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## ***Empowerment, Stress, and Depressive Symptoms Among Female Survivors of Intimate Partner Violence Attending Personal Empowerment Programs***

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Empowerment, Stress, and Depressive Symptoms Among Female Survivors of Intimate Partner  
Violence Attending Personal Empowerment Programs

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Running Head: Empowerment, Stress, and Intimate Partner Violence

## Abstract

Intimate partner violence (IPV) affects one in three women and can have long-lasting psychological effects, with abuse survivors typically exhibiting elevated stress and depressive symptoms. However, women with greater personal empowerment resources (i.e. self-care, agency, self-efficacy) and who practice relaxation techniques generally exhibit lower stress and depressive symptoms. The present study investigated the effectiveness of Personal Empowerment Programs (PEP) and practicing relaxation techniques in promoting empowerment and lowering stress and depressive symptoms. Ninety women were recruited from PEP classes conducted at domestic violence agencies in Orange County, California. Salivary cortisol and affect were assessed before and after one PEP class. Perceived stress, depressive symptoms, empowerment, and relaxation techniques were also assessed. Practicing relaxation techniques correlated with more empowerment. For women without sexual abuse experiences only, having completed more classes (>5 classes) in the program was associated with greater empowerment, less stress, and fewer depressive symptoms. Implications extend to future studies and interventions for IPV survivors.

Keywords: empowerment, stress, depressive symptoms, intimate partner violence

## Empowerment, Stress, and Depressive Symptoms Among Female Survivors of Intimate Partner Violence Attending Personal Empowerment Programs

Intimate partner violence (IPV) is a type of domestic violence (DV) characterized by “physical, sexual, or psychological harm by a current or former partner or spouse” (Centers for Disease Control and Prevention, 2017). It is predominantly experienced by women, for whom a lifetime incidence of one in three is estimated (NCADV, 2015). IPV negatively impacts abuse survivors’ health and wellbeing (Campbell, 2002; Campbell, & Lewandowski, 1997; Chen, Rovi, Vega, Jacobs, & Johnson, 2009; Coker et al., 2002; Garcia-Moreno, Guedes, & Knerr, 2012), and these adverse effects may extend until long after the victim leaves the abusive relationship due to continued abuse, ongoing psychological effects of abuse, or fear of the abuser (Anderson & Saunders, 2003; Anderson et al, 2003; Stoeberl, 2011, 2014).

IPV is also associated with heightened experiences of stress (Jones, Hughes, & Unterstaller, 2001; Stewart & Vigod, 2017; Yim & Kofman, 2018), suicidal thoughts and attempts (Garcia-Moreno et al., 2005), and stress-related mental health problems. For example, IPV victims experience higher rates of depression (Vaeth, Ramisetty-Mikler, & Caetano, 2010), anxiety, and Post-Traumatic Stress Disorder (PTSD; Langdon, Armour, & Stringer, 2014; Rodriguez et al., 2008) compared to non-abused women. Overall, the effects of IPV on women’s mental health outcomes differ depending on the type of abuse they experienced. For example, sexually victimized women generally exhibit lowered self-esteem and body image as well as depressive symptoms that increase in severity with repeated incidents, compared to women with abuse experiences that are not sexual in nature (Campbell & Soeken, 1999; Kamimura, Nourian, Assasnik, & Franchek-Roa, 2016). Rape victimization and sexual coercion are also associated with higher rates of PTSD among survivors of IPV (Basile et al., 2015).

One physiological pathway linking stress with stress-related disease is the hypothalamus pituitary adrenal (HPA) axis, one of the body's major stress-responsive systems (e.g., McEwen, 2007). Accordingly, studies suggest that IPV is associated with dysregulations in cortisol, the end-product of the HPA axis (Yim & Kofman, 2018). For example, greater chronicity of physical and psychological violence, PTSD symptoms, and psychological distress among IPV survivors has been associated with a blunted cortisol awakening response (CAR; Pinto et al., 2016). Similarly, chronicity of abuse has been associated with lower diurnal cortisol (area under the curve, AUC; Johnson, Delahanty, & Pinna, 2012). Finally, IPV survivors with PTSD exhibit on average lower cortisol levels than those without PTSD and healthy controls (Griffin, Resick, & Yehuda, 2005).

Given the high incidence of IPV and the considerable toll it takes on survivors' mental health and wellbeing, the development of targeted interventions seeking to support women exposed to IPV has been a central research goal. Many of these interventions have attempted to increase women's empowerment, typically defined as agency, self-determination, self-competence, self-care, skills, knowledge, and self-efficacy (e.g., Meyerson & Kline, 2008; Cattaneo & Goodman, 2015). The shared rationale underlying these studies is that empowerment may act as a buffer in the link between IPV-related stress and adverse mental health outcomes. Many of these studies have focused on financial empowerment, such as having control over one's finances (Hahn & Postmus, 2014; Peled & Krigel, 2016). While financial independence is a significant component of empowerment and is often critical to sustaining an end to abuse, other aspects of empowerment are equally important and are yet to be studied in more depth.

Recent empirical evidence suggests that personal empowerment (e.g., self-esteem, self-confidence) and increased control over one's own body benefit survivors' mental health. For

example, research shows that women who demonstrate greater self-care, agency, and self-efficacy are better able to adjust to life after IPV (Wright, Perez, & Johnson, 2010). Similarly, individuals who practice relaxation techniques and self-care demonstrate improvements in physical and mental health, including reductions in anxiety and depressive symptoms (Arias et al., 2006), with benefits extending to victims of IPV (Dutton et al., 2013) and other trauma survivors (Goldsmith et al., 2014).

One unique intervention for individuals who have experienced IPV is Personal Empowerment Programs (PEP). PEP interventions have been implemented in DV agencies throughout Orange County, California, for nearly two decades and address different elements of empowerment. These elements include, but are not limited to, understanding and utilizing legal remedies, establishing personal boundaries in healthy relationships, understanding the effects of DV on children, breaking cycles of co-dependence with the abuser, and recognizing red flags of DV in relationships. PEP consists of 10 two-hour classes that are taught weekly in a group format and facilitated by a therapist over a period of 10 weeks, addressing a specific element per week. PEP interventions aim to empower DV survivors by promoting the acquisition and use of personal resources as they move past their experiences of abuse. The county-wide use of this curriculum provides a unique opportunity to further investigate potential benefits of empowerment for survivors. To the authors' knowledge, there are no pre-existing studies or literature on PEP.

In sum, while it is clear that (1) IPV is a stressful experience, (2) stress is associated with negative physiological and psychological health outcomes (Yim & Kofman, 2018), and (3) empowerment is beneficial to health (Garcia & Yim, 2017), there is limited research on the link between empowerment, stress, and IPV. There is also very little research on empowerment

interventions and stress reduction, in particular in the context of IPV. Thus, the present study aimed to investigate whether PEP interventions promote empowerment, decreased stress and depressive symptoms, and influence cortisol secretion among survivors of sexual, physical, and/or emotional IPV. A secondary goal was to explore whether women's prior experiences with relaxation techniques or exercise were associated with increased empowerment, less stress and depressive symptoms, and altered cortisol levels.

Based on the extant literature, it was hypothesized that PEP interventions as well as practice of relaxation techniques and exercise would promote greater empowerment, decrease stress and depressive symptoms, and influence a greater cortisol change from pre- to post-class in women who had been in the program for a longer period of time.

## **Method**

### **Participants**

Ninety women, ages 19 to 69 ( $M = 36.1$ ,  $SD = 9.76$ ), who were enrolled in a PEP course offered by two DV agencies in Orange County, California, participated in the study. The agencies specifically provide services only to people facing DV. The sample was ethnically diverse, with the majority of women identifying as Hispanic or Latina (41.2%) or White (40.0%). Most women were born in the United States (69.0%) and reported English as their primary language (77.6%; Spanish: 21.2%, other: 1.2%). Marital status varied, with 31.8% of women reporting being single, never married and 29.4% indicating being married. On average, women had two children ( $SD = 1.68$ , range = 0 - 9). The majority of the women in our sample were from a low SES background. More than half of the sample (62.9%) had a high school degree or less. Almost half of the women were unemployed (45.7%); 29.6% worked part-time, and 24.7% were

employed full-time. Family income was below \$15,000 for half of the women (50.6%; see Table 1 for full demographics).

### **Overall Procedure**

Data collection for each participant occurred before and after one regularly scheduled PEP class. PEP classes were consistently offered in the same two-hour window each week, but were offered to different groups starting at a different time of the day. Class starting times ranged from 9:00 am to 7:00 pm. For example, a class that started at 9:00 am ended at 11:00 am and was taught at the same time each of the 10 weeks, covering a different topic each of the 10 weeks. Women provided two saliva samples, one immediately before and one immediately after the 2-hour class to assess salivary cortisol. At the time of each saliva collection, women also completed questionnaires assessing their current mood. After the PEP class, participants completed questionnaires on empowerment, perceived stress, depressive symptoms, and demographics, as well as their experience with exercise and relaxation techniques. All sessions were conducted in either English or Spanish, depending on the language preference. Participants received a modest monetary incentive for their participation. The present study was approved by the University of California, Irvine Institutional Review Board. All participants provided written informed consent.

PEP classes were taught as two-hour classes each week over a 10-week period, covering one topic per class, and offered in the 10-week sequence. Participants could enter the program at any class in the 10-week sequence. For example, an individual starting the program on the Week 5 class must cycle from the Week 5 through Week 10 classes, and back to the Week 1 class, ending the program with the Week 4 class. Individuals who attend PEP receive a completion certificate for either court records or as general proof of completion, but participating in the



program is not mandatory to receive services from the domestic violence agencies. In order to obtain a completion certificate, participants must complete all 10 modules. However, PEP has free entry and exit to the program. The number of PEP classes women had previously attended was assessed to compare women who were early in the program (had taken 1 to 5 classes) to those who were late in the program (had taken 6 to 10 classes). The program follows a standardized curriculum developed and offered in a group format by DV agencies in Orange County, CA, and was not altered for the purposes of this study.

A small subsample of 10 women provided longitudinal data, with a second assessment 3 weeks following the first data collection. The same information was collected in the same manner as the cross-sectional sample at the first time point and the second time point, 3 weeks apart. Although it is a small sample, this allows for a preliminary assessment of change in outcomes over time.

## Measures

**Intimate Partner Violence.** Intimate partner violence was assessed with the Revised Conflict Tactics Scale (CTS-2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996; Straus, Hamby, & Warren, 2003), a 39-item scale assessing experiences during the past year with psychological, physical, and sexual violence, and violence. The scale yields incidence (whether or not IPV has occurred before) and chronicity (frequency) scores for each subscale. The scale has been validated in community samples and has adequate internal consistency (Cronbach's  $\alpha = .70$ ; Connelly, Newton, & Aarons, 2005; Straus, Hamby, & Warren, 2003).

**Empowerment.** The Personal Progress Scale-Revised (PPS-R; Johnson, Worrell, & Chandler, 2005) was used to measure empowerment. It is a 28-item self-report 7-point Likert-type scale assessing the frequency of empowerment experiences. It includes seven domains,

assessing perceptions of power and competence, self-nurturance and resource access, interpersonal assertiveness, awareness of cultural discrimination, expression of anger and confrontation, autonomy, and personal strength and social activism. A sample item is: *I am aware of my own strengths as a woman*. Responses range from 0 = *almost never* to 7 = *almost always*. Thus, scores can range from 0 to 196. The PPS-R has demonstrated acceptable internal consistency in past studies (Cronbach's  $\alpha = .73$ ) and has been validated in a diverse sample of IPV survivors (Johnson, Worrell, & Chandler, 2005). The Cronbach's  $\alpha$  for the current study is .83.

**Perceived Stress.** The Perceived Stress Scale short form (PSS-10; Cohen, Kamarck, & Mermelstein, 1983) was used to assess perceived stress. It is a self-report measure consisting of five positive and five negative feelings or thoughts related to stress for which participants indicate the frequency of experience in the last month on a 5-point Likert-type scale. A sample item is: *In the last month, how often have you found that you could not cope with all the things that you had to do?* Responses range from 0 = *never* to 4 = *very often*. Scores can range from 0 to 40. The internal consistency of the scale in past studies is acceptable (Cronbach's  $\alpha = .84$ ). The scale has been validated to assess perceived stress in community samples (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988; Ezzati et al., 2014). The Cronbach's  $\alpha$  for the current study is .86.

**Depressive Symptoms.** The Center for Epidemiological Studies Depression Scale short form (CES-D; Andresen, Malmgren, Carter, & Patrick, 1994; Radloff, 1977) was used to assess depressive symptoms. It is a 10-item scale assessing the intensity of depressive symptomatology in the general population through self-reports of the frequency of depressive symptoms during the past week on a 4-point Likert-type scale. A sample item is: *I was bothered by things that*

*usually don't bother me.* Responses range from 0 = *rarely or none of the time (less than 1 day)* to 3 = *all of the time (5-7 days)*. Thus, scores can range from 0 to 30. A score of 10 or above is considered at high risk for depression. The internal consistency of the scale in past studies is acceptable (Cronbach's  $\alpha = .86$ ). The CESD has been validated in community samples (Grzywacz, Hovey, Seligman, Arcury, & Quandt, 2006; Andresen, Malmgren, Carter, & Patrick, 1994). The Cronbach's  $\alpha$  for the current study is .85.

**Affect Balance.** The Derogatis Affects Balance Scale (DABS; Derogatis & Rutigliano, 1996) was used to assess mood and affect before and after the PEP class. The DABS is a 40-item scale that measures individuals' momentary self-report of 20 positive and 20 negative mood items on a 5- point Likert-type scale. A sample item is *unhappy*, and responses range from 0 = *not at all* to 4 = *extremely*. Scores can range from 0 to 20 for positive affect and negative affect. The internal consistency of the scale in past studies is acceptable (Cronbach's  $\alpha = .85$ ). The DABS has been validated in psychiatric patients and community samples (Derogatis & Rutigliano, 1996). In the current study, the Cronbach's  $\alpha$  is .92 for negative affect and .86 for positive affect.

**Relaxation and Exercise.** Current and past experiences with relaxation techniques and exercise were assessed through a six-item questionnaire asking if the participant had practiced relaxation or exercise 1) currently, 2) ever, and 3) how often. A sample item, to which respondents indicate *yes* or *no*, is: *Do you currently practice relaxation techniques?*

**Salivary Cortisol.** Saliva was collected using Salivettes (Sarstedt, Nümbrecht, Germany) immediately before and after the 2-hour PEP class. Saliva samples were stored at room temperature until completion of the class, and then kept at  $-20^{\circ}\text{C}$  until assayed. Salivary cortisol concentrations were determined using an enzyme-linked immunoassay (ELISA, Salimetrics). All

samples were assayed in duplicate. According to the manual, inter-assay and intra-assay coefficients of variation are 4.6% and 6%, respectively. The sensitivity of the assay is reported at  $< 0.007$  ug/dL (Salimetrics, 2017). Cortisol change scores were calculated by subtracting the pre- from the post-salivary cortisol values. Greater positive change scores indicate a greater increase in cortisol from pre- to post-class. Mean cortisol values were also calculated between the two samples.

### **Statistical Methods**

To test for group differences based on type of abuse experienced, *chi square* and *t-tests* were conducted. To test for significant differences in the outcomes of interest (empowerment, perceived stress, cortisol, depressive symptoms, affect) based on the sociodemographic variables, a series of regressions (for continuous variables) and analyses of variance (ANOVAs, for categorical variables) were conducted. The steps of the Sobel test were followed to test the mediation of stress in the relationship between sexual violence and depressive symptoms. Time in the program (early participants had taken 1 to 5 classes vs. late had taken 6 to 10 classes) was entered as a predictor of the outcomes of interest in a regression model, controlling for the time of day. Similarly, experience with relaxation techniques and exercise (yes vs. no) was entered as a predictor of the outcomes of interest in a regression model. The interaction of sexual abuse with time in the program on the outcomes was tested in a Structural Equation Model (SEM) using the Full Information Maximum Likelihood (FIML) approach (Acock, 2014). Time of day was controlled statistically in all analyses to control for the pronounced circadian variation in cortisol levels.

## **Results**

### **Preliminary Analyses**

All women reported experiencing psychological abuse. Fifty-six women (86.2%) reported physical abuse, 45 women (70.3%) had been injured, and 40 women (61.5%) reported sexual abuse. In terms of time in the program, 48 women (63.1%) had completed five or fewer PEP modules at the time of data assessment (“early PEP”) and 28 (36.8%) had completed six or more modules (“late PEP”). Data were collected at two DV agencies; there were no differences in major study variables based on DV agency or by participant living arrangement (e.g., with partner, in shelter), all  $F \geq 1.01$ ,  $p \geq 0.26$ .

In the overall sample, there was a significant decrease in negative affect ( $t = 4.63$ ,  $p < .001$ ) and cortisol ( $t = 4.87$ ,  $p < .001$ ) from pre- to post-class, but no significant change in positive affect ( $t = -.883$ ,  $p = .37$ ). Women who experienced sexual abuse endorsed more depressive symptoms ( $t = -2.51$ ,  $p = .01$ ) and showed a lower increase in positive affect from pre to post class ( $t = 2.51$ ,  $p = .01$ ), compared to women not reporting sexual abuse (see Table 2); however, no other group differences were found for major study variables or sociodemographic variables.

Next, intercorrelations between major study variables, including abuse chronicity, were computed (see Table 3). As expected, greater empowerment was correlated with less perceived stress ( $r = -.50$ ,  $p < .001$ ), fewer depressive symptoms ( $r = -.44$ ,  $p < .001$ ), greater positive affect pre- ( $r = .39$ ,  $p = .001$ ) and post-PEP class ( $r = .38$ ,  $p = .001$ ), and less negative affect pre- ( $r = -.25$ ,  $p = .04$ ) and post-PEP class ( $r = -.35$ ,  $p = .004$ ). Greater stress was correlated with greater depressive symptoms ( $r = .60$ ,  $p < .001$ ) as well as less positive affect pre-class ( $r = .60$ ,  $p < .001$ ) and more negative affect pre- ( $r = .41$ ,  $p < .001$ ) and post-class ( $r = .24$ ,  $p = .04$ ). Greater chronicity of sexual IPV was associated with more negative affect pre- ( $r = .26$ ,  $p = .03$ ) and post-PEP class ( $r = .26$ ,  $p = .03$ ). Psychological abuse chronicity correlated with greater depressive

symptoms ( $r = .35, p = .004$ ) and more post-class negative affect ( $r = .26, p = .03$ ). Physical abuse chronicity was associated with a lower decrease in negative affect from pre- to post-class ( $r = -.28, p = .02$ ).

### Hypothesis Testing

In the overall sample, and in contrast with our prediction, early PEP women did not differ from late PEP women in terms of depressive symptoms ( $F(1, 65) = 1.42, n.s.$ ), perceived stress ( $F(1, 64) = 2.66, n.s.$ ), empowerment ( $F(1, 61) = 1.48, n.s.$ ), or the cortisol change score ( $F(1, 72) = 1.45, n.s.$ ). Women late in the PEP program had a greater decrease in negative affect (e.g., anger, guilt, and sadness) from pre- to post-class than women early in the program ( $F(1, 80) = 9.14, \beta = .32, p = .003$ ), but no group differences were observed for positive affect change ( $F(1, 80) = .00, n.s.$ ), controlling for time of day.

Analyses were then conducted separately by type of abuse. In the SEM model, women without experiences of sexual abuse who were late in the program exhibited higher levels of empowerment ( $b = 5.15, p = .001$ ) and lower levels of perceived stress ( $b = -2.12, p < .001$ ) and depressive symptoms ( $b = -1.23, p = .01; \chi^2(3) = 25.19, p < .001$ , Root Mean Square Error of Approximation (RMSEA) = .073) compared to women who were early in the program, a pattern in line with our initial predictions. These findings were not replicated for survivors of sexual abuse (all  $b < .31; n.s.$ ; see Figure 1a-d). Post hoc analyses indicate that these differences were driven by women late in the program, with group differences for empowerment ( $b = -19.3, p = .002$ ), stress ( $b = 7.62, p = .05$ ) and depressive symptoms ( $b = 5.90, p = .04; \chi^2(3) = 24.00, p < .001, RMSEA = .084$ ); group differences were not evident among women early in the program. No differences in cortisol change ( $b = .028, n.s.$ ) or mean cortisol value ( $b = .05, n.s.$ ) by sexual abuse were found in either subgroup.

Because survivors of sexual IPV had greater stress and depressive symptoms than those who did not experience sexual abuse, potential relationships between these variables were further probed. Perceived stress was considered as a potential mediator in the relationship between sexual violence and depressive symptoms. Perceived stress and sexual violence independently predicted depressive symptoms. The presence or absence of sexual violence ( $b = 3.97, p < .004, SE = 1.36$ ) as well as perceived stress ( $b = .55, p < .001, SE = .09; \chi^2(2) = 24.40, p < .001, RMSEA = .067$ ) were both significant predictors of depressive symptoms in a SEM model. The presence or absence of sexual violence was not significantly associated with perceived stress ( $b = .08, n.s., SE = .08; \chi^2(1) = 23.76, p < .001, RMSEA = .27$ ), and perceived stress was not a mediator in the relationship between sexual violence and depressive symptoms ( $Sobel = .44, n.s., SE = 1.18$ ; see Figure 2).

Women with greater empowerment were significantly more likely to have past experiences of practicing relaxation techniques,  $F(1, 62) = 5.06, \beta = .27, p = .03$ , and tended to have exercised more,  $F(1, 62) = 3.57, \beta = .23, p = .06$ , but neither relaxation nor exercise history was significantly associated with depressive symptoms, perceived stress, or cortisol change scores, all  $F < 2.32, n.s.$  There were no significant differences in relaxation and exercise history based on type of violence experienced, all  $F < 2.05, n.s.$

In the small longitudinal sample of 10, perceived stress scores decreased significantly from Time 1 ( $M = 27.90, SD = 7.38$ ) to Time 2 ( $M = 21.30, SD = 7.70$ ),  $t(9) = 2.30, p = .05$ ,  $Cohen's d = .87$ . There was also a marginal increase in empowerment from Time 1 ( $M = 123.30, SD = 19.93$ ) to Time 2 ( $M = 135.50, SD = 17.98, t(9) = -2.11, p = .06$ ), which was driven by women without sexual abuse victimization who exhibited a significant increase in empowerment from Time 1 ( $M = 112.8, SD = 8.53$ ) to Time 2 ( $M = 136.6, SD = 14.33; t(4) = -3.39, p = .03$ ,

*Cohen's d* = 2.02). The same pattern was not evident for those who experienced sexual abuse ( $t(4) = 1.99, p = .12$ ) or for any other outcomes (all  $p > .10$ ; see Figure 3).

### **Discussion**

The present study set out to test, in 90 survivors of IPV, whether participation in a PEP intervention and engagement in potentially stress-reducing self-care behaviors, including relaxation techniques and exercise, were associated with measures of empowerment, perceived stress, depressive symptoms, and cortisol. Two findings stand out. First, among women without sexual IPV, those who were late in the program showed greater empowerment as well as lower levels of stress and depressive symptoms compared to those who were early in the program. These group differences were not replicated for women with sexual abuse experiences. Similarly, among the small longitudinal sample, only survivors without sexual abuse victimization experienced a significant increase in empowerment over time. Second, and irrespective of the type of abuse experienced, women who had experience with relaxation techniques or exercise showed overall higher levels of empowerment compared to women without such experiences.

In terms of the differential findings for empowerment, perceived stress, and depressive symptoms based on the presence or absence of sexual victimization, our findings imply that sexual abuse has implications for women's well-being and their need for support and care that are different from those of emotional and physical abuse. This conclusion is consistent with previous studies, which indicate that experiences with sexual abuse have pervasive consequences for mental and physical health symptoms such as gynecological problems including chronic cramping, pain, and urinary problems (Campbell & Soeken, 1999; Itzin, Bailey, & Bentovim, 2008; Mason, 2008). Forced sex is a form of IPV that is linked to lowered self-esteem, body image issues, and depression that increases in severity with repeated incidents of sexual abuse



(Campbell & Soeken, 1999). The International Dating Violence Study (IDVS) also suggests greater prevalence of depression among victims of sexual IPV compared to those who had not experienced sexual IPV, mediated by substance abuse and partner conflict (Kamimura et al., 2016). Thus, sexual abuse survivors often experience more significant physical and mental health repercussions, and additional or different steps should be taken to promote well-being for those who have experienced sexual abuse. PEP classes are administered in a group format, and it may be particularly difficult for survivors of sexual abuse to talk about their experience of sexual abuse in a group setting because they may be uncomfortable sharing details. Thus, survivors of sexual abuse may benefit more from individual therapy.

In terms of engagement in relaxation techniques and exercise, participants who engaged in these behaviors had higher levels of empowerment than those who did not engage in such practices. This finding is also in line with previous studies suggesting that exercise (Vasquez, 2002), relaxation, trauma-informed yoga (Spinazzola et al., 2011), and other forms of self-care (Mutrie & Choi, 2000; Gunasena, 2007) are associated with increases in empowerment.

However, because our findings are correlational, we cannot establish directionality, and there is a possibility that women who are higher on empowerment to begin with also have a greater tendency to engage in these methods of self-care. Nonetheless, this finding points to the possibility that training women in relaxation techniques or offering opportunities for exercise or movement in the aftermath of abuse may help promote feelings of empowerment in survivors of IPV. This is particularly important because empowerment is associated with increases in domestic decision-making power, financial independence, and self-care (O'Leary & Bhaju, 2006; Sado, Spaho, & Hotchkiss, 2014), all of which can improve women's resilience in the face

of IPV (O'Leary & Bhaju, 2006) and benefit survivors of IPV, their children, and the community (Varkey, Kureshi, & Lesnick, 2010).

In the overall sample, negative affect significantly decreased from pre- to post-class, but there was no significant change in positive affect. Negative affect is associated with adverse outcomes, such as reduced global cognition (Danahauer et al., 2013) as well as adverse dispositional and health outcomes such as irritability, anxiety, and disruptions in immune and endocrine responses (Aguilera, 2011; Steptoe, Wardle, & Marmot, 2005). Although positive affect did not change significantly, it is promising for health and well-being of IPV survivors that negative affect decreased in association with PEP, even in the course of a single class.

The absence of findings for cortisol is not unprecedented in studies of survivors of interpersonal trauma. Preliminary findings suggest female survivors of sexual trauma tend to exhibit cortisol patterns that fail to change in response to stressors compared to those who have not experienced sexual trauma (Martinson, Craner, & Sigmon, 2016). Similarly, survivors of childhood interpersonal violent trauma exhibit suppressed cortisol output that increases with severity of trauma (Schechter et al., 2004).

Even though a small subsample of 10 women provided longitudinal data, the majority of our participants were sampled only once and our study is thus limited by the cross-sectional design. It would be valuable to disentangle the trajectory of the outcomes in time with a larger longitudinal sample in order to conduct appropriate analyses. For example, it may be the case that women with high levels of empowerment tend to engage in self-care such as exercise and relaxation techniques or that there is a feedback effect. Another limitation is that we did not assess whether women still living with their abusive partner attended PEP classes with or without

their partner's knowledge, and it is possible that this variable may play into the associations reported here.

### **Future Directions**

An important future direction would be to investigate empowerment, stress, and depression in female survivors of IPV attending PEP in a longitudinal randomized controlled study. In that manner, it would be possible to assess changes in the outcomes of interest over time, as well as to compare IPV survivors who participate in PEP to a control group who does not and have a tighter control for extraneous variables. Such a study would also benefit from systematically studying whether women's underrepresented minority status (e.g., ethnicity, SES) influences the associations reported here. While the current study included a diverse sample, group sizes were too small to test for relevant effects. Finally, it would be important to further investigate the benefits of exercise and relaxation techniques for IPV survivors' well-being by implementing an intervention that adds these elements to existent PEP classes.

In terms of diversity and innovation, this study is the first to test the effects of a PEP intervention in promoting empowerment and well-being in survivors of IPV. A strength of the present study is that it included a diverse sample; thus, generalizations can be made across more than one ethnicity. This study significantly contributes to diversity by both including underrepresented minorities and abuse survivors from low-income populations that are underserved and marginalized. Also, few studies in this field involve high-incidence samples and consider the consequences of the high incidence and frequency of IPV on health (Yim & Kofman, 2018), as did the present study. The sample included survivors of IPV who had a particularly high rate of at-risk levels of depressive symptoms. More than 60% of the sample met

the CES-D cutoff value for high risk of clinical depression. Therefore, it is particularly important to evaluate methods of improving stress and depressive symptoms in this population.

While previous studies have investigated health and well-being in survivors of IPV, not all have made distinctions between the consequences of the different types of IPV (sexual, physical, and psychological) on health. In the present study, the consequences of sexual abuse differed from those of other types of abuse and seem to have implications for the effectiveness of PEP. Although sexual abuse survivors may need additional services, overall, the present study suggests that PEP classes and experience with relaxation techniques are beneficial for empowerment, stress, and depression in female survivors of IPV. The results of the present study may inform current programs for IPV survivors, as well as future studies and interventions.

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Table 1. Participant Demographics (n = 90)

<b>Ethnicity</b>	<b>Percent</b>
Latina/Hispanic	41.2
White	40
Multiethnic	9.4
Asian	4.7
American Indian or Alaska Native	1.2
Black or African American	1.2
Other	2.4
<b>Marital Status</b>	
Single, never married	31.8
Married	29.4
Separated	17.9
Divorced	12.9
Living with someone in a steady relationship, but not married	5.9
Widowed	1.2
Other	1.2
<b>Living Arrangement</b>	
With Spouse/Partner	29.8
Separated	27.4
With Children	19
With Friends	1.2
With Relatives	16.7
In Shelter	2.4
Declined to State	3.5
<b>Education level</b>	
High School Diploma or GED	51.8
Associate's Degree	13.6
Bachelor's Degree	17.3
Master's Degree	4.9
PhD	1.2
No Degree	11.2
<b>Annual Income</b>	
< \$15,000	50.6
\$15,000-\$24,999	18.5
\$25,000-\$34,999	7.4
\$35,000-\$49,999	4.9
≥\$50,000	18.6

Table 2. Sociodemographics and Outcomes by Sexual Abuse

	Sexual Abuse Mean (SD) or %	No Sexual Abuse Mean (SD) or %	Group Comparison
<b>Sociodemographics</b>			
Age (yrs)	37.4 (10.3)	33.1 (8.78)	$t = -1.83$
Number of children	2.44 (1.37)	2.17 (1.84)	$t = -6.70$
Time in the US (yrs)	33.9 (11.9)	29.9 (10.6)	$t = -1.43$
Ethnicity (%Latina)	18.5	12.8	$\chi^2(6) = 6.17$
Language (%English)	51.4	38.5	$\chi^2(2) = 2.82$
Marital status (%married)	20	7.14	$\chi^2(6) = 9.89$
Education (%high school or less)	19.4	22.3	$\chi^2(6) = 9.88$
Employment (%unemployed)	15.9	26.1	$\chi^2(2) = 0.85$
Family income (%<\$15,000)	22.3	22.3	$\chi^2(7) = 7.35$
Living arrangement (% with partner)	15.9	13.0	$\chi^2(6) = 1.42$
<b>Major Study Variables</b>			
Depressive symptoms	17.5 (6.29)	13.2 (7.38)	$t = -2.51^*$
Perceived stress	24.1 (7.09)	22.7 (7.48)	$t = -0.72$
Empowerment	127.1 (19.9)	130.5 (22.4)	$t = 0.61$
Negative affect T1	14.76 (9.07)	9.28 (9.68)	$t = -2.40^{**}$
Negative affect T2	9.29 (8.08)	6.76 (8.62)	$t = -1.24$
Negative affect change	5.46 (9.63)	2.51 (7.30)	$t = -1.37$
Positive affect T1	15.67 (7.10)	17.85 (8.20)	$t = 1.18$
Positive affect T2	18.20 (8.29)	17.03 (9.27)	$t = -0.55$
Positive affect change	2.52 (6.06)	0.82 (4.37)	$t = 2.51^*$
Cortisol T1 (nmol/L)	0.50 (0.55)	0.45 (0.44)	$t = -0.39$
Cortisol T2 (nmol/L)	0.26 (0.21)	0.27 (0.26)	$t = 0.19$
Cortisol change	-0.23 (0.42)	-0.16 (0.28)	$t = 0.78$

Note. \*Significance:  $*p \leq .01$ ,  $**p \leq .05$

Table 3. Intercorrelations Among Major Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Psychological abuse chronicity	-	.57**	.26*	.51**	.30*	.20	.23	.04	.08	-.06	.07	.26*	-.17	.11	.02	-.12	.34**	.21	-.08
2. Physical abuse chronicity		-	.31**	.67**	.18	-.10	.26*	.15	.004	.19	-.07	.21	-.28*	-.08	.07	.17	.18	-.04	.07
3. Sexual abuse chronicity			-	.51**	-.06	.40**	.01	.008	.15	-.21	.26*	.26	.03	.02	.11	.04	.21	.07	.02
4. Injury chronicity				-	.17	.04	.30*	.08	.06	.15	.02	.14	-.11	-.002	.19	.15	.16	-.006	.07
5. Physical abuse prevalence					-	.03	.41**	.19	.20	-.04	.02	.08	-.06	-.12	-.10	.10	.12	-.07	-.04
6. Sexual abuse prevalence						-	.00	-.14	.07	-.29	.28	.15	.16	.05	-.02	-.10	.30	.09	-.08
7. Injury prevalence							-	.19	.15	.02	-.10	-.14	.01	-.03	.02	.04	-.004	-.005	.08
8. Positive affect T1								-	.71**	.20	-.32**	-.19	-.18	-.06	-.04	.05	-.28*	-.30*	-.39**
9. Positive affect T2									-	.53**	-.05	-.30**	.18	.04	.00	-.06	-.22	-.21	-.38**
10. Positive affect change										-	-.32**	.20	-.56**	.13	-.05	.16	-.02	-.07	-.07
11. Negative affect T1											-	.56**	.57**	.007	-.06	-.06	.58**	.41**	-.25*
12. Negative affect T2												-	.35**	.16	.08	-.17	.42**	.24*	.35**
13. Negative affect change													-	-.16	-.15	.11	.23	.21	.06
14. Cortisol T1 (nmol/L)														-	.71**	.90**	.12	-.04	.10
15. Cortisol T2 (nmol/L)															-	-.35**	-.20	-.02	.01
16. Cortisol change																-	.04	.03	.15
17. Depressive symptoms																	-	.60**	-.44**
18. Perceived stress																		-	-.50**
19. Empowerment																			-

Note. Values presented are correlations: Pearson's coefficients ( $r$ ) for continuous and Spearman ( $\rho$ ) for dichotomous variables; significance: \*\* $p \leq .01$ , \* $p \leq .05$



Figure 1. Interaction of time in the program and sexual abuse by a) depressive symptoms, b) perceived stress, c) empowerment, and d) cortisol change.

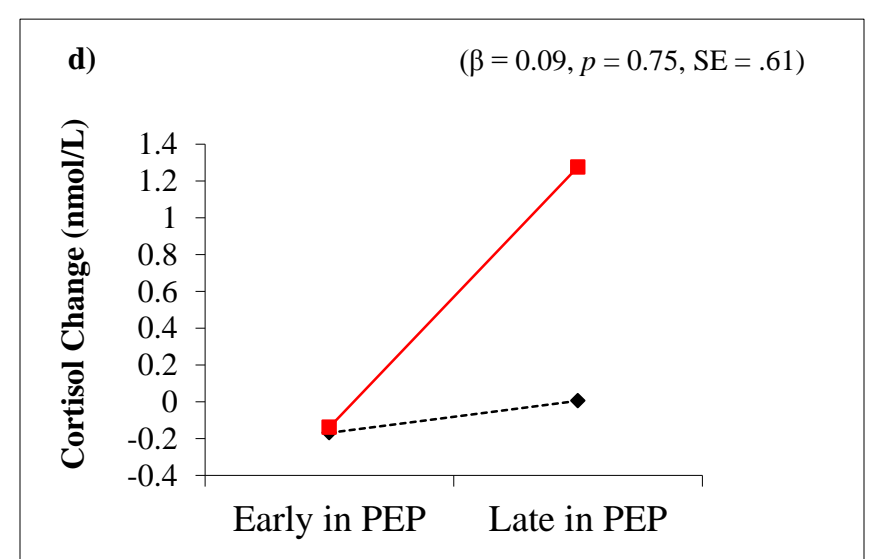
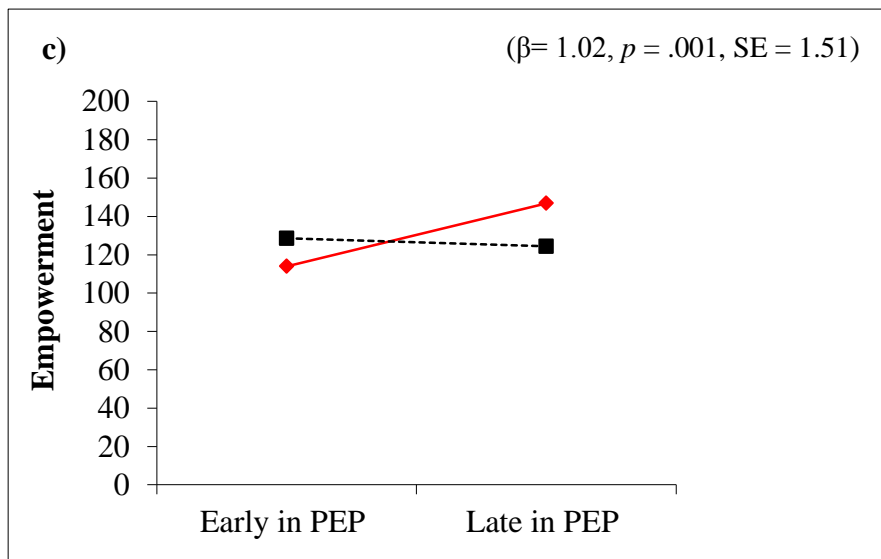
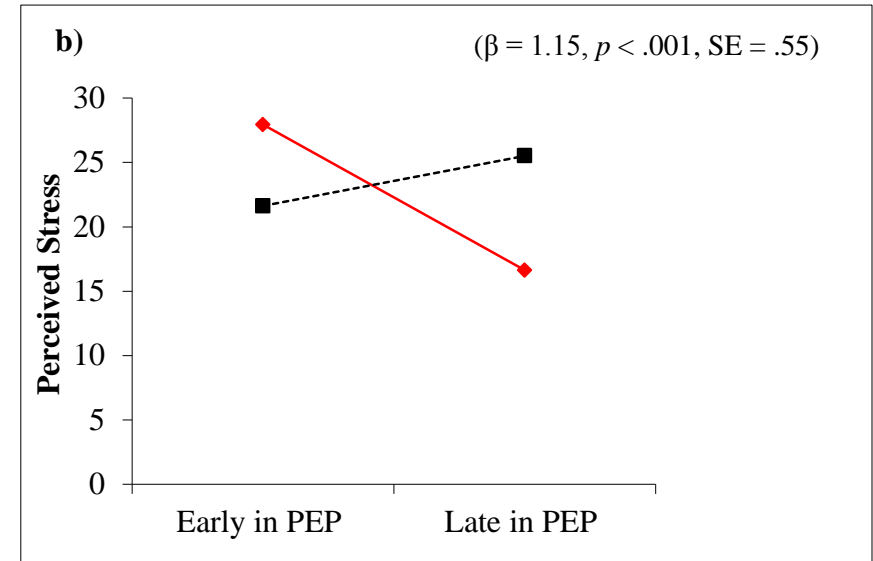
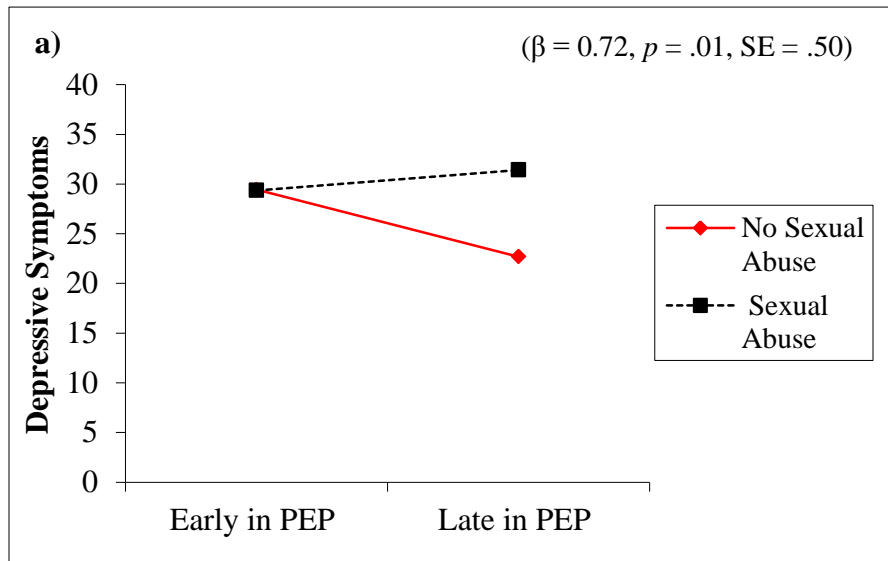


Figure 2. Mediation Model

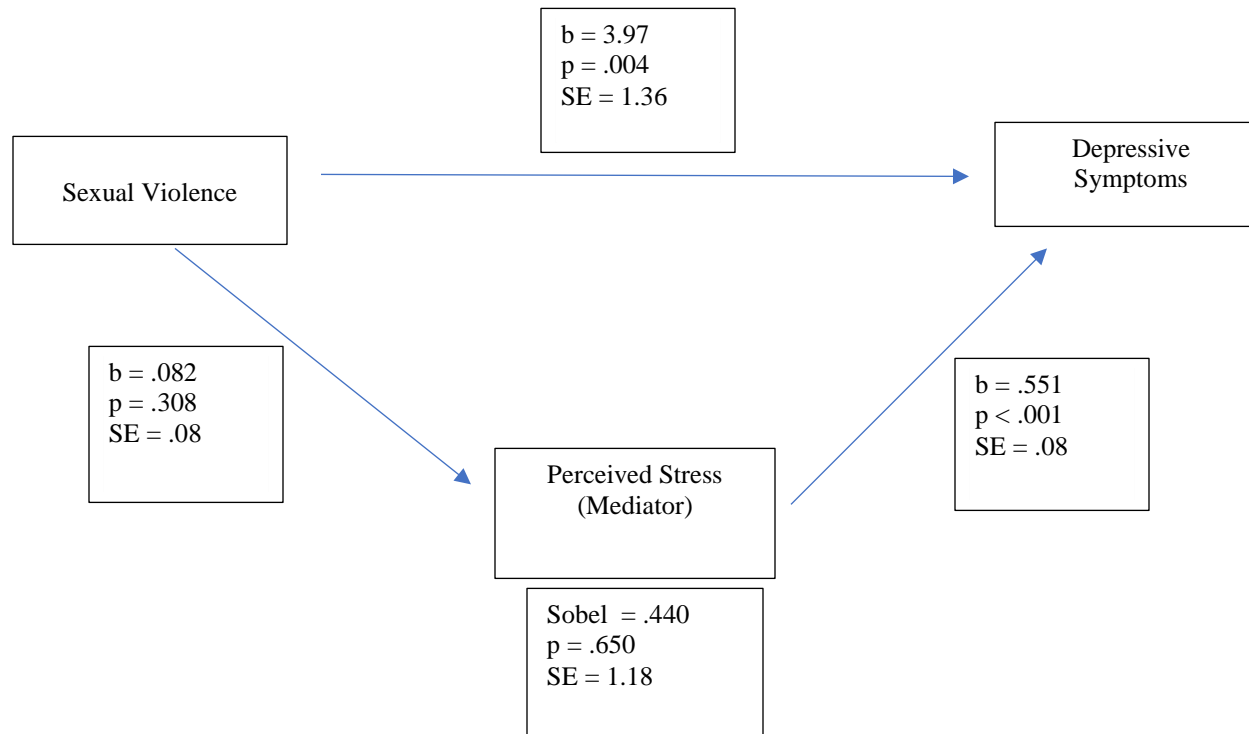


Figure 3. Change from Time 1 to Time 2 in a) perceived stress, b) empowerment (full sample), c) empowerment (sexual abuse) d) empowerment (non-sexual abuse)

