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Adverse Childhood Experiences and Intimate Partner Violence: Testing Psychosocial Mediation Pathways among Couples

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Abstract

Purpose—Adverse childhood experiences (ACEs) are associated with an increased likelihood of intimate partner violence (IPV) in adulthood. This study tests whether psychosocial factors, such as depression, anxiety, and impulsivity, and problem drinking mediate associations between ACEs and IPV.

Methods—Couple data from a cross-sectional sample of married/cohabiting couples residing in 50 medium-to-large California cities (n=1,861 couples) were used. Hypothesized relationships among male and female ACE, male-to-female partner violence (MFPV) and female-to-male partner violence (FMPV), frequency of intoxication, depression, impulsivity, and anxiety were tested with structural equation path models, and the significance of both individual direct paths and indirect associations was determined.

Results—Male and female partners had positive direct associations between ACEs and depression, anxiety, and impulsivity. Males' anxiety and impulsivity, and females' depression, were positively related to MFPV. Males' depression and frequency of intoxication, and females' depression, were positively related to FMPV. Indirect associations between male ACEs and MFPV via depression; male ACEs and FMPV via anxiety and impulsivity; and female ACEs and MFPV and FMPV via depression were all positive and significant.

Conclusions—Adverse childhood experiences impact IPV partially through psychosocial characteristics. Interventions targeted at reducing ACEs and subsequent psychosocial outcomes may help reduce adult IPV.

MeSH heading key words

Spouse Abuse; Domestic Violence; Child Abuse; Depression; Impulsive Behavior; Anxiety; Alcoholic Intoxication

Introduction

Exposure in early life to adverse childhood experiences (ACEs), including physical, psychological, and sexual abuse (1), is associated with an increased likelihood of intimate

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partner violence (IPV) in adulthood. Witnessing or experiencing violent events as a child has been hypothesized to lead to the intergenerational transfer of violence through imitating or tolerating similar behaviors in adult relationships (2). Prior studies have found significant associations between ACEs and IPV, using a variety of measures of childhood abuse and partner violence (3–6). While there is a strong, consistent association between ACEs and IPV, relationships differ across types of childhood trauma and types of partner violence. One study found child sexual abuse to be associated with female-to-male partner violence (FMPV) and male-to-female partner violence (MFPV), while physical abuse was associated with MFPV only (7). Some evidence points to alcohol use, stressors, and antisocial personality disorder as potential mediators of associations between ACEs and adult IPV (4, 8), but research on these mechanisms is sparse.

Impulsivity, by itself or through increased alcohol abuse, may mediate the relationship between ACEs and IPV. Although neurobiological mechanisms have not definitively been established, it is plausible that childhood abuse and trauma may result in higher levels of impulsivity in adulthood (9). Numerous studies indicate that impulsivity is positively associated with IPV (10, 11). ACEs are linked with increased risk of adult alcohol abuse (12); in turn, problem drinkers are at greater risk for IPV, particularly amongst males (11, 13, 14).

Psychosocial factors such as depression and anxiety are also potential mediating factors linking ACEs and adult IPV. ACEs often lead to depression and anxiety (1, 15), with a graded relationship between number of ACEs and severity of adult depression (16). Besides being a consequence of childhood maltreatment and/or family dysfunction, depression is a risk factor for both reciprocal (17) and unidirectional IPV (18, 19). Ehrensaft et al found psychiatric disorders in adolescence predicted partner violence in early adulthood (20), while past-week depressive symptoms were associated with partner violence in a sample of adolescents (18). A study using the World Health Organization Mental Health Survey estimated the population attributable risk for partner violence from premarital psychiatric conditions to be 17.2% (21).

Much of the current literature emphasizes the role of depression as a consequence of, rather than a risk factor for, IPV (22–25), with this relationship varying by type of partner violence. For example, Caetano and Cunradi found that FMPV, but not MFPV, was a risk factor for both partners' depression (26). In contrast to prior studies' emphasis on depression as a result of IPV, this analysis focuses on the importance of psychosocial factors in the pathway between ACEs and adult IPV. In this regard, the current study builds upon findings reported by Schafer, Caetano and Cunradi (13), in which pathways between childhood abuse and IPV were mediated by each partner's impulsivity and alcohol problems.

In this study, partner-specific pathways between ACEs and MFPV and FMPV are tested to determine if depression, anxiety, impulsivity and problem drinking are mediators of these relationships and whether associations differ across partners. A structural equation model of these relationships was estimated using data from a sample of couples drawn from 50 medium-sized California cities. Depression, impulsivity, and anxiety were expected to be associated with both ACEs and MFPV and FMPV. We also hypothesized that indirect pathways between ACEs and IPV through psychosocial characteristics would be significant. No previous studies, to our knowledge, have used couple data on both MFPV and FMPV to determine whether depression, anxiety, and impulsivity are in the pathway between ACEs and MFPV and FMPV.

Methods

Data Source and Measures

Couples were sampled from 50 California cities with populations 50,000–500,000. Couples were recruited by telephone from a purchased sample of household addresses and telephone numbers. Eligible households included those with couples who were married or cohabiting, had lived together for at least 12 months at the time of the survey interview, were between 18 and 50 years old, and were fluent in English or Spanish. Trained survey interviewers first spoke with the female partner in the couple using computer-assisted telephone interviewing procedures. If the female partner reported experiencing severe IPV, operationalized as the female reporting that her male partner used a knife or gun on her; punched or hit her with something that could hurt; choked her; slammed her against a wall; beat her up; burned or scalded her on purpose; or kicked her (27), the interviewer asked her permission before contacting her male partner for his interview (in which no questions about IPV were asked). Otherwise, the male partner was contacted for the full interview following completion of the female's interview. All procedures were approved by the Institutional Review Board of the Pacific Institute for Research and Evaluation. In addition, a Certificate of Confidentiality was obtained from the National Institute on Alcohol Abuse and Alcoholism. The full CASRO (Council of American Survey Research Organizations) response rate was 59.5%, while the Cooperation Rate was 78.3% (28). The calculation of the CASRO response rate takes into account the large number of potential respondents whose eligibility is unknown. Couples in the sample ($n = 1,861$ couples) used in the models reported here had a mean age of 41.8 years ($SD = 5.5$).

The occurrence of any past-12 month intimate partner violence was measured with the physical assault subscale of the revised Conflict Tactics Scales (CTS2) (29). The subscale asks about the occurrence of 12 behaviors (e.g., pushing or shoving, grabbing, choking) that the respondent may have perpetrated against their spouse/partner, and that their spouse/partner may have perpetrated against them. Separate variables were created for MFPV and FMPV. Violence was considered to have occurred if at least one partner reported a violent incident, independent of the other partner's report. Thus, if either partner reported occurrence of an incident, the partner violence variable (MFPV or FMPV, depending on the gender of the perpetrator) was coded "1;" if neither reported an incident, the variable was coded '0'. This method allows for the correction of under-reporting of violence common in one partner data (30). Since agreement between partners about the occurrence of aggression is low (31, 32), this method provides upper-bound estimates of MFPV and FMPV which compensate for the bias inherent in one-partner accounts of couple aggression (30). Level of agreement between partners as to the occurrence of past-year MFPV and FMPV was tested using Cohen's kappa statistic (31). Level of dyadic agreement beyond chance as to the occurrence of MFPV ($\kappa = .22$) and FMPV ($\kappa = .32$) was low.

Childhood exposure to violence and other adverse events was measured with a modified version of the Adverse Childhood Experiences (ACE) scale (1). The modified ACE (33) covers six categories of childhood experiences, including sexual, physical, or psychological abuse, exposure to a mentally ill or alcoholic person in the home, and violence against the mother. A scale, ranging from 0–6, was created by summing the number of affirmative responses. A separate ACE score was computed for each partner (Cronbach's α s = .66 and .59 for females and males, respectively).

Impulsivity was measured with three questions used in previous IPV studies (10, 11, 30). Each partner was asked to rate how well each of the following statements described them: I often act on the spur-of-the-moment without stopping to think; you might say I act impulsively; and many of my actions seem to be hasty. Response options ranged from quite

a lot to not at all (scored from 1–4). Items were reverse-coded prior to computing composite scores (Cronbach's α s = .76 and .78 for females and males, respectively). Frequency of intoxication was measured with a continuous variable created from each respondent's report of how many times during the past 12 months he or she drank "enough to feel intoxicated or drunk." We applied a square root transformation to these scores for use in our path models.

Both depression and anxiety were measured with scales from the Hospital Anxiety and Depression Scale (34). This scale has good sensitivity and specificity (approximately 0.80) and has been used in numerous studies (35). Depression was measured with six items, scored from 1–4: I still enjoy the things I used to enjoy; I can laugh and see the funny side of things; I feel cheerful; I feel as if I am slowed down; I have lost interest in my appearance; and I look forward with enjoyment to things. Anxiety was also measured with six items, scored from 1–4: I feel tense or wound up; I get a sort of frightened feeling as if something awful is about to happen; Worrying thoughts go through my mind; I can sit at ease and feel relaxed; I get a sort of frightened feeling like butterflies in the stomach; and I feel restless as if I have to be on the move. Items were coded with a higher score representing greater depression (or anxiety) and averaged to create composite scores for each partner (depression: Cronbach's α s = .62 and .67 for females and males, respectively; anxiety: Cronbach's α s = .70 for females and males).

Other variables in the model included unemployment, highest level of education received, and race/ethnicity. Unemployment status was measured using a dichotomous indicator for each partner's report of unemployment status, with self-reports of unemployment scoring 1, and self-reports being of employed, student, homemaker, retired, or disabled scoring 0. A five-category measure of race/ethnicity for each partner (Hispanic/Latino, non-Hispanic Black, Asian/Asian-American/Pacific Islander, multi-racial/other, and non-Hispanic White) was used. Non-Hispanic White was treated as the reference category. Highest level of education received was measured through the following four categories: less than high school; high school diploma; some post-high school; and Bachelor's degree or higher. Bachelor's degree or higher was used as the reference category.

Analytic approach

All analyses were conducted in 2011. Hypothesized associations, illustrated in Figure 1, were tested with path models using Mplus 6.12 (36) using the robust maximum likelihood (MLR) estimator with Monte Carlo integration. Covariance coverage values ranged from 98.1% to 100% (i.e., *max* pairwise item-level missingness for any pair of variables = 1.9%; *min* and *Mdn* = 0%; *M* = 0.03%). Under a full information maximum likelihood approach all available data, including data from cases with item-level missingness, were used in computing model estimates. In addition to associations depicted in Figure 1, paths were estimated from the race/ethnicity dummy variables to hypothesized mediators (depression, anxiety, impulsivity, and intoxication frequency) and from race/ethnicity and education dummy variables to IPV measures. A logit link function was used in modeling associations with the dichotomous outcome variables. Correlations among disturbances (errors of prediction) were estimated for selected pairs of mediators (parameters listed at the bottom of Table 4). All model variables were treated as manifest variables. In conducting tests of indirect associations, we employed the approach described by VanderWeele and Vansteelandt (2010) as implemented by Muthén (2011) (37, 38).

Results

Among couples included in this study's analysis, prevalence of MFPV was 7% and prevalence of FMPV was 10%. Correlations among male partner reports of model variables and IPV measures and their means and standard deviations are presented in Table 1. Male

depression and anxiety were moderately correlated with one another, as were MFPV and FMPV. A parallel set of statistics for female reports of model variables and IPV measures is presented in Table 2. Similar to male correlations, the strongest correlations were between female anxiety and depression and MFPV and FMPV. Correlations among male and female reports of model variables are presented in Table 3. No correlation was stronger than 0.28.

Test of relative model fit—As an initial step in analyses a model was estimated containing the paths in Figure 1, the paths from covariates and the correlations among disturbances described above, and direct paths from the exogenous variables (unemployment, ACE) to the IPV variables. This model served as a baseline against which the fit of the more parsimonious hypothesized model was tested¹. This baseline model with 120 free parameters had a log likelihood of −15090.083 and a sample size-adjusted Bayesian Information Criterion (BIC) value of 30702.392. The hypothesized model, which was nested within this initial model, had 112 free parameters, a log likelihood of −15098.643, and a sample size adjusted BIC of 30684.698. Comparison of the BIC values and a scaled chi-square difference test (39) of relative model fit based on the log likelihoods ($\chi^2 = 15.42$, $df = 8$, $p = .051$) indicated that the baseline model did not fit the data significantly better than the more parsimonious hypothesized model, so the hypothesized model was retained.

Tests of direct associations—Next, tests of significance for individual paths in the hypothesized model were tested. A complete listing of paths and correlations specified in the hypothesized model is presented in Table 4. Significant paths and correlations are depicted (with corresponding unstandardized coefficients) in Figure 1, while non-significant paths are indicated by dashed lines. Consistent with our hypotheses, male partners' ACE score was positively and significantly related to their reports of depression, anxiety, and impulsivity. Associations among female partner reports of these variables showed a similar pattern. Current unemployment was positively related to depression for female, but not male, partners. Impulsivity was positively related to intoxication frequency for male partners (as expected), but not for female partners. MFPV was positively related to male partners' anxiety and impulsivity and positively related to female partners' depression. FMPV was positively related to male partners' depression, impulsivity, and intoxication frequency and to female partners' depression. All of these significant associations were consistent with our hypotheses, but several hypothesized associations between psychosocial mediators and IPV outcomes were not found to be significant here.

Tests of indirect associations—Indirect associations of ACEs and current unemployment with IPV, as mediated by depression (male and female partners), anxiety, and impulsivity (male partners only), were examined, as these pathways consisted of significant direct effects. Using procedures from VanderWeele and Vansteelandt (2010) (37) under Mplus 6.12 we computed an odds ratios estimate and corresponding standard error for each indirect association². As hypothesized, the indirect association between male partner's ACE and FMPV via male partner's depression was positive and significant ($OR = 1.029$, $p = .038$). Likewise, indirect associations between male partner's ACE and MFPV via male's partner's anxiety and male partner's impulsivity were positive and significant ($OR = 1.044$, $p = .046$; and $OR = 1.039$, $p = .003$, respectively), as hypothesized. Consistent with our hypotheses, the indirect association between female partner's ACE and MFPV via female's depression was positive and significant ($OR = 1.039$, $p = .005$). Likewise, the hypothesized

¹Under Monte Carlo integration, there is no single referent covariance matrix, which precludes calculation of an overall model chi-square, and in turn, chi-square-based fit indices.

²We are unaware of methods that allow for estimation of complex indirect effects for dichotomous outcomes. As such, the chain from male's ACE to FMPV via impulsivity and intoxication was not formally evaluated.

positive indirect association between female's ACE and FMPV, via female's depression, was also significant ($OR = 1.031, p = .010$). The association between male partner's ACE and FMPV, via male's impulsivity was positive, but not significant ($OR = 1.016, p = .075$). The associations between female's unemployment and FMPV and MFPV via female's depression were not significant at $p < .05$ ($OR = 1.254, p = .051$ and $OR = 1.170, p = .112$, respectively).

Discussion

This study expands Schafer et al.'s (2004) conceptual framework linking IPV with each partner's adverse childhood experiences, impulsivity, and hazardous alcohol use to include important mediating variables such as depression and anxiety (13). While previous studies have shown the positive relationship between adverse childhood experiences and adult partner violence (5, 6) and the intergenerational transmission of violence and externalizing behaviors (40–42), the use of path analysis in the current study provides a structural model of IPV that assumes temporal precedence and mediating roles of key risk factors. Positive direct associations were found between ACEs and depression, anxiety, and impulsivity for male and female partners. In turn, male anxiety and impulsivity and female depression were positively related to MFPV, while male depression, impulsivity, and intoxication frequency and female depression were positively related to FMPV. Indirect associations between male ACEs and MFPV via male anxiety and impulsivity; male ACE and FMPV via male depression; and female ACEs and both MFPV and FMPV via female depression were all positive and significant. These results demonstrate the importance of psychosocial characteristics in the pathway between ACEs and adult IPV, and the heterogeneity of pathways for women and men and MFPV and FMPV.

Results generally matched our hypotheses, although the variation in the specific mediating psychosocial characteristics and IPV type (MFPV vs. FMPV) between men and women was unexpected. Female depression was in the pathway between ACEs and both types of partner violence, while male mediating psychosocial characteristics were more heterogeneous. Surprisingly, unemployment was not associated with any psychosocial outcomes with the exception of male anxiety and female depression.

Associations between alcohol use and intoxication and MFPV and FMPV were consistent with prior research (43, 44). As expected, the pathway from ACEs to impulsivity to intoxication and FMPV was significant for males. This, however, was the only significant association between ACEs and adult partner violence in which frequency of intoxication was significant. While intoxication was a strong independent predictor of IPV, it was less important than psychosocial characteristics in linking ACEs to IPV.

An important strength of this study is its novel use of couple data, enabling comparison between MFPV and FMPV and between female and male mediating psychosocial characteristics and IPV. It is important to determine risk factors for both MFPV and FMPV, as both types of partner violence can have devastating consequences (45). Couple data is essential for exploration of heterogeneity in the role of psychosocial characteristics as mediators between ACEs and IPV. The associations between ACEs and psychosocial characteristics were somewhat similar for males and females, although there were also distinct differences. Female anxiety and impulsivity were not associated with MFPV or FMPV, while female depression was associated with both. Male impulsivity and anxiety were directly associated with MFPV, while male depression was associated with FMPV.

Several limitations of this study should be noted. For example, these analyses do not investigate whether IPV is a mediator in the pathway between ACEs and psychosocial

characteristics. Instead, analyses focused on psychosocial characteristics as mediators, and the potential impact of intervening on psychosocial factors in breaking the strong ties between ACEs and IPV. Direct comparison of these analyses to those that found IPV to be a risk factor for depression is difficult. Adult IPV and psychosocial characteristics likely influence one another. However, childhood experiences are associated with adult IPV, and indirect pathways through psychosocial characteristics are significant. Future research that investigates the (likely bidirectional) relationships between depression/anxiety and IPV would begin to disentangle these complicated relationships. Additionally, the construction of a model that is able to statistically differentiate competing models would help determine the directionality of associations. These results are distinct from the few studies that have also examined pathways between ACEs and IPV (4, 8, 13), since we use couple data and test a different set of mediators. Taken together, these studies begin to elucidate important mechanisms linking childhood exposure to adverse experiences and adult behaviors.

The Community Health Study of Couples was designed to be geographically representative of the California cities from which the sample was drawn. Study recruitment methods relied on a listed sample in which all households were contacted by landline telephone, which may have limited recruitment of the youngest couples (18–29 years old) as young adults increasingly live in wireless-only households (46). These data are cross-sectional, limiting causal inference from analyses despite the use of a mediational model. The primary predictor of interest is a retrospective measure of childhood circumstances that erases the temporal ambiguity between ACEs and adult partner violence for study participants. Adult recall of childhood experiences can be biased, but there is no reason to believe this bias would be differential between individuals. Furthermore, it would be impossible to collect data from children and adult couples, as these partnerships form after childhood has already passed. The temporal distinctions between adult depression and past-year IPV are much murkier. The relatively low internal consistency of the ACEs measures might indicate that the items are actually composite indicators of the adverse childhood experiences construct (47), suggesting that further psychometric investigation of these items and related measures is warranted.

Despite these limitations, the findings suggest that prevention of childhood trauma, maltreatment and family dysfunction remains an important public health goal, for both the wellbeing of the child and the future adult (48). Effective treatment of depression and anxiety is essential to reduce adult partner violence and potentially to weaken links between ACEs and IPV amongst adults. Prevention of ACEs and mental health disorders is important, beyond the prevention of IPV, but this analysis highlights the contribution of specific psychosocial pathways that link childhood circumstances to adult partner violence. Important next steps in understanding how ACEs influence adult partner violence should include further exploration of other mediating pathways and why pathways differ between men and women (13).

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List of Abbreviations

IPV	Intimate partner violence
MFPV	Male-to-female partner violence

FMPV	Female-to-male partner violence
ACEs	Adverse childhood experiences
CTS2	Conflict Tactics Scales

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Figure 1.
Path Model of Associations Between Adverse Childhood Experiences and Partner Violence with Psychosocial Mediators

Table 1
Correlations, means, and standard deviations for male partner reports of model variables and for IPV measures

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Male Adverse childhood experiences	--							
2. Male Unemployment	.04	--						
3. Male Depression	.17**	.03	--					
4. Male Anxiety	.21**	.05*	.48**	--				
5. Male Impulsivity	.10**	.07**	.20**	.25**	--			
6. Male Intoxication frequency	.06**	-.01	.07**	.14**	.16**	--		
7. Male-to-Female Intimate partner violence	.09**	.03	.10**	.11**	.14**	.07**	--	
8. Female-to-male Intimate partner violence	.04	.04	.11**	.09**	.09**	.11**	.55**	--
Mean	0.67	0.07	1.51	1.73	1.56	0.90	0.07	0.10
Standard Deviation	1.05	0.25	0.42	0.46	0.63	1.83	0.25	0.30

* $p < .05$

** $p < .01$

Table 2
Correlations, means, and standard deviations for female partner reports of model variables and for IPV measures

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Female Adverse childhood experiences	--							
2. Female Unemployment	.05*	--						
3. Female Depression	.14**	.09**	--					
4. Female Anxiety	.17**	.04	.42**	--				
5. Female Impulsivity	.14**	.07**	.20**	.26**	--			
6. Female Intoxication frequency	.08**	.06**	.01	.12*	.05	--		
7. Male-to-Female Intimate partner violence	.07**	.07**	.12**	.07**	.04	.05*	--	
8. Female-to-male Intimate partner violence	.08**	.04	.13**	.09**	.04	.05*	.55**	--
Mean	0.88	0.07	1.48	1.81	1.47	0.55	0.07	0.10
Standard Deviation	1.26	0.26	0.42	0.46	0.58	1.38	0.25	0.30

* $p < .05$

** $p < .01$

Table 3
Correlations among male partner (M) and female partner (F) reports of model variables

	Adverse childhood experiences (F)	Unemployment (F)	Depression (F)	Anxiety (F)	Impulsivity (F)	Intoxication frequency (F)
Adverse childhood experiences (M)	.10**	.04	.04	.05*	.07**	.06*
Unemployment (M)	-.02	.05*	.04	.02	.011	.02
Depression (M)	.03	.05*	.16**	.08**	.06**	.02
Anxiety (M)	.03	.05*	.10**	.08**	.06**	.08**
Impulsivity (M)	-.01	.04	.05*	.06**	.05*	.05*
Intoxication frequency (M)	.04	-.00	.02	.06**	.07**	.28**

* $p < 0.05$

** $p < 0.01$

Table 4

Unstandardized coefficients (b), standard errors, standardized coefficients (b'), and p-values for structural paths and correlations

Outcome (Variable predicted from)	Dependent variable and predictors	b	SE(b)	b'	p-value
Male Depression	Adverse childhood experiences (M) ^c	0.07	0.01	0.16	<0.001
	Unemployment (M)	0.02	0.04	0.02	0.524
	Hispanic/Latino ethnicity (M) ^a	-0.01	0.03	-0.01	0.773
	African American race (M) ^a	0.06	0.06	0.02	0.365
	Asian American race (M) ^a	0.06	0.05	0.03	0.191
	Other race/Multiracial (M) ^a	0.10	0.04	0.06	0.026
Male Anxiety	Adverse childhood experiences (M)	0.09	0.01	0.20	<0.001
	Unemployment (M)	0.08	0.04	0.04	0.069
	Hispanic/Latino ethnicity (M) ^a	-0.13	0.03	-0.11	<0.001
	African American race (M) ^a	-0.21	0.05	-0.08	<0.001
	Asian American race (M) ^a	-0.08	0.05	-0.04	0.101
	Other race/Multiracial (M) ^a	0.00	0.04	0.00	0.964
Male Impulsivity	Adverse childhood experiences (M)	0.06	0.02	0.11	<0.001
	Hispanic/Latino ethnicity (M) ^a	-0.11	0.04	-0.07	0.002
	African American race (M) ^a	-0.15	0.09	-0.04	0.101
	Asian American race (M) ^a	0.00	0.08	0.00	0.968
	Other race/Multiracial (M) ^a	0.04	0.07	0.01	0.602
Female Depression	Adverse childhood experiences (F) ^c	0.05	0.01	0.15	<0.001
	Unemployment (F)	0.14	0.04	0.08	0.001
	Hispanic/Latina ethnicity (F) ^a	0.05	0.02	0.04	0.163
	African American race (F) ^a	0.00	0.06	0.00	0.992
	Asian American race (F) ^a	0.14	0.04	0.07	0.002
	Other race/Multiracial (F) ^a	0.11	0.05	0.06	0.016

Outcome (Variable predicted from)	Dependent variable and predictors	b	SE(b)	b'	p-value
Female Anxiety	Adverse childhood experiences (F)	0.06	0.01	0.18	<0.001
	Unemployment (F)	0.05	0.04	0.02	0.261
	Hispanic/Latina ethnicity (F) ^a	-0.11	0.03	-0.09	<0.001
	African American race (F) ^a	-0.13	0.07	-0.04	0.058
	Asian American race (F) ^a	0.06	0.04	0.03	0.221
	Other race/Multiracial (F) ^a	0.02	0.05	0.01	0.672
Female Impulsivity	Adverse childhood experiences (F)	0.07	0.01	0.15	<0.001
	Hispanic/Latina ethnicity (F) ^a	-0.01	0.03	-0.01	0.695
	African American race (F) ^a	-0.00	0.09	0.00	0.998
	Asian American race (F) ^a	0.03	0.07	0.01	0.668
	Other race/Multiracial (F) ^a	0.14	0.07	0.05	0.050
Male Intoxication frequency	Impulsivity (M)	0.30	0.09	0.13	<0.001
	Hispanic/Latino ethnicity (M) ^a	-0.49	0.09	-0.10	<0.001
	African American race (M) ^a	-0.59	0.11	-0.06	<0.001
	Asian American race (M) ^a	-0.80	0.10	-0.09	<0.001
	Other race/Multiracial (M) ^a	-0.05	0.23	-0.01	0.834
Female Intoxication frequency	Impulsivity (F)	0.08	0.06	0.03	0.203
	Hispanic/Latina ethnicity (F) ^a	-0.43	0.06	-0.12	<0.001
	African American race (F) ^a	-0.50	0.11	-0.05	<0.001
	Asian American race (F) ^a	-0.63	0.05	-0.10	<0.001
	Other race/Multiracial (F) ^a	-0.47	0.08	-0.07	<0.001
Male-to-female violence	Depression (M)	0.17	0.24	0.04	0.483
	Anxiety (M)	0.47	0.23	0.11	0.040
	Impulsivity (M)	0.59	0.14	0.19	<0.001
	Intoxication Frequency (M)	0.05	0.04	0.04	0.300
	Depression (F)	0.70	0.23	0.15	0.003

Outcome (Variable predicted from)	Dependent variable and predictors	b	SE(b)	b'	p-value
	Anxiety (F)	0.11	0.21	0.03	0.590
	Impulsivity (F)	0.03	0.16	0.01	0.858
	Intoxication Frequency (F)	0.03	0.08	0.02	0.729
	Hispanic/Latino ethnicity (M) ^a	0.74	0.35	0.14	0.035
	African American race (M) ^a	1.22	0.73	0.11	0.094
	Asian American race (M) ^a	-0.16	0.63	-0.02	0.800
	Other race/Multiracial (M) ^a	-0.39	0.50	-0.05	0.430
	Hispanic/Latina ethnicity (F) ^a	-0.59	0.39	-0.12	0.159
	African American race (F) ^a	-0.66	0.98	-0.05	0.607
	Asian American race (F) ^a	0.73	0.53	0.08	0.014
	Other race/Multiracial (F) ^a	0.43	0.48	0.05	0.438
	Less than High School (M) ^b	-0.44	0.55	-0.05	0.461
	High school diploma (M) ^b	-0.15	0.33	-0.03	0.876
	Some post high school (M) ^b	0.20	0.25	0.04	0.318
	Less than high school (F) ^b	0.32	0.55	0.04	0.291
	High school diploma (F) ^b	-0.53	0.40	-0.09	0.292
	Some post high school (F) ^b	0.20	0.24	0.05	0.379
	Depression (M)	0.46	0.20	0.10	0.024
	Anxiety (M)	0.22	0.20	0.05	0.277
Female-to-male violence	Impulsivity (M)	0.26	0.12	0.08	0.027
	Intoxication Frequency (M)	0.12	0.04	0.11	0.003
	Depression (F)	0.62	0.20	0.13	0.001
	Anxiety (F)	0.21	0.18	0.05	0.242
	Impulsivity (F)	-0.09	0.14	-0.03	0.526
	Intoxication Frequency (F)	0.02	0.07	0.01	0.788
	Hispanic/Latino ethnicity (M) ^a	-0.13	0.36	-0.03	0.712
	African American race (M) ^a	0.49	0.72	0.04	0.501
	Asian American race (M) ^a	-0.57	0.47	-0.06	0.224

Outcome (Variable predicted from)	Dependent variable and predictors	b	SE(b)	b'	p-value
	Other race/Multiracial (M) ^a	0.11	0.37	0.01	0.765
	Hispanic/Latina ethnicity (F) ^a	-0.30	0.33	-0.06	0.355
	African American race (F) ^a	0.13	0.85	0.01	0.883
	Asian American race (F) ^a	1.18	0.36	0.13	0.001
	Other race/Multiracial (F) ^a	0.37	0.40	0.04	0.360
	Less than High School (M) ^b	-0.41	0.48	-0.05	0.387
	High school diploma (M) ^b	-0.56	0.32	-0.10	0.076
	Some post high school (M) ^b	0.14	0.21	0.03	0.496
	Less than high school (F) ^b	0.77	0.43	0.10	0.074
	High school diploma (F) ^b	-0.44	0.34	-0.08	0.191
	Some post high school (F) ^b	0.08	0.20	0.02	0.677
Correlations between disturbances					
	Male Depression with Male Anxiety	0.09	0.01	0.47	<0.001
	Male Depression with Male Intoxication frequency	0.03	0.02	0.04	0.051
	Male Anxiety with Male Intoxication frequency	0.07	0.02	0.09	<0.001
	Female Depression with Female Anxiety	0.08	0.01	0.41	<0.001
	Female Depression with Female Intoxication frequency	0.00	0.01	0.00	0.878
	Female Anxiety with Female Intoxication frequency	0.06	0.02	0.09	0.003

^aWhite/non-Hispanic is the reference category.

^bBachelor's degree or higher is the reference category.

^cM=Male, F=Female