THE MODERATING EFFECTS OF MINORITY-BASED FACTORS ON THE ASSOCIATION BETWEEN ADVERSE CHILDHOOD EXPERIENCES AND INTIMATE PARTNER VIOLENCE PERPETRATION AMONG TRANSGENDER AND GENDER DIVERSE ADULTS

by

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ABSTRACT

THE MODERATING EFFECTS OF MINORITY-BASED FACTORS ON THE ASSOCIATION BETWEEN ADVERSE CHILDHOOD EXPERIENCES AND INTIMATE PARTNER VIOLENCE PERPETRATION AMONG TRANSGENDER AND GENDER DIVERSE ADULTS

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Under the Supervision of Professor Ryan Shorey

Intimate Partner Violence (IPV) is a pressing global health concern and is associated with a broad range of adverse outcomes. Emerging work has illustrated that transgender and gender diverse (TGD) individuals experience IPV at disproportionate rates. Adverse childhood experiences (ACEs) are a robust predictor of IPV perpetration among cisgender populations, yet only handful of studies have examined this relation among TGD populations. Minority stress and resilience factors (i.e., gender-related rejection and community connectedness [CC]) have been linked to IPV. Despite this, there is a paucity of research on the effects of gender-related minority stress and resilience factors on the association between ACEs and IPV perpetration among TGD adults. Thus, the current study aimed to address these gaps by (1) examining the relationship between ACEs and IPV perpetration and (2) investigating the moderating effects of minority stress and resilience factors on this relationship among TGD adults. This study also employed an exploratory factor analysis to determine whether certain types of ACEs have differential impacts on the risk for IPV perpetration. The current study used pre-existing baseline data (cross-sectional surveys) from a sample of 137 TGD adults, between the ages of 18 and 58. After controlling for age, ACEs were found to be significantly and positively associated with all IPV perpetration types, except sexual IPV, and CC moderated this relationship such that this

association was strengthened at low levels of CC. Contrary to expectations, the ACEs-IPV perpetration association was strengthened at low levels of gender-related rejection. Regression analyses did not indicate any significant associations between specific types of ACEs and IPV perpetration. Identification of these risk and protective factors may inform interventions aimed at reducing prevalence of IPV perpetration amongst TGD individuals.

Keywords: IPV perpetration, ACEs, gender-related rejection, community connectedness, minority stress, TGD

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The Moderating Effects of Minority-based factors on the Association between Adverse Childhood Experiences and Intimate Partner Violence perpetration among Transgender and Gender Diverse adults

Intimate Partner Violence (IPV) is a pressing global health concern. IPV involves physical (e.g., slapping, hitting), sexual (e.g., coerced sexual activity), and psychological (e.g., verbal threats, isolation) aggression and violence inflicted by or towards an intimate partner (Capaldi et al., 2012). An abundance of research indicates that IPV is associated with a broad range of adverse outcomes including depression, PTSD, suicidality, and substance use (Capaldi et al., 2012; Dillon et al., 2013; Spencer et al., 2019). Recent literature has illustrated that gender minorities (i.e., transgender and gender diverse [TGD] individuals) experience IPV at disproportionate rates relative to their cisgender counterparts. Specifically, lifetime IPV prevalence rates among TGD individuals have been estimated to range between 31% - 71% (Henry et al., 2018; Hillman, 2021; Langenderfer-Magruder et al., 2016; Peitzmeier et al., 2020). Furthermore, data from the One Colorado's anonymous 2011 LGBT Health Survey (N = 1,139) revealed statistically significant differences between transgender (31.1%) and cisgender (20.4%) participant reports of lifetime IPV victimization (Henry et al., 2018).

Extant empirical and theoretical findings have identified adverse childhood experiences (ACEs), such as childhood abuse, neglect, and peer rejection, as risk factors for IPV during adulthood in cisgender populations, yet only a handful have examined this relation among TGD populations (Choi et al., 2022, Garthe et al., 2018; Messinger et al., 2021; Renner & Whitney, 2012). ACEs have also been demonstrated to be highly prevalent amongst TGD individuals, where 80% report experiencing at least one ACE in their lifetime compared to 34% of cisgender counterparts (Feil et al., 2023). Despite this, there is a paucity of research examining ACEs as a

risk factor for IPV perpetration among TGD adults, and no known research, to our knowledge, has been published on the effects of gender-related minority stress and resilience factors on the association between ACEs and IPV among TGD adults. Thus, it is imperative to identify the unique factors associated with the increased risk of IPV amongst this population.

IPV among TGD adults

TGD is a term typically used to refer to individuals whose gender identity and/or expression differ from traditional social norms associated with their sex assigned at birth (Hendricks & Testa, 2012). TGD people include transgender individuals (those whose gender identity and/or expression differ from their sex assigned at birth), nonbinary individuals (an umbrella term referring to those whose gender identity exist beyond the binary of man/woman, such as genderqueer), two-spirit (a term used by some Native and Indigenous communities/tribes to refer to individuals that embody the expression and qualities of both men and women, unique to their status as two-spirit indigenous people), and other gender identities that fall outside the gender binary (e.g., agender; Messinger et al., 2021; Tebbe & Budge, 2022).

A systematic review demonstrated that TGD individuals are at a 2 to 3 times heightened risk of exposure to physical and sexual IPV in their lifetime, relative to cisgender individuals, where 16.7% and 10.8% experienced past-year physical and sexual IPV respectively (Peitzmeier et al., 2020). Previous research aimed at including TGD participants in their samples often lump gender identity with sexual orientation, failing to capture the distinct and unique experiences that the TGD population faces (Puckett et al., 2021). For instance, TGD people are vulnerable to distinct forms of IPV related to gender identity, such as transphobia, threatening to “out” one’s identity to others, intentionally misgendering by using the wrong pronouns, or deadnaming (using one’s birth name instead of their affirmed name), not experienced by the general

population (i.e., identity abuse; Price et al., 2021). Additionally, many findings are limited in generalizability due to their sample descriptions utilizing umbrella terms such as “transgender”, failing to acknowledge within-group differences, and thereby excluding experiences of folks who hold different gender identities (Puckett et al., 2021). Due to this, and the historical underrepresentation of this population in research, this study exclusively focuses on TGD adults.

ACEs and IPV

Experiencing adversity during childhood has been linked to a wide range of detrimental outcomes in adulthood including depression, violence, and suicidality. For instance, individuals who experience trauma and adversity during childhood are 3 to 5 times more likely to experience suicidal ideation (Thoma et al., 2021). Childhood maltreatment (i.e., physical, emotional, and sexual abuse and neglect) has been illustrated to be one of the strongest risk factors for IPV among all individuals (Garthe et al., 2018; Renner & Whitney, 2012).

An overwhelming majority of research on ACEs examines the effects of cumulative ACE scores (i.e., experiencing multiple adversities) to illustrate the “dose-response” relationship of experiencing additive adverse events, and assumes that the effects of each event are equal. However, studies that have examined the impact of experiencing more severe events as opposed to others (e.g., physical abuse, co-occurring abuse), indicate a higher cumulative adversity on mental health outcomes, rather than a linear cumulative effect (Negriff, 2020). Additionally, a novel framework, the Dimensional Model of Adversity and Psychopathology (DMAP), portrays ACEs as either threat- based or deprivation-based and illustrates their differential association with adverse outcomes (McLaughlin et al., 2014; Sheridan & McLaughlin, 2014). Threat-based experiences are those that represent threat or danger to an individual’s physical integrity (e.g., physical/sexual abuse, family violence, IPV), while deprivation-based experiences are

characterized by a lack of essential environmental and cognitive inputs (e.g., emotional/physical neglect; McLaughlin et al., 2014; Goldstein et al., 2021).

It is worth mentioning that this framework does *not* suggest that threat and deprivation experiences occur independently throughout childhood, rather that they should be assessed distinctly from one another as they result in varied effects (McLaughlin et al., 2014). Studies have found that threat-based ACEs are more strongly linked to any type of psychological disorder, particularly behavior disorders, and affect emotion regulation and fear conditioning. Conversely, deprivation-based ACEs are linked to an increase in cognitive deficits and lower executive functioning (Goldstein et al., 2021; McLaughlin & Sheridan, 2016; McLaughlin et al., 2014; Stein et al., 2022). Whilst research has examined the differential impact of ACEs (threat vs. deprivation-based) *and* IPV in adulthood on mental health outcomes (Goldstein et al., 2021), no known study has investigated how these subtypes distinctly impact risk for IPV perpetration in adulthood. This association is further unexplored among TGD populations. Through integrating these theoretical considerations, the detrimental effects of threat vs deprivation-based ACEs (e.g., abuse vs neglect, respectively) on IPV perpetration in adulthood can be examined. Research on whether specific types of ACEs increase risk for IPV could inform efforts in addressing early adversity which may reduce instances of IPV in adulthood.

Research also illustrates that ACEs are highly prevalent amongst TGD individuals. Notably, 28.6% to 60.7% of TGD individuals report experiencing 4 or more ACEs in their lifetime, in relation to 5.7% to 48% of cisgender individuals (Feil et al., 2023; Garthe et al., 2018; Renner & Whitney, 2012; Schnarrs et al., 2019). In particular, emotional abuse and neglect and physical neglect are the most frequently reported amongst this population (Schnarrs et al., 2019). Some have linked the elevated risk for ACEs among TGD individuals to cis-

heteronormativity and distinct themes surrounding expansion of gender identity/expression, thus are more susceptible to abuse and neglect by family members and peers during childhood (Thoma et al., 2021). Amongst TGD individuals who report childhood abuse, the risk for suicidal ideation and behavior is further elevated (Thoma et al., 2021). Thus, this underscores the necessity to understand and examine ACEs and associated outcomes amongst a highly vulnerable population.

Minority Stress and IPV

In addition to general life stressors, TGD people experience added stressors such as victimization, rejection, and discrimination related to their gender identity and/or expression (Hendricks & Testa, 2012). A study that examined the prevalence of minority stressors among young transgender women revealed that 85% of participants experienced at least one form of discrimination and unfair treatment in their lifetime (Garthe et al., 2018). TGD individuals face rejection by their family, peers, racial/ethnic community, and other communities often due to their gender identity and/or expression falling outside the widely reinforced societal binary, more commonly referred to as gender-related rejection (Dietert & Dentice, 2013; Price et al., 2021; Thoma et al., 2021). A qualitative study demonstrated that experiences of rejection often lead to emotional and/or physical distancing from family and caregivers (Price et al., 2021). Additionally, gender-related rejection has been linked to adverse outcomes such as depression, anger, increase risk for suicidal ideation, self-harm, and decreased college self-efficacy (Price et al., 2021; Farquhar-Leicester et al., 2022; Testa et al., 2017). One study found that experiences of rejection were one of the most salient predictors for physical, sexual, and psychological violence victimization (Domínguez-Martínez et al., 2020). However, rejection remains relatively unexplored in relation to the association between ACEs and IPV perpetration.

Community connectedness, feeling a sense of connectedness to one's community (e.g., emotional belongingness), can act as a protective buffer against negative mental health outcomes and has been linked to perceived social support (Frost & Meyer, 2012; Hendricks & Testa, 2012; Pflum et al., 2015). Serving as a group-level coping resource, TGD community connectedness encompasses social networks, TGD-specific support groups, TGD-related community events, and more (Frost & Meyer, 2012; Hendricks & Testa, 2012). Seeking support from other TGD individuals promotes a shared safe space for affirmation and validation of experiences related to stigmatization, discrimination, and other forms of gender-related minority stress (Pflum et al., 2015). TGD community connectedness has also been found to influence and encourage help-seeking behaviors (gender-affirming care, seeking resources post-violence exposure; Sherman et al., 2022). However, feeling connected to one's community can be particularly challenging for individuals with multiple minoritized identities who may not be in an environment safe enough to disclose or freely express their identity. For example, racial and ethnic minorities may be subject to racism within the TGD community due to aspects of the community being predominantly White oriented, in addition to certain cultural stigmas that may be reinforced within one's racial/ethnic community (Frost & Meyer, 2012; Sherman et al., 2022; Whitton et al., 2021). This can lead to increased risk for rejection, in addition to additive and interactive distress (Farquhar-Leicester et al., 2022).

Theoretical Considerations

Bandura's social learning theories proposes that violence witnessed and/or experienced during childhood, such as ACEs, may be passed down intergenerationally by means of learned behaviors through observation and modeling processes, thereby increasing chances of IPV perpetration in adulthood (Bandura, 1977). Through witnessing and experiencing interpersonal

violence, the belief that violence is a reasonable approach for dealing with conflict is reinforced throughout adolescence and adulthood (Manchikanti Gómez, 2010). Furthermore, experiencing childhood maltreatment is associated with family instability/conflict, psychological distress and emotional dysregulation, and ineffective conflict resolution skills, which are all associated with increased risk for IPV (Abajobir et al., 2016). Minority stress models assert that TGD individuals are often subjected to both distal (e.g., discrimination, rejection) and proximal stressors (e.g., internalized homophobia and transphobia), which act as potential drivers of disparities in adverse outcomes (Hendricks & Testa, 2012; Meyer, 2003). While these stressors are associated with adverse consequences, not all minority-based factors act as risk factors and are linked to harmful outcomes. For instance, TGD individuals often develop resilience and coping mechanisms that act as protective factors to detrimental effects, such as feeling connected to one's community (Hendricks & Testa, 2012; Meyer, 2003).

According to the I^3 ("I-Cubed") theory of IPV (Finkel, 2007), a leading theoretical framework for identifying risk and protective factors for IPV perpetration, strong impelling and weak inhibiting factors interact to increase likelihood for IPV perpetration, in the presence of instigating factors (e.g., conflict with a partner). This occurs when impelling forces exceed inhibiting forces, and the threshold for IPV perpetration is reduced. Integrating the social learning and minority stress frameworks into the I^3 model, gender-based rejection and childhood abuse theoretically act as impelling forces, whereas community connectedness acts as an inhibiting factor (Finkel, 2007). Further, exposure to minority stressors may lead to depletion of dispositional self-regulatory resources (i.e., self-control, an inhibiting factor), increasing risk for IPV perpetration. TGD- community connectedness, conversely, can in turn diminish the

impelling factors that interact to increase risk for IPV, thereby reducing the likelihood for IPV perpetration to occur.

Proposed Study

Integrating the minority stress and social learning models into the I³ theory of IPV, the current study examined the relationship between ACEs, minority stress, and IPV perpetration among TGD adults. Specifically, this study incorporated gender-based rejection and community connectedness and examined their moderating effects on the relationship between ACEs and IPV perpetration. This study also explored whether certain subtypes of ACEs (e.g., threat, deprivation) are associated with a greater frequency of IPV perpetration.

Study Aims and Hypotheses

Based on past literature and theory, the specific aims of the study were as follows:

Aim 1: Examine the association between ACEs and IPV perpetration (psychological, physical, sexual, and identity abuse) in adulthood.

Hypothesis 1: Elevated rates of ACEs during childhood would be associated with more frequent IPV perpetration in adulthood.

Aim 2: Examine whether minority-based factors (gender-based rejection and community connectedness) moderate the relationship between ACEs and IPV perpetration.

Hypothesis 2a: The association between ACEs and IPV perpetration would be strengthened at *high* levels, relative to low levels, of gender-based rejection.

Hypothesis 2b: The association between ACEs and IPV perpetration would be strengthened at *low* levels, relative to high levels, of community connectedness.

Exploratory Aim: Examine whether specific types of ACEs (threat vs deprivation) are associated with a greater frequency of IPV perpetration.

Methods

Participants

A total of 137 TGD adults, from across the United States, were recruited as part of a longer longitudinal study. To be eligible, participants were required to (a) be between the ages of 18-58, (b) identify as TGD, (c) be in an exclusive, current intimate relationship that lasted at least one month with someone who was between the ages of 18-58, (d) be in contact with their partner for a minimum of 2 days weekly, and (e) have consumed alcohol in the past 30 days (as the parent project focused on alcohol-related IPV).

In terms of sample demographics, the mean age was 29 (*SD* = 8.60, range = 18-58. Participants self-identified and could endorse multiple identities. The sample was predominantly White (78.8%) and not of Latino/a/x/e or Hispanic origin (87.6%). Specifically, 11.7% of participants identified as Black, 5.8% African American, 5.1% Asian, 4.4% multi-racial, 2.2% American Indian, 0.7% Middle Eastern, and 2.9% identified as another race not listed. Majority of participants identified as non-binary (67.9%) and transgender (55.5%). Notably, the sample was diverse in regard to sexual orientation with individuals identifying primarily as queer (63.5%), bisexual (29.9%), pansexual (29.2%), and lesbian (21.9%). Approximately 35.8% of the sample were current college students. Lastly, 81% of participants were assigned female at birth and 18.2% were assigned male at birth.

Procedure

The current study used pre-existing baseline data collected from the *Alcohol-related Intimate Partner Violence among Transgender and Gender Non-conforming Adults* study, funded through the NIAAA [IRB study 22.045]. The principal investigators for this study are Dr. Ryan Shorey and Dr. Gregory Stuart. Data was collected at two institutional sites: University of Wisconsin – Milwaukee (UWM) and University of Tennessee – Knoxville (UTK). Majority of

recruitment was conducted through FORGE's social media. Participants were also recruited through SONA at UWM and UTK, which included a description of the study placed on the SONA website, flyers posted on campus and off-campus locations, in addition to flyers emailed to organizations and departments both on and off campus.

Participants completed a baseline assessment that lasted approximately 120 minutes and included a battery of surveys collected online through Qualtrics.com. All assessments occurred virtually and were run by study staff and graduate students. Participants received $50.00 for the baseline assessment in the form of cash or a gift card (e.g., Amazon.com). Students recruited through UWM and UTK and enrolled in eligible psychology courses could choose to receive 2 hours extra credit.

Measures

Demographic Information: A demographic questionnaire was used to assess various demographic characteristics including age, academic status, race and ethnicity, gender identity, sex assigned at birth, sexual orientation, etc.

Intimate Partner Violence: *The Sexual and Gender Minority Conflict Tactics Scale* (SGM-CTS2), an adapted version of the Revised Conflict Tactics Scales (CTS2; Straus et al., 1996), was utilized to examine IPV perpetration (Dyar et al., 2019). The SGM-CTS2 scale is a 74-item measure consisting of subscales that measure physical, psychological, and sexual IPV, in addition to injury and negotiation tactics due to IPV in the past 12-months. The physical IPV subscale scores range from 0 to 300, sexual IPV subscale scores range from 0 to 125, and the psychological IPV subscale scores range from 0 to 200. Higher scores on all the SGM-CTS2 subscales indicate greater frequency of IPV. Majority of the subscales within the SGM-CTS2, demonstrated good internal reliability and validity, with Cronbach's alpha ranging from .78 to

.88. Cronbach's alpha for the sexual IPV subscale (.48) was lower due to weak inter-item correlations with refusal of safe sex methods, a pattern also demonstrated in the original CTS2 (Straus et al., 1996). Internal consistency of the psychological, physical, and sexual IPV perpetration for the present sample were Cronbach's alpha = 0.86, .91, and .48 respectively. A potential reason for the sexual IPV subscale's low internal consistency may be that perpetrators often do not use various, different acts of violence, which may lead to increased variability within reports of victimization behaviors. As such, this may artificially decrease internal consistency (Ryan, 2013).

Additionally, the *Identity Abuse Scale* (IAS) assessed identity abuse (Scheer et al., 2019). This is a 7-item measure and examined threats to reveal one's gender identity to others and the use of transphobic/demeaning comments against a partner in the past year. IAS scores range from 0 to 385, where higher scores indicate more frequent IA exposure. The IAS demonstrated adequate reliability (Cronbach's alpha = .79), and the measure demonstrated good internal consistency for the present sample with Cronbach's alpha = .86.

Minority Stress: Gender minority stress and resilience factors were assessed using the gender-related rejection (*6 items*) and community connectedness (*5 items*) subscales of the *Gender Minority Stress and Resilience* (GMSR) scale (Testa et al., 2015). The gender-related rejection subscale scores range from 0 to 6 and assessed lifetime experiences of rejection, and the community connectedness subscale scores range from 0 to 20 and assessed feelings of connectedness to the TGD community (e.g., "*When interacting with members of the community that shares my gender identity, I feel like I belong*", "*I feel isolated and separate from other people who share my gender identity*"). Higher scores on the rejection subscale indicate increased exposure to gender-related rejection, whereas higher scores on community

connectedness indicate a greater sense of connectedness to the TGD community. Both the rejection and community connectedness subscales have demonstrated good internal consistency (Cronbach's alpha = .71 and .86, respectively). Regarding the present sample, the rejection and community connectedness subscales demonstrated good internal consistency with Cronbach's alpha = .72 and .85, respectively.

Adverse Childhood Experiences: The 14-item *Adverse Childhood Experiences inventory* (Finkelhor et al., 2015) was used to assess adverse childhood experiences prior to the age of 18. Each adverse event endorsed as "Yes" was coded as 1, and total scores are calculated by summing scores for all events endorsed. Scores on the ACEs inventory range from 0 to 14, where higher scores indicate higher cumulative adversity. The measure demonstrated good internal consistency for the present sample (Cronbach's alpha = .80).

Determination of Sample Size.

To ensure adequate sample size for examining each of the proposed hypotheses, power analyses were calculated using G*Power (Faul et al., 2007). Calculations were informed by existing literature and Cohen's (1988) general guidelines for detecting small-to-medium effects. A meta-analysis that examined the association between ACEs and IPV perpetration among cisgender populations found a significant positive association with small to medium effect sizes (Zhu et al., 2023). A pooled effect size of $r = .172$, $p < .001$ was demonstrated, where results indicated that elevated ACEs scores (abuse, neglect, and household dysfunction) were significantly associated with IPV perpetration (Zhu et al., 2023). Post-hoc power analyses that were conducted to examine associations between childhood abuse and IPV perpetration revealed small ($f^2 = .05$) to medium ($f^2 = .11$) effect sizes (Nikulina et al., 2017). At the .05 alpha level, and power = .80, the minimum sample size required for regression analyses with one predictor is

$N = 133$. Thus, the pre-existing data sample size was sufficient to run our analyses for aim 1 with appropriate power.

Due to the lack of pre-existing studies that have conducted this type of moderation analysis for our second aim, power analyses for all effect sizes (small, medium, and large) were conducted. At the .05 alpha level with a small effect size, and power = .80, the minimum sample size required to conduct aim 2 with three predictors (independent variable, moderator, and interaction effect) is $N = 222$. At a medium effect size, the minimum sample size required to conduct aim 2 is $N = 82$. Thus, this analysis was slightly underpowered at the smaller tail end of the effect size.

Data Analytic Plan

Preliminary analyses were conducted in SPSS to obtain descriptive statistics and assess for significant correlations between demographic characteristics (e.g., age) and interest variables (e.g., IPV, minority stressors). Demographic variables demonstrated to be significant with interest variables were included as covariates in main analyses. Missing data were identified for 1 case on the ACEs and IAS measure, and 3 cases for the community connectedness subscale of the GMSR. Missing fields were determined to be missing likely due to lack of time to complete all questions at the baseline assessment. Thus, these cases were excluded from analyses; as such, completed data existed for 134 cases.

For primary analyses, to reduce type I error that may result from conducting separate regression analyses with multiple dependent variables, structural equational modeling (SEM) was conducted. Independent and moderating variables were mean centered to reduce multicollinearity. Additionally, Bayesian estimation was employed given the flexibility to specify more realistic likelihood functions, reduced probability of model non-convergence, and ability to

better address uncertainty (using credible levels, as opposed to confidence intervals; Bürkner, 2017; van de Schoot et al., 2017). Given the general distribution of IPV measures (i.e., not normally distributed, negatively skewed), poisson or negative binomial distributions are commonly used. Model fit comparisons were conducted that assessed the WAIC (widely applicable information criterion; Watanabe, 2010) among negative binomial, poisson, and gaussian distributions. WAIC was lowest for the negative binomial model, indicating best model fit (WAIC = 1516.3) relative to the poisson (WAIC= 7070) and gaussian (WAIC= 3693.9) models, and thus was used across analysis.

To achieve Aim 1, which was to examine the association between ACEs and IPV perpetration (psychological, physical, sexual, and identity abuse) in adulthood, the Bayesian Multilevel Model Regression model was employed using the brms package (v2.14.4; Bürkner, 2017) in R. Total ACE scores were regressed on to all four types of IPV perpetration to determine whether increased ACEs associated with increased frequency of IPV perpetration.

Next, consistent with Aim 2, which was to examine whether gender-based rejection and community connectedness moderated the relationship between ACEs and IPV perpetration, separate moderation analyses were conducted for each moderator [see Figure 1]. To accurately capture moderating effects of rejection (a risk factor) and community connectedness (a protective factor), the interaction effects between ACE scores and the moderators were regressed *separately* onto the dependent variables (all types of IPV perpetration). Interaction terms were created by multiplying the rejection and ACEs, and community connectedness and ACEs variables together (Aiken & West, 1991). Significant interactions were decomposed at high (+1 SD) and low (-1 SD) levels of the moderator.

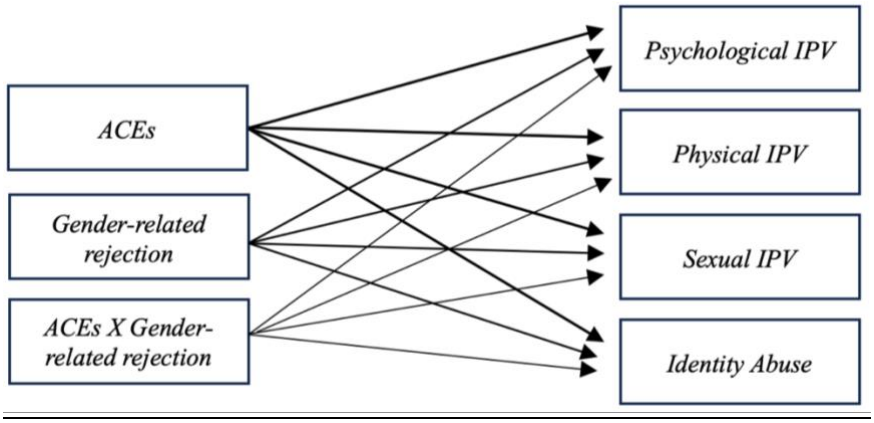

Figure 1. *Path Analysis – Rejection as a Moderator*

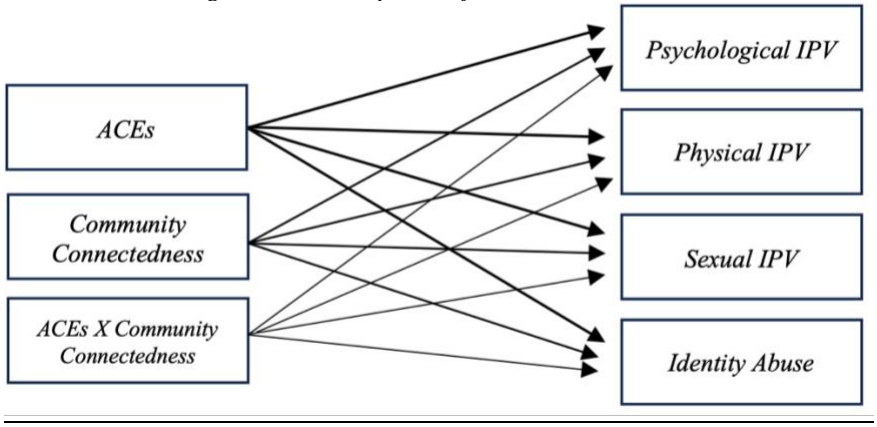

Figure 2. *Path Analysis – Community Connectedness as a Moderator*

To address the Exploratory Aim (whether specific types of ACEs are associated with a greater frequency of IPV perpetration), an exploratory factor analysis (EFA) of ACEs factors was conducted in SPSS using the Principal Component extraction method with varimax rotation. Given the lack of research examining impact of subtypes of ACEs using the Finkelhor et al. (2015) measure, no a priori constraints were imposed on the number of factors to be extracted, therefore maximizing variance. Next, a Bayesian Multilevel Model Regression was conducted with the extracted factors regressed onto all four types of IPV perpetration.

Results

Preliminary Analyses

Ninety-eight individuals (71.5%) reported at least one incident of psychological perpetration, 26 individuals (19%) reported at least one incident of physical perpetration, 18 individuals (13.1%) reported at least one incident of sexual perpetration, and 13 individuals (10.2%) reported at least one incident of identity abuse perpetration in the past year. Furthermore, 115 (83.9%) individuals reported experiencing at least one instance of gender-related rejection and 132 (97.1%) individuals reported experiencing at least one adverse event in their childhood.

As shown in Table 1, correlation analysis indicated that ACEs were significantly and positively associated with identity abuse perpetration ($r = .22$, $p < .01$), psychological IPV perpetration ($r = .24$, $p < .01$), physical IPV perpetration ($r = .23$, $p < .01$), and gender-related rejection ($r = .21$, $p < .05$). Gender-related rejection and community connectedness were not significantly associated with any type of IPV perpetration. Additionally, correlation analysis revealed that age was significantly and positively associated with identity abuse and physical IPV perpetration. Thus, age was included as a covariate across all analyses.

Aim 1

Analysis results for Aim 1 (examine the association between ACEs and IPV perpetration in adulthood) are presented in Table 2. The Bayesian multilevel model demonstrated good convergence ($\hat{R} = 1$), in addition to stable and reliable estimates (MCSE = 0.10). In partial support of Hypothesis 1, results revealed that after controlling for age, ACEs were positively and significantly associated with all types of IPV perpetration, except for sexual IPV perpetration. Specifically, greater exposure to adversity in childhood was more likely to be associated with

identity abuse (β = 0.28, [95% CI = 0.04, 0.54]), psychological IPV (β = 0.09, [95% CI = 0.01, 0.17]), and physical IPV (β = 0.20, [95% CI = 0.03, 0.38]) perpetration in adulthood.

Aim 2

Analysis for aim 2 (examine whether gender-based rejection and community connectedness moderate the relationship between ACEs and IPV perpetration) revealed that the interaction effect of ACEs and gender-related rejection was significantly and positively associated with identity abuse perpetration, but not with psychological, physical, or sexual IPV perpetration [See Table 3]. Decomposition of the significant interaction revealed that ACEs were significantly and positively associated with identity abuse perpetration at mean (β = 0.42, [95% CI = 0.14, 0.76]) and low levels of rejection (β = 0.84, [95% CI = 0.32, 1.48]), but not at high levels of rejection (β = -0.01, [95% CI = -0.39, 0.37]). Thus, the relationship between ACEs and identity abuse perpetration strengthened at low levels of gender-related rejection, contrary to our expectations [see Figure 3].

Conversely, the interaction effect of ACEs and community connectedness was significantly associated with identity abuse, psychological, and physical IPV perpetration [see Table 4]. Decomposition of the interaction effects revealed that ACEs were significantly and negatively associated with identity abuse perpetration at high (β = -0.72, [95% CI = -1.75, -0.02]), and positively and significantly associated with identity abuse at low (β = 0.57, [95% CI = 0.15, 1.10]), levels of community connectedness, but not at mean levels [see Figure 4]. ACEs were also positively and significantly associated with psychological and physical perpetration at low levels of community connectedness (psychological: β = 0.20, [95% CI = 0.07, 0.33]; physical: β = 0.43, [95% CI = 0.12, 0.89]), but not at mean or high levels.

Exploratory aim

EFA results for the exploratory aim (examine whether specific types of ACEs are associated with a greater frequency of IPV perpetration) resulted in the extraction of four factors with eigenvalues at or exceeding 1, and accounting for 56.4% of the variance cumulatively (see Table 5). Results of the EFA revealed that one item (Item 4: "*Did you often or very often feel that no one in your family loved you or thought you were important or special? Or your family didn't look out for each other, feel close to each other, or support each other?"*) had large cross-loadings that exceeded .40 on two factors (factor 2 and 4), and thus was removed for analysis. Next, internal consistency estimates were examined to assess the reliability of each factor. Reliability estimates were adequate for Factor 1 (α = .69), Factor 2 (α = .66), and Factor 3 (α = .62). However, Factor 4 produced an alpha coefficient of .49, demonstrating questionable reliability.

Factor 1 consisted of three items reflecting deprivation-related adversity, such as parental absence and lack of financial stability; thus, was labeled as *Economic/Family Deprivation*. Factor 2, labeled as *Abuse/Threat*, included three items describing abuse or threat (i.e., emotional, physical, and sexual abuse). Items included in factor 3 reflected chaotic or household dysfunction, such as physical neglect and parental substance use/mental illness and was labeled *Chaotic Household*. Lastly, factor 4, labeled as *Peer Relations*, consisted of two items characterized by interpersonal or peer relationships. Across the sample, 51.5% of participants endorsed one or more items within factor 1, 71.6% within factor 2, 74.6% within factor 3, and 84.3% within factor 4.

Correlation analysis [See Table 6] revealed that the Economic/Family Deprivation factor was significantly and positively associated with psychological (r = .18, p < .05) and physical (r =

.18, $p < .05$) IPV perpetration. Additionally, Abuse/Threat was significantly and positively associated with psychological IPV perpetration ($r = .19$, $p < .05$). However, results of the Bayesian multilevel model regression analysis did not demonstrate significant results for any of the factors [See Table 7].

Discussion

The present study examined the relationship between ACEs and IPV perpetration among TGD adults, and the moderating effects of gender-related rejection and community connectedness on this relationship. This study also explored whether certain types of ACEs (e.g., threat vs deprivation) have differential impacts on the risk for IPV perpetration. Consistent with the study's first hypothesis, results revealed that ACEs were positively and significantly associated with identity abuse, physical IPV, and psychological IPV, but not sexual IPV perpetration. These findings align with past research which suggests that experienced adversity during childhood and exposure to additive ACEs increase the likelihood of IPV perpetration in adulthood (Fonseka et al., 2015; McClure & Parmenter, 2017; Zhu et al., 2023). This may be due to exposure to certain learned behaviors in one's environment that may have been passed down intergenerationally and promote violence, as posited by Bandura's social learning theory (Bandura, 1977). These findings are especially important given the novelty of examining the ACEs-IPV relationship among TGD individuals, and the exceptionally high prevalence of ACEs in this population (Feil et al., 2023; Garthe et al., 2018; Schnarrs et al., 2019), which is reflected in participant reports of the current sample (97.1%). Thus, preventing ACEs from occurring, and treating the emotional impact of experienced ACEs, among TGD people may help to reduce the likelihood of IPV perpetration in adulthood.

Building upon these findings, results of the exploratory factor analysis revealed four ACE factors: Economic/family deprivation, abuse/threat, chaotic household, and peer relations. Notably, the economic/family deprivation factor was significantly and positively correlated with psychological and physical IPV perpetration, and the abuse factor was significantly and positively correlated with psychological IPV perpetration. However, regression analyses did not illustrate any significant associations with IPV perpetration. This suggests that classifying ACEs into merely two groups, threat vs. deprivation, may be an overly simplistic approach that may not account for the nuanced experiences of TGD individuals who have endured a variety of trauma. Future research is warranted to further explore the Dimensional Model of Adversity and Psychopathology (DMAP) framework in relation to IPV, as understanding which unique adverse events are associated with different types of IPV perpetration may help inform efforts in addressing adversity in childhood, and potentially reduce instances of IPV perpetration.

Regarding results for the second hypothesis, adding gender-related rejection as a moderator revealed a significant interaction effect with identity abuse, but not with other types of IPV perpetration. Contrary to our expectations, the relationship between ACEs and identity abuse perpetration was strengthened at low levels, relative to high levels, of gender-related rejection. One possible explanation for this counterintuitive finding could be that individuals who report more ACEs and elevated levels of gender-related rejection understand the pain related to trauma and/or minority stress and may not want to inflict that pain onto their partner. This may be particularly true for identity abuse because it may be similar in nature to gender-related rejection. For example, both identity abuse and gender-related rejection involve undermining or denying one's gender identity, or using transphobic language (Dietert & Dentice, 2013; Woulfe & Goodman, 2018). Notably, given that the gender-related rejection subscale of the GMSR

assessed lifetime experiences of rejection, it could be possible that this measure also captured some ACEs. However, given the lack of research surrounding this topic, these results should be interpreted with caution and future research is needed to replicate this preliminary study.

Additionally, community connectedness moderated the relationship between ACEs and identity abuse, psychological, and physical IPV perpetration. Consistent with expectations, at low levels of community connectedness, ACEs were significantly and positively associated with identity abuse, psychological, and physical IPV perpetration. In contrast, at high levels of community connectedness, ACEs were significantly and negatively associated with identity abuse perpetration. Thus, the relationship between ACEs and IPV perpetration was weakened at high levels of community connectedness and strengthened at low levels of community connectedness. Findings are consistent with prior research suggesting that community connectedness acts as a protective factor against adverse outcomes, including IPV perpetration. As proposed by the minority stress framework, feeling a sense of belonging to one's community may buffer the deleterious effects of stressors and trauma, such as ACEs, and therefore may reduce the impact of ACEs on IPV perpetration. (Frost & Meyer, 2012; Hendricks & Testa, 2012). Further, seeking support from other TGD individuals in the community may increase access to safe and non-stigmatized spaces, promote well-being, and increase affirmation of one's identity and experiences related to gender-related minority stress (Pflum et al., 2015; Sherman et al., 2022).

Clinical Implications

These findings may have important theoretical and clinical implications for the TGD community. As TGD people experience IPV at disproportionate rates relative to their cisgender counterparts, understanding the factors that may be contributing to this disparity is critical to IPV

prevention and intervention program development (Henry et al., 2018; Langenderfer-Magruder et al., 2016; Peitzmeier et al., 2020; Hendricks & Testa, 2012; Garthe et al., 2018). Given our findings demonstrate ACEs are linked to IPV perpetration, increasing intervention and prevention efforts to address early adversity and incorporating trauma-informed care may help to mitigate the impact of ACEs on likelihood of IPV perpetration amongst the TGD population. Literature indicates that it may be useful to work towards building and strengthening individual and community resilience at the population level, and identifying strength and protective factors, as opposed to exclusively focusing on risk factors (Leitch, 2017; Oral et al., 2015). For instance, risk assessments could work towards collecting resilience-based information and asking protective questions (e.g., "*How often do your parents or caregivers tell you they're proud of something you've done*"; Leitch, 2017), and intervention programs could take a strength-based trauma approach and work towards cultivating community to minimize isolation (Trabold et al., 2018).

In line with strengthening individual and community resilience to address early adversity among TGD individuals, fostering community connectedness may buffer the effects of early adversity and reduce likelihood for IPV perpetration. Feeling a sense of belonging to the TGD community may encourage positive social comparisons to those who share one's identity, rather than negative comparisons grounded in stigmatization to those of the out-group (Frost & Meyer, 2012). Further, community connectedness may promote help-seeking behaviors such as gender-affirming care and support, or trauma recovery following exposure to violence and may decrease detrimental mental health outcomes (Frost & Meyer, 2012; Sherman et al., 2022; Pflum et al., 2015). Accordingly, intervention programs may consider integrating gender-affirming and culturally responsive care that cultivate connectedness to the community. For instance, by

incorporating inclusive environments, such as those that include providers and support staff who identify as TGD, effective TGD-specific community resource mapping, and group-psychotherapy sessions which may serve as a shared source of support (Loo et al., 2021; Ogbe et al., 2020).

Limitations and future directions

While this study provides valuable insights, it is important to consider its limitations. First, as the sample is predominantly White and has limited BIPOC (Black, Indigenous, and people of color) representation, results cannot be generalized to racial and ethnic minoritized groups. It is also vital to consider that community connectedness may not act as a protective factor to all, as racially/ethnically minoritized TGD folks may face increased difficulty feeling connected to the general TGD community (Sherman et al., 2022; Whitton et al., 2021). For instance, TGD folks who identify with a racial/ethnic minority group may feel ostracized within their TGD community, as aspects of the community are often predominantly White-oriented, and within one's racial/ethnic community due to potential reinforcement of cultural stigmas (Frost & Meyer, 2012; Whitton et al., 2021). Thus, although community connectedness generally buffers adverse outcomes, it does not consistently act as a protective factor among individuals with multiple minoritized identities. Future research should recruit a more diverse sample in terms of racial and ethnic identities, and work towards understanding the factors that contribute to this disparity.

Additionally, research has demonstrated that experiences of IPV and minority stress vary based on gender identity. Non-binary individuals are at a greater risk of IPV and identity abuse victimization compared to transmasculine individuals, whereas transmasculine and transfeminine young adults report more discrimination relative to non-binary young adults (Poquiz et al., 2021;

Kattari et al., 2022). However, this study was underpowered to examine within-group differences based on gender identity. Future research should examine within-group heterogeneity effects and understand how these experiences vary as a function of gender identity. Lastly, given that this study was cross-sectional in nature, the temporal relationship between ACEs, IPV perpetration, and minority-based factors could not be determined. Future research should incorporate longitudinal methods to determine causal relationships between these variables.

Conclusion

Findings of the current study provide evidence that among TGD adults, ACEs are associated with increased risk for IPV perpetration and community connectedness serves as a protective factor in relation to this association. This suggests that increasing efforts to address early adversity and fostering community connectedness within intervention programs may be helpful for reducing frequency of IPV perpetration among TGD individuals. Implementing action-oriented trauma-informed care and strengthening community resilience among TGD folks are important components that intervention programs could consider.

Table 1. *Correlations for Study Variables.*

	1. ACEs	2. Identity Abuse Perp.	3. Psychological IPV Perp.	4. Physical IPV Perp.	5. Sexual IPV Perp.	6. Gender-based Rejection	7. CC	8. Age
1.	-							
2.	.22**	-						
3.	.24**	.65**	-					
4.	.23**	.96*	.74**	-				
5.	.13	.84**	.69**	.83**	-			
6.	.21*	-.06	.14	-.03	-.01	-		
7.	-.06	-.11	-.14	-.13	-.04	.04	-	
8.	.15	.17*	.14	.18*	.15	.02	-.16	-
M	5.84	.96	14.16	2.53	.99	2.80	14.14	28.82
SD	3.25	8.28	26.16	15.35	5.06	1.85	4.91	8.49

Note: $*p < .05$. $**p < .01$

ACEs = Adverse childhood experiences. Perp. = Perpetration. CC = Community connectedness

Table 2. *Bayesian Multilevel Model Regression Coefficients*

IPV perpetration	β	S.E.	95% CI LL	95% CI UL
Identity Abuse				
ACEs	**0.28***	0.13	0.04	0.54
Age	0.05	0.05	-0.05	0.16
Psychological IPV				
ACEs	**0.09***	0.04	0.01	0.17
Age	0.02	0.02	-0.02	0.06
Physical IPV				
ACEs	**0.20***	0.09	0.03	0.38
Age	0.05	0.04	-0.02	0.12
Sexual IPV				
ACEs	-0.13	0.15	-0.43	0.17
Age	0.15	0.08	-0.01	0.33

Note:* IPV = Intimate Partner Violence. CI = credible interval. LL and UL indicate the lower and upper limits of the CI. Significant variables are in **boldface*. Significance was determined if zero did not fall between the UL and LL values of the CI.

Table 3. *Bayesian Multilevel Model Regression Coefficients, with Rejection as a Moderator*

IPV perpetration	β	S.E.	95% CI Lower	95% CI Upper
Identity Abuse				
ACEs	**0.42***	0.15	0.14	0.76
Rej.	0.20	0.26	-0.29	0.72
Age	-0.12	0.10	-0.33	0.07
ACEs * Rej.	**-0.23***	0.10	-0.45	-0.04
Psychological IPV				
ACEs	0.08	0.04	-0.01	0.16
Rej.	0.12	0.08	-0.04	0.27
Age	0.03	0.02	-0.01	0.07
ACEs * Rej.	0.01	0.02	-0.03	0.05
Physical IPV				
ACEs	**0.20***	0.10	0.01	0.40
Rej.	0.06	0.20	-0.33	0.48
Age.	0.06	0.05	-0.03	0.16
ACEs * Rej.	0.01	0.05	-0.09	0.12
Sexual IPV				
ACEs	-0.12	0.17	-0.46	0.19
Rej.	0.21	0.24	-0.24	0.72
Age	0.11	0.10	-0.08	0.33
ACEs * Rej.	-0.10	0.07	-0.23	0.05

Note:* IPV = Intimate Partner Violence. Rej. = Rejection. CI = credible interval. LL and UL indicate the lower and upper limits of the CI. Significant variables are in **boldface*. Significance was determined if zero did not fall between the UL and LL values of the CI.

Table 4. *Bayesian Multilevel Model Regression Coefficients, with Community Connectedness as a Moderator*

IPV perpetration	β	S.E.	95% CI Lower	95% CI Upper
Identity Abuse				
ACEs	-0.07	0.21	-0.54	0.30
CC.	-0.26	0.16	-0.61	0.01
Age	-0.06	0.08	-0.23	0.09
ACEs * CC.	**-0.13***	0.06	-0.27	-0.04
Psychological IPV				
ACEs	0.08	0.05	-0.01	0.17
CC.	-0.02	0.03	-0.08	0.04
Age	0.02	0.02	-0.02	0.06
ACEs * CC.	**-0.02***	0.01	-0.04	-0.01
Physical IPV				
ACEs	0.10	0.12	-0.13	0.34
CC.	-0.04	0.09	-0.22	0.16
Age	0.04	0.04	-0.04	0.12
ACEs * CC.	**-0.07***	0.03	-0.14	-0.01
Sexual IPV				
ACEs	-0.07	0.17	-0.42	0.26
CC	0.07	0.09	-0.11	0.25
Age	0.13	0.10	-0.06	0.34
ACEs * CC.	-0.05	0.03	-0.11	0.01

Note:* IPV = Intimate Partner Violence. CC = Community Connectedness. CI = credible interval. LL and UL indicate the lower and upper limits of the CI. Significant variables are in **boldface*. Significance was determined if zero did not fall between the UL and LL values of the CI.

Table 5. *Factor Loadings for the ACEs items from Exploratory Factor Analysis*

Items	Factor Loadings			
	1	2	3	4
1. Did a parent or other adult in the household often or very often swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?		**0.80**		
2. Did a parent or other adult in the household often or very often… Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured		**0.80**		
3. Did an adult or person at least 5 years older than you ever… Touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you?		**0.58**		
4. **Did you often or very often feel that … No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?		**0.49**		**0.54**
5. Did you often or very often feel that … You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?			**0.69**	
6. Was a biological parent ever lost to you through divorce, abandonment, or other reason?	**0.70**			
7. Was your mother or stepmother: Often or very often pushed, grabbed, slapped, or had something thrown at her? or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?				
8. Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs?			**0.65**	
9. Was a household member depressed or mentally ill, or did a household member attempt suicide?			**0.75**	
10. Did a household member go to prison?	**0.83**			
11. Did other kids, including brothers or sisters, often or very often hit you, threaten you, pick on you or insult you?				**0.69**
12. Did you often or very often feel lonely, rejected or that nobody liked you?				**0.84**
13. Did you live for 2 or more years in a neighborhood that was dangerous, or where you saw people being assaulted?				
14. Was there a period of 2 or more years when your family was very poor or on public assistance?	**0.63**			

Note: Extraction Method = Principal Component. Rotation Method = Varimax.
**Item 4 was deleted from the final factor analysis as it cross-loaded on to two factors (2 and 4).

Table 6. *Correlations for Extracted Factors*

	1. FC 1	2. FC 2	3. FC 3	4. FC 4	5. Identity Abuse Perp.	6. Psych IPV Perp.	7. Physical IPV Perp.	8. Sexual IPV Perp.
1.	-							
2.	.31**	-						
3.	.42**	.29**	-					
4.	.15	.18*	.20*	-				
5.	.17	.13	.16	.08	-			
6.	.18*	.19*	.15	.07	.65**	-		
7.	.18*	.15	.13	.09	.96*	.74**	-	
8.	.13	.06	.07	.05	.84**	.69**	.83**	-
M	.90	1.38	1.32	1.28	.96	14.16	2.53	.99
SD	1.06	1.12	1.03	.72	8.28	26.16	15.35	5.06

*Note: *p < .05. **p* < .01.
FC 1 = Economic/Family deprivation. FC 2 = Abuse/Threat. FC 3 = Chaotic Household. FC 4 = Peer relations.

Table 7. *Bayesian Multilevel Model Regression Coefficients for each Extracted Factor*

IPV perpetration	β	S.E.	95% CI Lower	95% CI Upper
Identity Abuse				
Age	0.10	0.07	-0.02	0.24
Economic/Family Depr.	-0.28	0.94	-2.19	1.50
Abuse/Threat	0.59	0.77	-0.85	2.20
Chaotic Household	0.81	0.61	-0.39	2.05
Peer relations	0.08	0.78	-1.57	1.61
Psychological IPV				
Age	0.01	0.02	-0.03	0.05
Economic/Family Depr.	0.10	0.17	-0.24	0.42
Abuse/Threat	0.24	0.16	-0.07	0.56
Chaotic Household	0.11	0.18	-0.26	0.46
Peer relations	-0.06	0.22	-0.48	0.37
Physical IPV				
Age	0.02	0.06	-0.09	0.14
Economic/Family Depr.	0.21	0.51	-0.73	1.28
Abuse/Threat	0.74	0.44	-0.10	1.66
Chaotic Household	0.15	0.51	-0.85	1.15
Peer relations	0.04	0.68	-1.29	1.41
Sexual IPV				
Age	0.20	0.10	-0.00	0.42
Economic/Family Depr.	-0.16	0.60	-1.16	1.21
Abuse/Threat	-0.54	0.57	-1.70	0.56
Chaotic Household	-0.38	0.55	-1.47	0.83
Peer relations	0.24	0.87	-1.59	1.87

**Note:* IPV = Intimate Partner Violence. CI = credible interval. LL and UL indicate the lower and upper limits of the CI. Significance was determined if zero did not fall between the UL and LL values of the CI.

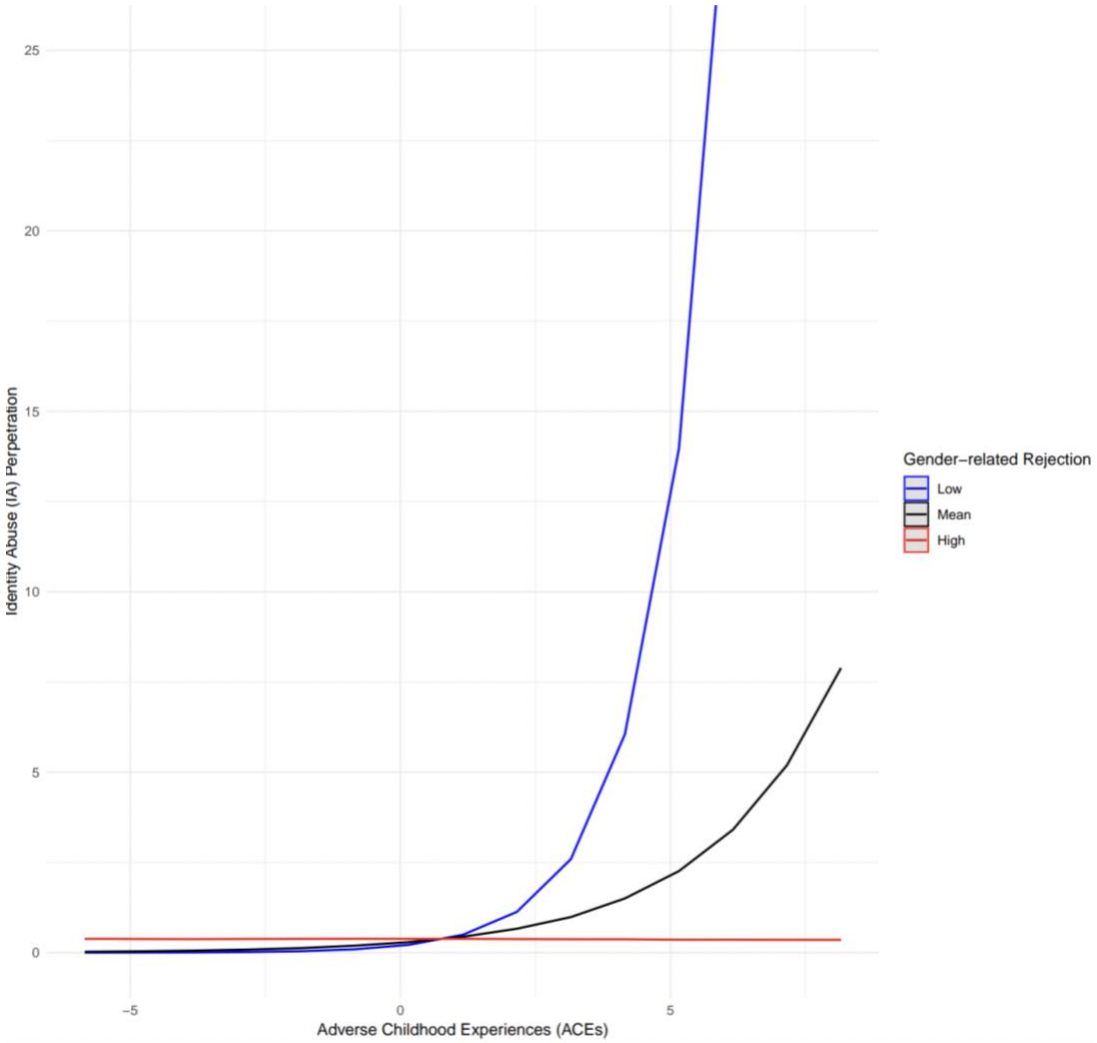

Figure 3. *Interaction effect of ACEs and Rejection on IA perpetration*

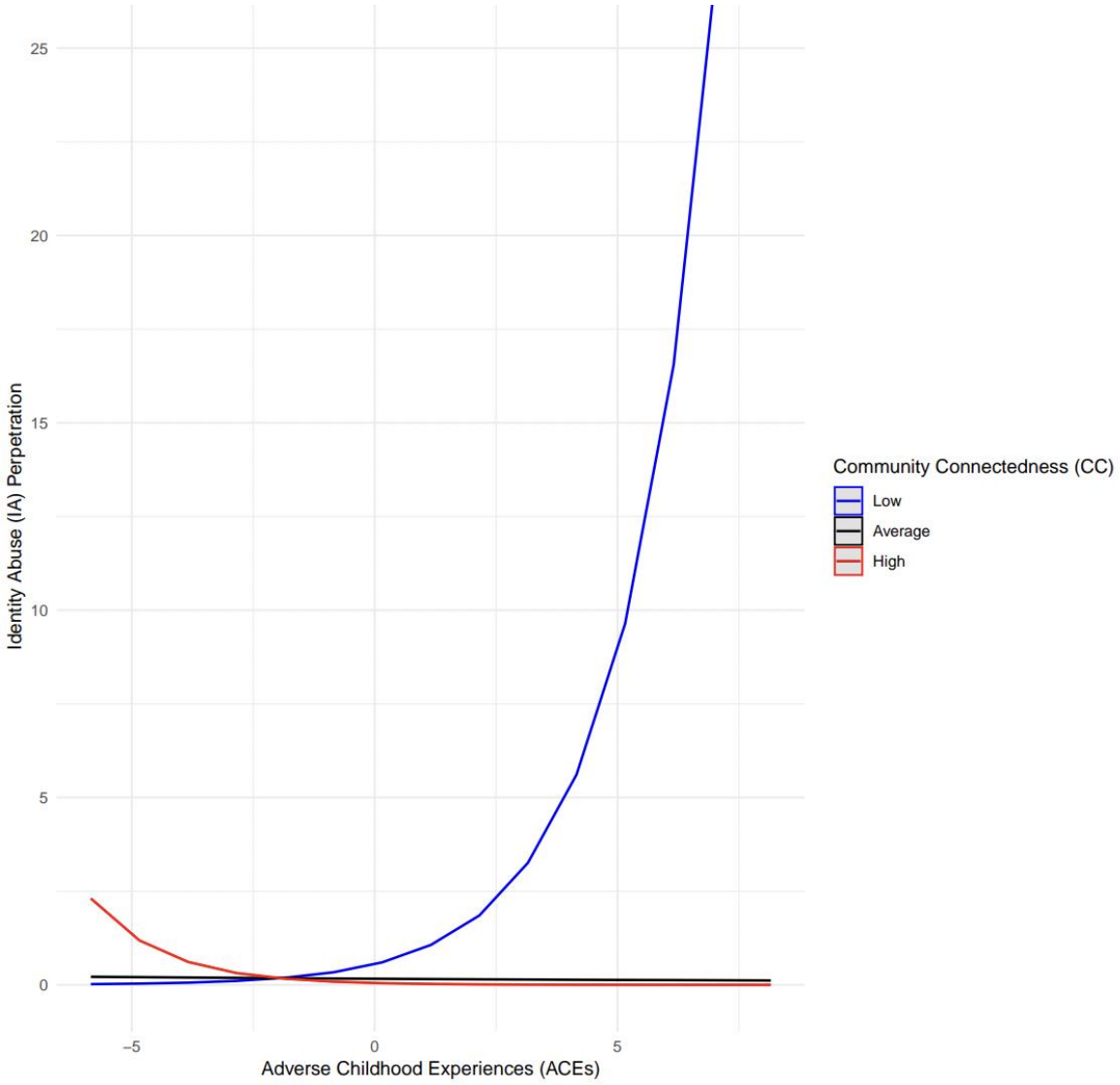

Figure 4. *Interaction effect of ACEs and CC on IA perpetration*

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