV Perpetration*

Categorical Moderators^a	<i>k</i>	<i>b</i>	95% CI	<i>z</i> Score	<i>p</i>
Type of IPV					
Mixed IPV	6	.280	.153, .398	4.213	< .001
Physical IPV	6	.105	.063, .147	4.863	< .001
Continuous Moderators	<i>k</i>	<i>b</i>	95% CI	<i>z</i> Score	<i>p</i>
Participant Age	9	.005	-.0005, .011	1.79	.073
% Male	14	.0009	-.0006, .002	1.12	.261
% Minoritized	7	-.0005	-.004, .003	-.22	.823
Publication Year	15	.004	-.009, .017	.55	.579

Table 4*Moderator Analyses for the Association Between ACEs and IPV Victimization*

Categorical Moderators	<i>k</i>	<i>b</i>	95% CI	<i>z Score</i>	<i>p</i>
Type of IPV					
Mixed IPV	18	.266	.191, .338	6.706	< .001
Physical IPV	5	.064	.032, .097	3.891	< .001
Continuous Moderators	<i>k</i>	<i>b</i>	95% CI	<i>z Score</i>	<i>p</i>
Participant Age	16	-.006	-.012, -.0003	-2.04	.041
% Male	25	-.0002	-.002, -.0015	-.26	.797
% Minoritized	9	-.0007	-.005, .003	-.34	.737
Publication Year	26	.024	.011, .037	3.68	< .001

Figure 1

PRISMA Diagram of Review Search Strategy

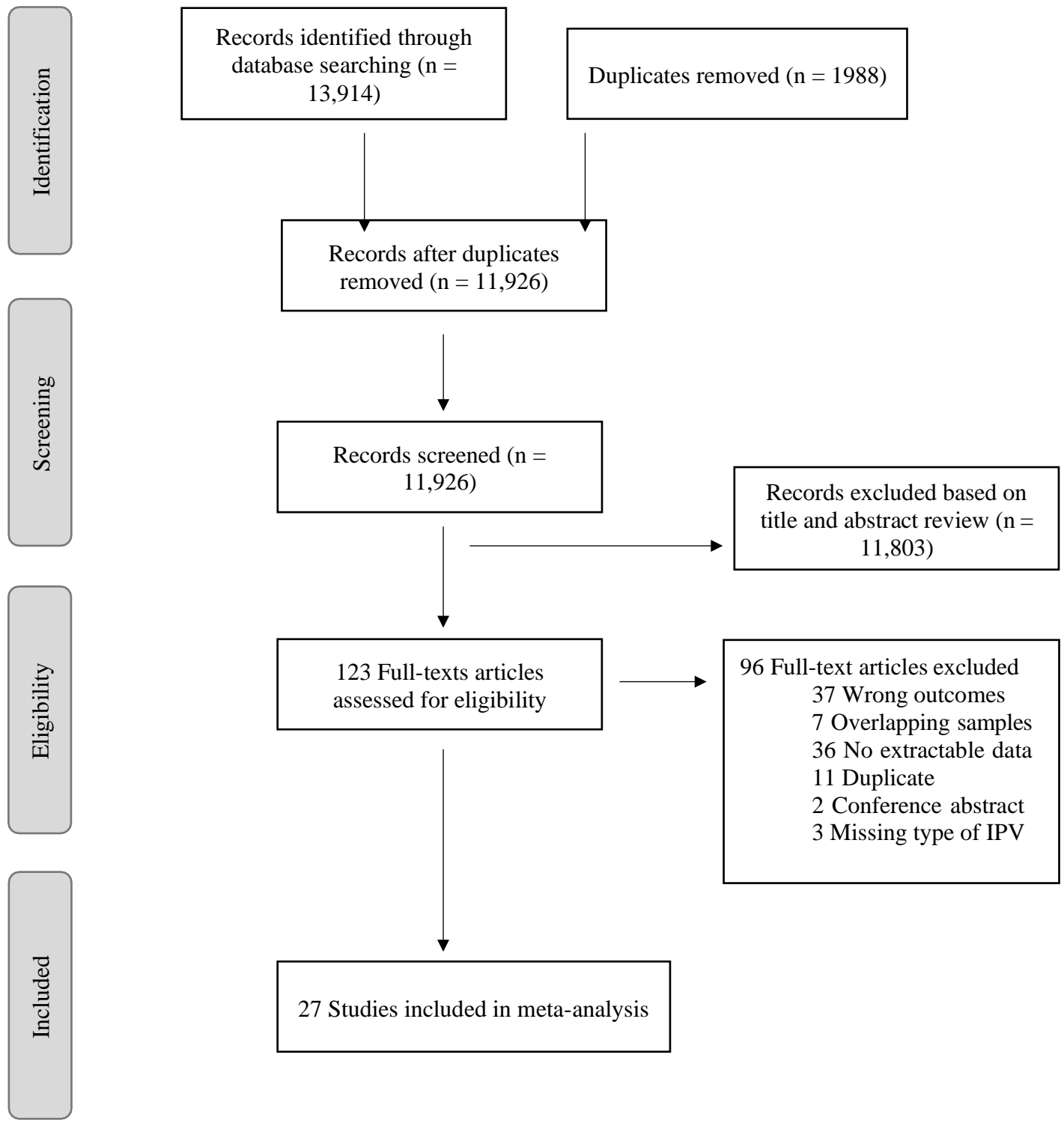


Figure 2

Forest Plot of Effect Sizes for the Association Between ACEs and IPV Perpetration

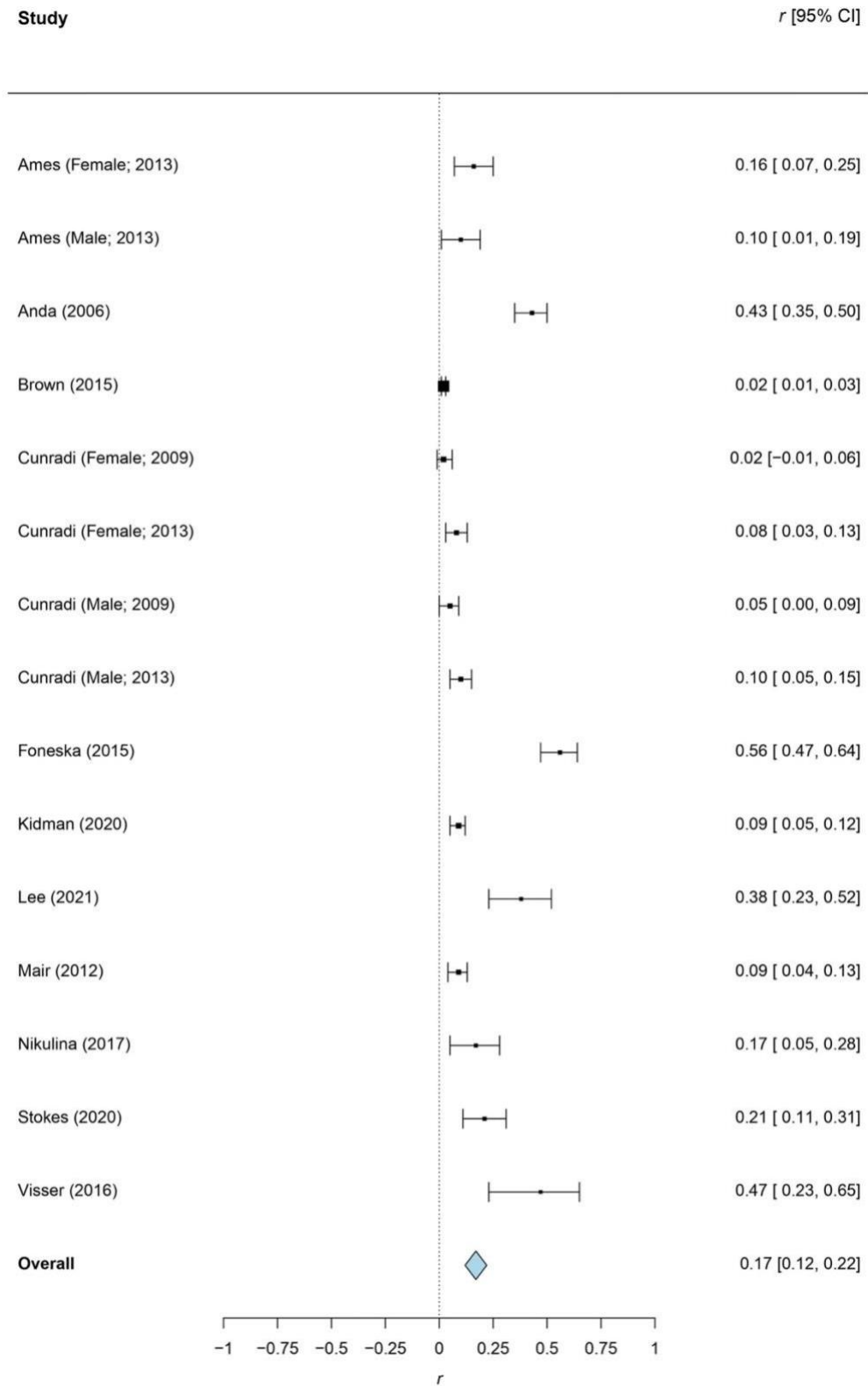


Figure 3

Forest Plot of Effect Sizes for the Association Between ACEs and IPV Victimization

