Intimate Partner Violence Risk Factors: A Vulnerability-Adaptation Stress Model Approach

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Abstract

Intimate partner violence (IPV) disproportionally affects women. Using the vulnerability-adaptation stress model, we examined adverse childhood experiences (ACEs), self-esteem, and hope as vulnerability indicators and relationship status and length, positive and negative affect, and socioeconomic status (SES) as stressors to ascertain the risk for IPV. Women (N=491,M = 37.15, standard deviation = 12.51) completed an online survey comprised of the Positive and Negative Affect Scale, Rosenberg's Self-esteem Scale, Snyder's Hope Scale, ACE questionnaire, Composite Abuse Scale Revised-Short Form, and demographic questions. Factor analysis identified four ACE factors of sexual abuse, physical or psychological abuse, witnessing domestic violence, and household dysfunction. A five-step hierarchical multiple regression identified that greater exposure to physical or psychological child abuse was associated with an increased risk of IPV (Step 2), B=0.73[0.16, 1.34]. Lower self-esteem, B=-0.30 [-0.47, -0.14] predicted IPV (Step 3). Age B=0.07 [0.01, 0.13], negative affect, B=0.39 [0.19, 0.59], and relationship length, B = -1.24 [-2.16, 0.41] were associated with a higher risk of IPV (Step 4). In Step 5, previous variables attenuated to nonsignificance while age, B=0.07 [0.01, 0.13], negative affect, B=0.39 [0.19, 0.59], and relationship length B = -1.25 [-2.16, 0.41] remained significant.

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Robyn Joy Brunton, School of Psychology, Charles Sturt University, Building 1400, Panorama Ave, Bathurst, NSW 2795, Australia. Email: rbrunton@csu.edu.au While the key findings of this study were inconsistent with some commonly reported findings (e.g., ACEs, self-esteem, hope, relationship status, SES, age), these inconsistencies are important to highlight given the factorial approach to examining ACEs, the comprehensive analyses conducted, and our examination of these variables' direct relationship to IPV. The study was limited by its cross-sectional nature, higher prevalence of IPV victims, and not examining IPV sub-types. Similar studies need to be conducted for other relationship types and victimized individuals (e.g., same-sex relationships and male victims) to provide a complete picture of risk factors for IPV.

Keywords

domestic violence, violence exposure, predicting domestic violence, child abuse, children exposed to domestic violence

Intimate partner violence (IPV) can result in physical, sexual, or psychological harm or suffering (Breiding et al., 2015). While IPV is indiscriminate of sex, gender, relationship type, and socioeconomic status (SES, Breiding et al., 2015; Capaldi et al., 2012), women in heterosexual relationships are disproportionally affected by this violence, with 27% reporting experiencing IPV compared to 12% of men (ABS, 2023; Leemis et al., 2022). It is worth noting that within the LGBTQI+ community, inconsistent prevalence rates for IPV have been reported. However, it is proposed that the rate is likely comparable to or higher than for heterosexual couples (Gehring & Vaske, 2017). The consequences of IPV can be long- or short-term, including physical injury, poor mental health, substance abuse, and, in some cases, death (White et al., 2023; WHO, 2021). Consequently, IPV violates human rights (WHO, 2021), and a better understanding of its risk factors is essential.

Vulnerability-Adaptation Stress Model

The vulnerability-adaptation stress model (Karney & Bradbury, 1995) was initially developed to explain how pre-existing and relatively stable vulnerabilities (e.g., prior experiences, traits) and current stressors (e.g., relational factors, SES) may impact marriage (i.e., relationship satisfaction) The model provides a framework to explain how vulnerabilities and stressors interact, and how the couple's responses to these factors contribute to the quality and stability of their relationship. Studies have provided empirical support for the model (e.g., Williamson et al., 2013), and it has been used to explain declines in relationship satisfaction (McNulty et al., 2021), nega-tive relational outcomes such as situational couple violence (Stith et al., 2011) and physical aggression (Langer et al., 2008). Given the model's application to negative relational outcomes, it has also been used as a framework for examining IPV risk factors (Schreiber & Georgia Salivar, 2021; Ulloa & Hammett, 2015).

Pre-Existing Vulnerabilities

Adverse childhood experiences (ACEs) are widely regarded as a pre-existing vulnerability for IPV (Ports et al., 2016; Pro et al., 2020). ACE types include physical, sexual, and psychological abuse and household dysfunction (e.g., living with criminality or domestic violence [DV]; Felitti et al., 1998). Consistent relationships between ACEs and adult revictimization have been found in comparative studies (i.e., with low or no abuse), such that an individual with a history of ACEs may have a higher likelihood of physical, sexual, and psychological violence/stalking, with a dose-response relationship evident (Cprek et al., 2020). Similarly, ACEs and revictimization in adult-hood have a strong graded relationship (Butler et al., 2020).

A common method in ACEs research is the cumulative risk approach that summates the ACEs to indicate exposure. This approach equally weights each experience (Ford et al., 2014) but does not differentiate these diverse experiences. Studies have shown that the cumulative method (also known as the summative approach) limits the assessment of the actual risk of these specific adversities (Lanier et al., 2018) and can mask findings as ACE types can cancel each other out in statistical analyses. For example, Thulin et al. (2021) did not find a relationship between the ACE summary score and IPV, yet obtained significant results when the ACEs were separately examined.

A key limitation of the cumulative approach is that it does not allow assessment of the characteristics and associated outcomes for different abuse types, which is an important consideration in the context of child abuse. That is, the experience of physical abuse differs from emotional or sexual abuse, and thus, the abuse types can have different sequelae (Brunton, 2023). In the context of IPV, it is important to assess the different abuse types to ascertain if they pose a differential risk; however, the cumulative approach does not allow for this level of analysis. One way to address this limitation is to use a factorial approach that taps into the latent domains underlying the ACE items. Factorial analysis also has the additional benefit of reduced measurement error and allows a more stable and comprehensive assessment of ACEs as the latent domains are assessed with multiple items (Ford et al., 2014). Furthermore, studies that have compared the summative approach to factorial models have shown that the latter is statistically superior as it provides more differentiated information for some outcomes and greater predictive power for discrete variables (LaNoue et al., 2020; Westermair et al., 2018).

Another benefit of the factorial approach is that it allows for the statistical control of other ACE subtypes. The child abuse subtypes are often comorbid such that a child who has suffered sexual abuse likely has also been physically abused (Mathews et al., 2023). Therefore, robust statistical analysis requires that the other abuse types be controlled (i.e., partitioning the effects of the different abuse types) to ensure the accuracy of findings (Higgins & McCabe, 2001).

Other pre-existing vulnerability factors for IPV include self-esteem and hope. Both self-esteem and hope are evaluative dimensions of the self and relatively enduring traits (Orth & Robins, 2014; Snyder et al., 1991). While the relationship between self-esteem and IPV has been established in crosssectional studies (Papadakaki et al., 2009; Whiting et al., 2009), most of the research has focused on self-esteem as a mediator (Kim et al., 2022) or as an outcome of IPV (e.g., Capaldi et al., 2012; Matheson et al., 2015), but not as a predictor of IPV. However, measures of self-esteem assess aspects of the self in relation to worth and positive self-regard. Individuals with low self-esteem may be more likely to be self-denigrating and exaggerate their failures and perceived "bad" traits (Baumeister et al., 2003). Likewise, dispositional hope is regarded as a moderating factor between the effects of stressors and wellbeing (Valle et al., 2006) and is defined as the individual's cognitions about their expectations and ability to realize important life goals. These cognitions relate to will and commitment (i.e., agency) and strategies (i.e., pathways) to achieve these goals (Snyder et al., 1991). Similar to self-esteem, dispositional hope has been examined in survivors of IPV, but primarily in relation to other factors such as negative affect (Chang et al., 2017), self-efficacy, and life satisfaction (Munoz et al., 2017) but not its direct relationship with IPV. However, it is conceivable that low self-esteem (e.g., self-denigrating, poor positive regard) and less hopeful individuals who focus on failure and experience mostly negative emotions during goal-related activities (Snyder et al., 1991) may be more vulnerable to IPV because of reduced psychological resources (i.e., psychological capital, Luthans & Youssef-Morgan, 2017). This proposition is consistent with theoretical explanations such as target congruence theory which proposes that certain characteristics of victims of IPV make them more at risk of victimization (Sween & Reyns, 2017).

Current Stressors

Relationship status has been understudied relative to other IPV risk factors (Capaldi et al., 2012). Early studies examined status with respect to marriage

and different types of cohabitation (Capaldi et al., 2012; Sutton & Dawson, 2021) with inconsistent findings reported. For example, Li et al. (2020) found that living with an intimate partner and lower relationship satisfaction were associated with IPV. Similarly, Renner and Whitney (2012) identified that being married or living together were higher risk factors for IPV than dating. In contrast, Vest et al. (2002) noted that being divorced, separated, or wid-owed increased the odds of IPV than current marriage or cohabitating. However, with changing societal norms, the type of union (i.e., married or de facto) may be less relevant than the state of the relationship (i.e., cohabitation or estrangement). Indeed, separation and divorce are well-documented risk factors for IPV, consistent with estrangement, a time of higher risk of IPV because it typically follows relational discord (see Capaldi et al., 2012 for a review; Rezey, 2020).

While relationship status can provide information on the type of union and the risk it may present, a common limitation of research is that relationship length is comparatively under-studied (Sutton & Dawson, 2021). The duration of a relationship can contribute to changed meanings in a relationship (i.e., increased intimacy or commitment) but has also been found to increase the risk of IPV (Sutton & Dawson, 2021). While studies have examined this variable, most have been conducted in Middle Eastern or Asian countries (e.g., Li et al., 2020; Mootz et al., 2023), with few studies conducted with Western samples. Indeed, a comprehensive review and meta-analysis of risk and protective factors for IPV that included 60 studies primarily based in the United States of America (Yakubovich et al., 2018), relationship length was not included as a relational risk factor, highlighting the need for further examination.

Another stressor associated with IPV is mood. Positive and negative affect are distinct mood states, with positive affect being the extent to which an individual feels happy, satisfied, and active. In contrast, negative affect subsumes a variety of mood states, such as anger, fear, and distress (Watson et al., 1988). While previous IPV studies have examined the influence of positive and negative affect on relationship satisfaction (Shortt et al., 2010), most have focused on these mood states as moderators or outcomes or examined their relationship to IPV perpetration (e.g., Cabras et al., 2020; Tiberio & Capaldi, 2019). Relatively few studies have explored positive and negative affect's direct relationship to IPV. However, consistent with attachment theory, the content of internal working models (IWMs) includes information on attachment figures (i.e., intimate partners), such as who they are and how they may react in certain situations (Zimmermann, 1999). Moreover, the emotional regulation component of IWMs is activated when negative emotions arise during the attachment appraisal process. One aspect of IWMs is regulating emotional communication within and between individuals (Zimmermann, 1999). Given that mood lability (emotional dysregulation) is related to IPV (Bogat et al., 2020), it is conceivable that positive or negative affect may be a risk for IPV victimization because of the negative IWMs victims may have toward their intimate partners.

Other potential stressors are SES variables, with consistent findings reported in the literature that less education and household wealth are risk factors for IPV (Capaldi et al., 2012; Wilson, 2019). SES is a multidimensional construct that typically includes economic resources (e.g., income, education, occupation) and social factors (e.g., social status or class, Braveman et al., 2005). Yet, as highlighted by Capaldi et al.'s review (2012), most studies only have a few self-reported individual indicators of SES, such as education, income, and employment (Braveman et al., 2005). However, despite most SES indicators being related (e.g., income and education), the individual indicators cannot be assumed as interchangeable (Braveman et al., 2005); thus, when only limited SES indicators are included, important information may be missed, particularly in regard to IPV risk. To overcome these limitations, area-level indicators of SES can provide a more comprehensive assessment of SES. These indicators are based on the assumption that individuals residing in the same area will share many socioeconomic and environmental characteristics that may impact health over and above individual SES factors (Berkman & Macintyre, 1997). In Australia, the Socio-Economic Indexes for Areas (SEIFA) is a satisfactory measure of SES in multivariate modeling and determining aggregate relationships (Lim & Gemici, 2011).

The Current Study

This study used the vulnerability-adaptation stress framework to address previous limitations of extant research on IPV risk factors. We examined vulnerabilities relating to the history of ACEs using the factorial approach. We also examined enduring traits (i.e., self-esteem and hope) previously less considered in IPV research. Current stressors included relationship status and length, mood, and SES to ascertain risk for IPV. Finally, we addressed a common limitation of extant research, of using convenience samples and recruiting primarily young adults, by obtaining a community sample of participants with a broad age range. Consistent with the literature reviewed and the vulnerability-adaptation stress framework, we expected that enduring variables (i.e., ACEs, hope, and self-esteem) would pose a stronger risk for IPV than more transient variables (i.e., positive and negative affect, relationship status, and length, and SES).

Method

Participants

An initial 502 participants responded to the online questionnaire. Women over 18 years and in a current heterosexual relationship (i.e., within the previous 12 months) were eligible to participate. A small incentive (chance to win an AUD50.00 gift card) was provided to encourage participation. GPower (Faul et al., 2007) determined that a sample of 172 would produce a moderate effect size (f^2 =0.15) and a Type 1 error probability of 0.05.

Measures

The Adverse Childhood Experiences Questionnaire (Felitti et al., 1998) assessed childhood abuse and household dysfunction prior to 18 years. The questionnaire is a psychometrically sound measure (Dube et al., 2004) comprised of physical (2 items), sexual (4 items), and psychological abuse (2 items), rated from *never* to *more than 10 times*. The *questionnaire* also includes four areas of household dysfunction scored dichotomously (yes/no): living with someone with substance abuse, mental illness, or incarceration (5 items) and DV (4 items). Consistent with Ford et al. (2014), we analyzed all responses dichotomously; higher scores indicated greater ACE exposure. Internal consistency for the current study was $\omega = .84$.

The Composite Abuse Scale Revised–Short Form (CASR-SF; Ford-Gilboe et al., 2016) is a 15-item scale that assesses physical, sexual, and psychological IPV by a current or former intimate partner within the past 12 months. Responses are rated from 0 (*No*) to 6 (*daily/almost daily*). Consistent with Akel et al. (2022), IPV was analyzed as a continuous variable. The CASR-SF has demonstrated validity and high internal consistency (α =.94) consistent with the current study, ω =.90.

The Rosenberg Self-Esteem Scale (1965) is a 10-item unidimensional measure of self-esteem. Items are rated from 1 (*strongly disagree*) to 4 (*strongly agree*), with higher scores indicating higher levels of self-esteem. The scale has demonstrated validity and high internal consistency, $\alpha = .91$ (Sinclair et al., 2010), consistent with this study, $\omega = .92$.

The Trait Hope Scale (Snyder et al., 1991) is a 12-item trait measure of hope that is comprised of two inter-related domains: agency (4 items, an individual's goal-directed energy to pursue their goals) and pathway (4 items, the extent of creating pathways to pursue their goals) and four filler items. All items are rated from 1 (*definitely false*) to 4 (*definitely true*). Consistent with Snyder et al. (1991), total test scores were used in the data analyses, with

higher scores indicating greater hope. The scale has good construct validity and high internal consistency, $\alpha = .86$ (Munoz et al., 2020), consistent with this study, $\omega = .86$.

The Positive and Negative Affect Scale Short Form (Kercher, 1992) includes a 5-item negative affect subscale that assesses feelings of upset, nervousness, and distress and a 5-item positive affect subscale that measures feelings of determination, inspiration, and excitement. Items are scored from 1 (*very slightly/not at all*) to 5 (*extremely*); higher scores indicate greater affect. The subscales have good internal consistency (α =.84–.87) and validity with measurement invariance across different age groups (Mackinnon et al., 1999; see Rossi & Pourtois, 2012, for a review). Good internal consistency estimates were obtained for this study: negative affect ω =.78 and positive affect ω =.86.

Participants reported relationship status and length for their current or most recent partner. Relationship status was coded categorically as 1 (*separated*), 2 (*divorced*), 3 (*dating*), 4 (*de facto*), and 5 (*married*). Higher scores on this pseudo-continuous variable indicated a more partnered relationship. Participants also reported the length of that relationship rated as 1(<1 year), 2 (1–5 years), 3 (5–10 years), and 4 (10+ years).

The SEIFA Index of Relative Socioeconomic Advantage and Disadvantage assessed SES (ABS, 2016). This index defines advantage/disadvantage in terms of access to material and social resources and the ability to participate in society. It is, therefore, a broad index encapsulating many of the various concepts of advantage/disadvantage from the literature (ABS, 2016). The index is determined by the area's zip code/postcode and includes key variables (i.e., income [low < AUD 26k, high > AUD78k], education, employment [% in the labor force], occupation [skill level, e.g., laborer, professional], and housing [e.g., privately owned, size, rental]) and other miscellaneous indicators (e.g., car ownership, internet access, families with children and jobless, disability, language skills, and marital status). The index has a standardized distribution (M=1,000, standard deviation [SD]=100), with the mean equal to the national average; lower scores indicate a greater proportion of disadvantaged than advantaged people.

Demographic Questions. Respondents provided information regarding education, income, employment, age, cultural background, country of birth, and number of children.

Procedure

Following institutional ethics approval, the survey was promoted through boosted Facebook/Meta postings. Previous research confirms that online

recruitment is comparable to paper/pencil surveys (Weigold et al., 2013); therefore, we used this strategy to access a broad range of participants. After providing informed consent, the measures were presented in the following order: positive and negative affect, self-esteem, hope, ACE questionnaire, and CASR-SF. This order prevented carry-over effects and allowed forewarning of potentially distressing questions. The survey concluded with the demographic questions.

Data Analysis

Data were analyzed using IBM's Statistical Package for the Social Sciences (v. 29.0). Principal Axis Factoring with Promax rotation examined the factor structure of the ACE items. We then used hierarchical multiple regression with variables ordered by perceived importance (Field, 2013). Adjusted R^2 was reported as the measure of variance explained by each step of the model as it provides a less-biased sample estimate (Field, 2013). In Step 1, age was entered as a covariate due to its association with IPV (VanderWeele, 2019). In Step 2, the ACE factors were entered based on consistent empirical evidence supporting their predictive power. Hope and self-esteem were added in Step 3 as these enduring traits were expected to be stronger predictors of IPV than transient stressors. In Step 4, positive and negative affect and relationship factors were entered based on associations reported in the literature, and finally, SES was entered in Step 5 as fewer empirical studies use area-level indicators. Histograms assessed the normality of the variables of interest, and scatterplots assessed the homoscedasticity of the variance of the residual terms. The assumption of normally distributed errors was not evaluated as bootstrap confidence intervals were reported (Field, 2013). Multivariate outliers were determined by Mahalanobis distance using a critical value of 25, which is recommended for samples >100 when used with bootstrap resampling (Field, 2013). Analyses proceeded with 2,000 bootstrap resamples with bias-corrected confidence intervals.

Results

Data Screening and Preliminary Analyses

Three participants were removed as they did not provide their age. Given the use of incentives, we screened for internet bots based on recommendations by Griffin et al. (2022). Responses with completion times considered outliers or from a single IP address were removed. Visual scanning and checking each scale's variance confirmed no straight-lining. Missing data in the final sample

Variable	Frequency	%	Variable	Frequency	%
Employment			Relationship status		
Full time employed	165	33.6	Dating	109	22.2
Part-time	115	23.4	Defacto	135	27.5
Casual	81	16.5	Married	221	45.0
Unemployed	74	15.1	Separated/divorced	15	3.0
Prefer not to state	56	11.4	Prefer not to state	11	2.2
Annual income (AUD)			Length of current/recent r	elationship	
<\$50K	288	58.7	<i td="" year<=""><td>51</td><td>10.4</td></i>	51	10.4
\$50K-\$70K	80	16.3	I–5 years	157	32.0
\$70K–90K	56	11.4	5–10 years	93	18.9
\$90K-120K	46	9.4	>10 years	190	38.7
>\$120K	21	4.3			
Education			Number of children		
< or Year 12	80	16.3	0	212	43.2
Diploma/trade certificate	121	24.6	I	56	11.4
Undergraduate degree	191	38.9	2	131	26.7
Postgraduate degree	99	20.2	3+	92	18.7
Cultural background ^b			SEIFA index ^a		
Caucasian/White/European	457	93.I	Lowest quartile	939.75	
Indigenous Australian	9	1.8	Second quartile	969.00	
South Asian	7	1.4	Third quartile	1,027.00	
East, Southeast Asian	7	1.4	Highest quartile	117,80	0
Other cultural background	6	1.2			

Table I. Sample Demographics.

Note. Missing, a = 33, b = 5. South Asian cultures = India, Pakistan, Sri Lanka. East Southeast Asian cultures = Chinese, Malaysian, and Vietnamese. Other cultural backgrounds = Middle Eastern, North African, Hispanic, Black/sub-Saharan Africa. SEIFA = SEIFA Index and relative Advantage/Disadvantage; Income = individual annual income excluding partners.

was minimal (3.2%); thus, pairwise deletion was used. Relationship status and employment included 'other' categories in the survey, but participants could not elaborate, so 11 responses for status and 56 for employment were coded as missing.

Participants (N=491) were 18 to 75 years (M=37.15, SD=12.51), showing no bias toward younger participants, which can occur with online surveys (Bennetts et al., 2019). Participants were predominantly Australian-born, Caucasian, from the eastern states of Australia, employed, and earning up to AUD50K per annum. Most respondents had a tertiary education and were in a current heterosexual relationship (see Table 1). The sample's demographic characteristics were similar to the Australian population for employment, education, and income. Indigenous Australians were slightly underrepresented (ABS, 2022).

	Frequency	%		Frequency	%
CSA			Witness DV		
Yes	159	32.4	Yes	98	20.0
No	332	67.6	No	393	80.0
CPA/CPY			Household dy	sfunction	
Yes	237	48.3	Yes	351	71.5
No	254	51.7	No	140	28.5
Experience	d any IPV in the last	t 12 months			
No	218	44.4			
Yes	273	55.6			

Table 2. Prevalence of ACEs and I
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Note. CSA = child sexual abuse; CPA/CPY = child physical or psychological abuse;

ACE = adverse childhood experience; IPV = intimate partner violence; DV = domestic violence.

Descriptive Statistics

Self-esteem (M=27.68, SD=6.11), hope (M=16.03, SD=3.96), and positive affect (M=14.84, SD=3.86) were normally distributed. Negative affect (M=11.82, SD=4.74) had a slight positive skew in its distribution. Most respondents were in a long-term relationship, with only 3.0% reporting separation or divorce and 10.9% indicating a relationship length of <1 year (see Table 1). The SEIFA index indicated that most respondents were from less advantaged areas (M=939.03, SD=210.49). Supplemental Figure S1 provides the histograms for each distribution.

Nearly 80% of participants reported experiencing an ACE (see Table 2). The prevalence of the different ACE types was reasonably consistent with estimates reported for Australian female children (child physical or psychological abuse [CPA/CPY] 31.5%, exposure to DV 40.8%, child sexual abuse [CSA] 37.3%; Mathews et al., 2023). Over half of the sample indicated they had experienced IPV, which is higher than recent Australian estimates of 27% for women (ABS, 2023). This over-representation may be due to the topic (i.e., IPV) attracting those with a vested interest. As expected (Figure 1), the distribution was positively skewed, consistent with the occurrence of IPV in the general population (Table 3).

Factor Analysis

We factor-analyzed the ACE items consistent with Ford et al. (2014). The ACE data was negatively skewed; however, this analysis is robust to deviations from normality (Field, 2013). Further, the linear relationship of the items, the Kaiser–Meyer Olkin Measure of Sampling Adequacy (KMO=.84),



Figure 1. Distribution of intimate partner violence frequency.

and the significant Bartletts Test of Sphericity ($\chi^2=3542.47$, df=136, p<.001) confirmed the suitability of the data. Four factors were identified accounting for 61.23% of the variance based on eigenvalues >1: CPA/CPY, CSA, witness DV, and household dysfunction. One item was excluded due to low loading (see Supplemental Table S1). The ACE factor scores were used for all subsequent analyzes.

Spearman's Rho Correlations

Correlations between IPV frequency and the demographic variables determined potential covariates. IPV frequency was related to relationship status, r=-0.19, p < .001, and relationship length, r=-0.24, p < .001. The remaining demographic variables (number of children, education, employment, income, culture, and birth country) were not significantly related to IPV frequency and therefore not included in the regression analysis.

Hierarchical Multiple Regression

Hierarchical multiple regression analyzed the predictive power of the independent variables on IPV frequency using the five steps previously described. Given its known association with IPV frequency, age was the only demographic variable included as a covariate. Mahalanobis distance indicated the presence of multivariate outliers (critical value=46.33) with 11 cases outside

B (SE) P ⁴ Bas 95% Cl B (SE) P ⁴ Bas 95% Cl B (SE) P ⁴ Bas 95% Cl Cons 3.75 (125)** -01 [1.47, 6.33] 11.132 (408)** -17 [3.32, 19.40] Age -033 (003) -05 00 [-0.05, 102] 0.01 (003) -01 [-0.64, 102] CAR 0.373 (0.31)* 15 01 [0.16, 1.34] 0.28 (0.32) .00 [-0.04, 1.27] CAR 0.373 (0.31)* 15 01 [0.16, 1.34] 0.28 (0.32) .01 [-0.41, 1.37] Wit DV 0.74 (0.41, 1.37) 0.34 (0.40) .07 .01 [-0.44, 1.17] HDys 0.48 (0.40) .07 .01 [-0.24, 1.31] 0.34 (0.40) .05 .01 [-0.44, 1.17]	95% C1 B (5E) 1.47, 6.35] 11.32 (408)** [-0.09, 0.03] -001 (0.03) [-0.05, 1.28] 0.59 (0.33) [0.16, 1.34] 0.28 (0.32) [-0.41, 1.54] 0.20 (0.49) [-0.41, 1.54] 0.20 (0.49)	B ³ Bias -17 -01 -01 -06 -01 -08 -01 -08 -01	5% CI [3.32, 19.40] [-0.06, 0.05] [-0.04, 1.29] [-0.33, 0.91]	B (SE) 7.02 (4.91) 0.07 (0.03)* 0.35 (0.31) 0.29 (0.30)	β ^a Bia: 0	95% CI	B (SE)	ð		
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-0.30 (0.08) ^{*****} 24 .01 [-0.47, -0.1	-0.30 (0.08)****	24 .01	[-0.47, -0.14]	-0.13 (0.08)	0. 01	0 [-0.29, 0.03]	-0.13 (0.08)	10	8	[-0.29, 0.03]
PA				-0.03 (0.09)	0 10	I [-0.20, 0.13]	-0.03 (0.09)	02	10	[-0.20, 0.14]
NA				0.39 (0.10)***	.24 –.0	I [0.19, 0.59]	0.39 (0.10)***	.24	01	[0.19, 0.59]
R_status				-0.77 (0.59)	10 .0	2 [-1.81, 0.46]	-0.76 (0.58)	-00	.02	[-1.81, 0.47]
R_lgth				-1.24 (0.45)**	170	2 [-2.16, -0.4	I] –1.25 (0.45)**	17	02	[-2.16, -0.41]
SEIFA							-0.09 (0.11)	03	- <u>0</u>	[-0.30, 0.13]

psychological abuse; Wit DV = Witness domestic violence; HDys = household dysfunction; SE = self-esteem; PA = positive affect; NA = negative affect; R_Status = relationship Note. For parsimony, Step 1 is not reported. SE=standard error; CI: confidence interval; Cons = Constant; CSA = child sexual abuse; CPA/CPY = child physical or

status; R_Lgth= relationship length; SEIFA = relative advantage/disadvantage index. B = Unstandardized Coefficients. 95% CI for B.

^a Not based on bootstrap resamples.

Significance denoted as p < .05. p < .01. p < .001. p < .001. p < .0001.

Table 3. Hierarchical Multiple Regression.

the expected range (i.e., 2.5+SD of Mahalanobis statistic distribution). However, Cook's distance was <1 for all cases, indicating that none had an undue influence on the model (Field, 2013). Scatterplots of standardized residuals were randomly dispersed with some clustering along the X-axis, likely due to the positive skew of the IPV frequency distribution. However, this should not unduly bias the model, given the sample size and use of bootstrapping (Schmidt & Finan, 2018). A linear relationship between the predictor variables and the outcome, IPV frequency, was confirmed by significant Pearson's correlations (p < .01): CPA/CPY, r=0.24, CSA, r=0.18, witness DV r=0.19, household dysfunction, r=.20, hope, r=0.22, self-esteem, r=0.31, positive affect, r=-0.15, negative affect r=0.36. All Variance Inflation Factors for the predictors variables were <2.80 confirming the absence of multicollinearity (Allen et al., 2014).

Step 1 (age) was not significant, F(1, 446) 0.65, p=.420, B=-0.02,SE=0.03 [-0.08, 0.03]. Step 2 (addition of ACEs factors) was significant, F(5, 442) 7.57, p < .001, and overall this step explained 6.85% of the variance. Greater exposure to CPA/CPY was associated with an increased risk of IPV, explaining 1.64% of the variance. Step 3 (addition of hope and selfesteem) was significant, F(7, 440) 9.28, p < .001, and this step explained an additional 4.63% of the overall variance (11.48% in total). CPA/CPY attenuated to non-significance. Lower self-esteem predicted IPV, explaining 2.69% of the variance. Step 4 (addition of affect and relationship variables) was significant, F(11, 436) 10.90, p < .001, and this step explained an additional 8.11% of the variance (19.59% in total). Age was significant, explaining 1.15% of the variance, indicating that being older was associated with a higher risk of IPV. Self-esteem attenuated to non-significance. Greater negative affect and a shorter relationship length were significant predictors of IPV, explaining 5.11 and 1.80% of the variance, respectively. Step 5 (addition of SES) was significant, F(12, 435) 10.03, p < .001, and overall, this step explained 19.51% of the variance. Age, negative affect, and relationship length remained significant in the model, whereas SES was not significant. Table 2 presents the full results¹.

Given the results for relationship length and negative affect, we examined if there was any interaction between these variables consistent with the duration of a relationship influencing shared meanings within a relationship, as previously stated. Step 1 included all the non-significant variables in the previous model's final step (i.e., ACE factors, hope, self-esteem, positive affect, relationship status, and the SEIFA index). In Step 2, age, negative affect, and relationship length were added as predictors of IPV frequency. Step 3 added the interaction variable (i.e., Relationship Length \times Negative Affect).

Step 1 was significant, F(9, 438) 9.14, p < .001, and overall, explained 14.07% of the variance. Self-esteem and relationship status were significant predictors of IPV frequency. Step 2 was significant, F(12, 435) 10.03, p < .001, and overall the model explained an additional 5.44% of the variance (19.51% in total). Age, negative affect, and relationship length were significant predictors of IPV frequency. Step 3 was significant, F(13, 434) 9.26, p < .001, and overall the model explained 19.38% of the variance. The interaction between relationship length and negative affect was not significant (p=.590). Full results are provided in Supplemental Table S2.

Discussion

Using the vulnerability-adaptation stress model, this study examined enduring vulnerabilities and current stressors as risk factors for IPV. While the key findings of this study were inconsistent with some common findings reported in the literature (e.g., ACEs, self-esteem, hope, relationship status, SES, and age), we consider these inconsistencies important to highlight given the factorial approach to examining ACEs, the comprehensive nature of our analyses, and our examination of these variables' direct relationship to IPV.

Pre-Existing Vulnerabilities: Adverse Childhood Experiences and Enduring Traits

Our findings that ACEs were not associated with IPV are inconsistent with extant research. This inconsistency may relate to methodological limitations of previous research, such as using a cumulative or summative approach that does not acknowledge the high comorbidity often seen across ACE types (Higgins & McCabe, 2001) and thus not conducive to controlling for them in analyses. Indeed, studies such as Forke et al. (2018) that examined only witnessing DV or Nikulina et al. (2021) that used the summative approach (applying an equal risk to all ACEs) and identified relationships with IPV may have inadvertently inflated their findings. Our more comprehensive analyses, which reduce measurement error (i.e., factorial approach) and control of other ACEs using multivariate analysis, provide a clearer understanding of the level of risk ACEs pose for IPV. Notably, the absence of significant findings for ACEs highlights the complex mechanisms through which they operate. This complexity is evident by the physical/psychological abuse variable attenuating to non-significance when other variables were added to the analysis. This finding suggests that previous reports of a direct relationship between ACEs and adult re-victimization may lack consideration of other

variables that may mediate or confound these associations (i.e., the third variable problem, MacKinnon et al., 2000).

Likewise, the finding that self-esteem was a significant predictor of IPV (Step 3), which attenuated to non-significance with the inclusion of other less enduring variables (Step 4), indicates that negative affect and relationship length explain a large amount of the variance in the relationship between self-esteem and IPV. Therefore, when examining the relationship between self-esteem and IPV, affect and relationship length are potentially important variables that influence or mediate any relationship between self-esteem and IPV.

The absence of significant findings for hope in the regression model was unexpected, given that experiences of childhood adversity or women experiencing IPV are more likely to have negative self-appraisals (Lamis et al., 2014; Whiting et al., 2009). These negative appraisals can contribute to maladaptive coping behaviors, potentially perpetuating the cycle of violence (Hassija et al., 2017). Notwithstanding this, the negative correlation between hope and IPV indicates that further examination may be warranted. More recent research into cognitive appraisals of hope and IPV suggests that Snyder's model of hope with a focus on personal agency may be limited for IPV (Munoz et al., 2017). Bernardo and Estrellado (2015) extended this model by the locus-of-hope dimension, which includes other people or forces (i.e., external agents) and goal attainment. With respect to IPV, where individuals may feel a loss of personal agency, this extended conceptualization may be more relevant.

Current Stressors: Relationship Variables, Mood, and SES

Previous studies, despite mixed findings, suggest that relationship status may be associated with a greater risk of IPV. Our findings, however, are inconsistent with extant research, as relationship status was not a significant predictor of IPV. In contrast, our results suggest that the length of the relationship, regardless of the type of relationship, is a particularly potent vulnerability for IPV. Indeed, after accounting for all other variables in the model, a shorter relationship length was associated with an increased risk for IPV and was the strongest risk factor. Given that traditional relationships (i.e., marriage) are declining, consistent with changing societal trends (ABS, 2019), relationship length may provide more nuanced information than relationship type.

A noteworthy finding was that negative affect was associated with IPV, whereas positive affect was not. Given that women who have experienced this form of violence are more likely to have higher levels of anger, fear, or distress (White et al., 2023), it is conceivable that this finding represents a feedback

loop rather than a causal relationship. Negative affect, which may precede or result from IPV, may be cyclical suggesting that continued IPV may feed into this negative mood state. Also, a couple's affective states can be interdependent such that there may be a crossover of affect (Schoebi, 2008). Thus, negative affect which is also linked to IPV perpetration, may be a particularly potent variable. It is worth noting that there was no significant interaction with relationship length indicating that any crossover affect related to IPV is not dependent on the duration of the relationship. Notably, despite the negative correlation between positive affect and IPV, the absence of significant findings in the regression model indicates that this is not a direct relationship. Previous research has suggested that while positive and negative affect are distinct aspects of affect, positive affect may exert a moderating influence on negative affect (Shortt et al., 2010) and is an area worthy of more attention.

Finally, SES was examined using area-level indicators, and the absence of significant findings is inconsistent with extant research. However, this sample was not highly advantaged or disadvantaged, with 79% of scores within 1 *SD* of the mean, thus, the distribution may have needed more variability to obtain a result. Further examination is required to clarify the specific relationship between SES and IPV.

Age

Another noteworthy finding was age. Age only emerged as a significant predictor in the analyses when other variables were added to the model. This finding indicates that being older is related to an increased risk for IPV. Given the non-significance of age in earlier steps of the regression model, the other enduring traits (i.e., ACEs, hope, and self-esteem) appear to have suppressed age's effect (MacKinnon et al., 2000). That is, including negative and positive affect and relationship status and length increased the predictive validity of age. This positive relationship between age and IPV is inconsistent with extant research reporting that IPV risk generally declines with age (Capaldi et al., 2012). However, our findings are consistent with the median age to marry in Australia being 30.5 years, with a trend of increasing age over the last 20 years (ABS, 2019). Therefore, these differing results likely reflect changing societal trends.

Practical and Theoretical Implications

This study's findings have practical implications for future research. Our findings suggest the following as being associated with greater risk of IPV: relationships being in the early stages, greater negative affect either through

discord or IWMs, and women being older. While some of these vulnerabilities are not amendable to change (i.e., relationship length, age), they provide information on those who may be most at risk providing information for targeted intervention programs and screening.

Theoretically, as previously identified, research requires a more sophisticated methodology, such as factorial approaches to ACEs and multivariate statistical methods that include potentially confounding or mediating variables (Capaldi et al., 2012; Higgins & McCabe, 2001). This will enhance our understanding of the actual risks of IPV, which, as our findings indicate, is more complex than often reported.

Limitations and Future Directions

This study provides new information on predictors of IPV but is not without limitations. Prevalence estimates of IPV for this study were higher than Australian estimates; thus, caution is warranted in generalizing our findings to the wider general community. Our methodology did not examine specific IPV types (e.g., physical, sexual); therefore, future studies should broaden the examination of risk factors for distinct IPV subtypes. Also, given the cross-sectional nature of this study, causal inferences cannot be drawn; future prospective and/or longitudinal research is needed. Unfortunately, the costs and ethical considerations associated with prospective/longitudinal studies often prevent such studies from being conducted. Finally, similar studies need to be undertaken for other relationship types and victimized individuals (e.g., same-sex relationships and male victims) to provide a more complete picture of risk factors for IPV.

Conclusion

The vulnerability-adaptation stress model provided a framework for this study of predictors of IPV. Using this model and multivariate analyses, we identified that age, relationship length, and negative affect were risks associated with IPV. Our findings highlight the complex nature of IPV and related risk factors. It, therefore, behooves researchers to carefully consider their approach to examining this topic, such that multivariate (rather than univariate) analyses/methodology would provide a complete picture. Lastly, our findings must be replicated using prospective and longitudinal studies.

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Supplemental Material

Supplemental material for this article is available online.

Note

1. The analysis was also conducted using income, education, and employment as individual-level predictors of IPV in Step 5 of the model alongside the area-level indicator, the SEIFA index. Results for all SES indicators were not significant.

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