

# Economic Hardship Predicts Intimate Partner Violence Victimization During Pregnancy

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**Objective:** Intimate partner violence (IPV) during pregnancy is associated with negative physical and mental health consequences for both mothers and infants. Economic hardship is often exacerbated during pregnancy and is associated with increased rates of IPV in nonpregnant samples. However, temporal associations between economic hardship and IPV victimization have not been well-characterized during pregnancy. The present study used data collected at the weekly level to examine whether interindividual and intraindividual variation in economic hardship predicts IPV victimization during pregnancy and whether longitudinal changes in IPV across pregnancy vary based on level of economic hardship. **Method:** Two hundred ninety-four women reported on weekly experiences of IPV and economic hardship (i.e., food insecurity and other money problems) during Weeks 17–40 of pregnancy. Participants were oversampled for low income and IPV exposure. Binary logistic multilevel models were used to test study hypotheses. **Results:** Greater economic hardship on average during pregnancy predicted increased odds of IPV victimization. Within-person increases in economic hardship also predicted increased odds of IPV victimization in the same week. Although IPV victimization tended to decrease on average over the course of pregnancy, there was a significant time by economic hardship interaction such that IPV decreased more gradually for women reporting high levels of economic hardship. **Conclusions:** The present study examined weekly patterns of IPV victimization across pregnancy in a low-income community sample. Results suggest that policies aimed at increasing families' economic security during the perinatal period may reduce the individual and societal burden of IPV.

**Keywords:** intimate partner violence, pregnancy, economic hardship, financial stress, food insecurity

Intimate partner violence (IPV) is defined as physical, sexual, or psychological abuse by a current or former intimate partner (Saltzman et al., 2002). Women are at highest risk for experiencing IPV during their reproductive years (Breiding et al., 2014). Estimates of the rates of IPV during pregnancy vary. In a literature review, Gazmararian et al. (1996) found that prevalence rates reported in the literature ranged from 1% to 20% depending upon the sample and the measure used to assess IPV. IPV during pregnancy is a significant public health concern as it is associated with a variety of negative health consequences for both the mother and fetus (e.g., Alhusen et al., 2015). Indeed, in the United States, homicide (the most serious manifestation of IPV) is a leading cause of maternal mortality and is responsible for more than double the number of deaths caused by

maternal hemorrhage or placental disorders (Wallace et al., 2021). Contextual factors such as economic hardship have been consistently associated with increased incidence of IPV among nonpregnant couples (e.g., Schwab-Reese et al., 2016), but less is known about the relationships among these variables during the pregnancy period. As the anticipation of a new baby often comes with increased strain on household economic resources, the goal of the present study was to characterize the temporal associations between economic hardship and IPV victimization during pregnancy.

Prior research with nonpregnant samples indicates that economic disadvantage and associated sociodemographic factors (e.g., younger age, less education, being unmarried, and belonging to a minoritized racial/ethnic group) are linked to increased likelihood of experiencing IPV (Capaldi et al., 2012). Data from the National Longitudinal Study of Adolescent to Adult Health suggest that individual indicators of economic hardship (e.g., utilities nonpayment, housing nonpayment, food insecurity, lack of phone service) as well as overall number of indicators are associated with increased odds of IPV perpetration (Schwab-Reese et al., 2016). Couple's subjective reports of financial strain have also been associated with increased rates of IPV (Benson et al., 2003). Among mothers with young children, women who reported any economic hardship during the first 10 years of their child's life were more likely to experience IPV compared to those who reported no economic hardship, and those who reported chronic economic hardship were at highest risk for IPV (Lucero et al., 2016).

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However, most studies examining the association between economic stress and IPV have been cross-sectional, and thus limited in their ability to make causal inferences about whether change in economic status leads to changes in IPV. Importantly, fluctuations in economic status and IPV may be especially pronounced during periods of family transition such as pregnancy (e.g., Chan et al., 2022; Martin et al., 2001; Stanczyk, 2020; Van Parys et al., 2014), making it a prime window in which to examine whether within-person increases in economic hardship correspond to increases in IPV.

Pregnancy is a time of significant change for a couple, which in some cases may exacerbate existing conflicts (Martin et al., 2004). This may be especially true for couples facing concurrent social-ecological stressors. For instance, the family stress framework posits that the way families respond to stressful events is influenced by the availability of coping resources, both psychological and tangible (McCubbin et al., 1980). Financial strain is commonly exacerbated during pregnancy due to loss of income related to missed work or loss of employment for the birthing parent, as well as increased expenses related to medical care, housing, childcare, and other preparations for the new baby (Stanczyk, 2020).

In all relationships, the rate and severity of IPV fluctuate over time. Regarding pregnancy IPV, reported rates tend to decrease after a woman becomes pregnant, suggesting that for some women, pregnancy may represent a protective period (Taillieu & Brownridge, 2010). However, data from a nationally representative sample suggest that among women who experienced physical IPV before and during pregnancy, 48.5% reported that IPV decreased in frequency during pregnancy, 30.8% reported that it remained about the same, and 20.8% reported that it increased (Saltzman et al., 2003). Another large study conducted with pregnant women in Mexico City found that women whose abuse continued during pregnancy were more likely to endorse markers of economic hardship including husband's loss of employment and inability to pay bills (Díaz-Olavarrieta et al., 2007). However, studies like these commonly use retrospective reports of IPV spanning weeks or months. Importantly, IPV is episodic in nature, and measuring it at the level of discrete incidents, rather than merely presence or absence of IPV over an extended period (e.g., preconception vs. pregnancy), allows for a finer-grained examination of proximal risk factors.

Electronic diary and experience sampling methods that involve repeated measures at daily or weekly increments have been applied to the study of IPV for this purpose (e.g., Crane & Eckhardt, 2013; Elkins et al., 2013; Moore et al., 2011; Shorey et al., 2015; Shorey, Stuart, McNulty, et al., 2014; Shorey, Stuart, Moore, et al., 2014). However, all of these studies focused on college samples, which may not be generalizable to the broader community. Additionally, they only examined individual-level factors that influence the likelihood of IPV, such as alcohol use or negative affect, rather than broader social-ecological factors such as economic hardship, which have the potential to inform systems-level prevention efforts and aid in the identification of at-risk individuals for early intervention. Repeated measures designs that allow for the examination of within-person temporal associations are needed to better characterize the influence of contextual factors on IPV victimization during sensitive periods such as pregnancy.

## The Present Study

The present research used longitudinal data collected at the weekly level to characterize associations between economic

hardship and IPV victimization in a community sample of pregnant women. Multilevel modeling methods were employed to address the following aims:

*Aim 1:* To examine whether interindividual and intraindividual variation in economic hardship predict odds of IPV victimization during pregnancy.

*Hypothesis 1a:* Greater between-person economic hardship (i.e., women whose overall average economic hardship is high relative to the sample average) will positively predict odds of IPV victimization during pregnancy.

*Hypothesis 1b:* Greater within-person economic hardship (i.e., weeks that are especially difficult relative to a woman's own average) will positively predict odds of IPV victimization that week.

*Aim 2:* To determine whether longitudinal changes in IPV across mid-to-late pregnancy vary based on level of economic hardship.

*Hypothesis 2:* IPV will decrease on average over the course of pregnancy, but economic hardship will moderate the effect of time on IPV victimization such that women experiencing high levels of economic hardship will continue to experience higher levels of IPV throughout pregnancy.

## Method

### Participants

Data were drawn from a larger longitudinal study of the effects of prenatal stress on child and maternal physiological and behavioral outcomes (for a more complete overview of study methods, see Levendosky et al., 2021). Participants were recruited early in their pregnancies from several Midwest cities and towns and were oversampled for experiences of IPV, low income, and other stressors. The study was advertised to potential participants via flyers given out by Obstetrics offices, posted in the community (e.g., Women, Infants, and Children [WIC] offices, laundromats, libraries, public parks), and on social media. Interested women were screened over the phone for study eligibility. Participants were eligible if they were below 20 weeks pregnant with a singleton, 18–34 years of age, in a relationship with a man at some point during their pregnancy, and able to read and speak English fluently. Additionally, participants had to either endorse any experiences of IPV in the past year or be Medicaid eligible based on household income and endorse two or more family stressors (i.e., family conflict, neighborhood violence, food insecurity, or other money problems). Because the longitudinal study focused, in part, on stress hormones, participants were further excluded if they had any medical conditions (e.g., endocrine disorders) or lifestyle factors (e.g., working night shifts) that are known to affect salivary cortisol measures (hormonal data were not included in the present analysis).

Three hundred fifty-seven pregnant women participated in weekly surveys during the study period (April 2017 and December 2021). As one of the variables of interest (other money problems) was added after the start of data collection, a subsample of 294 women who had valid data for both the economic hardship and IPV variables were included in the present analysis. Two-tailed independent samples

*t* tests and *z* tests were used to assess group differences between participants who were dropped and those who were retained in the study. Women who were dropped from the present study due to missing data did not differ significantly from those who were retained in the analyses with regard to age,  $t(353) = .021, p = .983$ , number of children in the household,  $t(337) = -.065, p = .948$ , total family income,  $t(72.415) = 1.669, p = .099$ , or marital status ( $z = 1.371, p = .170$ ). The groups did differ with regard to IPV status at screening such that women who were dropped were less likely to endorse IPV in the past year (38.7% compared to 55.1%,  $z = -2.352, p = .019$ ), reflecting that a higher proportion of non-IPV participants were recruited earlier on in the study before the “other money problems” question had been added. Demographics for the final sample are presented in Table 1. The sample was racially diverse. Approximately, half the sample endorsed past-year IPV at the time of screening. Two-thirds of the sample were unmarried, and most were living with a romantic partner. Over half the sample had a high school degree or less education. For approximately one-third of the sample, it was their first time being pregnant.

## Procedure

Eligible participants were invited to attend a baseline assessment in project offices when they were between 15 and 20 weeks pregnant. After giving their informed consent to participate in the study, women reported on their demographics and completed additional survey measures and activities that are not the focus of the present analyses. At this visit, participants also agreed to complete a brief online survey each week for the remainder of their pregnancy. The weekly surveys took about 3–5 min to complete and asked participants to report on the kinds of stressors they experienced over the past week, including questions about experiences of IPV, food insecurity, and other money problems. Surveys were sent

**Table 1**  
*Sample Demographics*

Variable	<i>M (SD)</i>		
1. Age	26.71 (4.25)		
2. Monthly household income	\$2,701 (\$2,200)		
3. Number of children in household	1.45 (1.40)		
Variable	<i>N = 294</i>	<i>Obs = 4,253</i>	
4. Married	101 (34.4%)	1,582	
5. Unmarried and cohabitating with a partner	111 (37.8%)	1,591	
6. Unmarried and not cohabitating with a partner	82 (27.9%)	1,080	
7. Primiparous	89 (30.6%)	1,328	
8. High school degree or less education	170 (57.8%)	2,348	
9. Race			
White	123 (42.0%)	1,874	
Black or African American	116 (39.5%)	1,597	
Asian American or Pacific Islander	5 (1.7%)	68	
American Indian or Alaska Native	1 (0.3%)	21	
Multiracial	30 (10.2%)	421	
Other	5 (1.7%)	79	
Missing	14 (4.8%)	193	
10. Ethnicity			
Hispanic or Latina	22 (7.5%)	306	

to participants’ smart phones via email or text on Monday mornings and expired at 11:59 p.m. the following Sunday. Reminders were sent several times throughout the week to noncompleters. For participant safety, online surveys were equipped with an emergency escape button that redirected to a neutral webpage when pressed. Prepaid phones were also provided to participants who did not have reliable access to an internet-connected device. Participants were compensated \$1 for each survey they completed and regular participation was incentivized by the opportunity to earn \$5–\$10 bonuses based on the number of surveys completed consecutively. Additional compensation was provided for completing other components of the larger study. The present analyses include weekly data from gestational Weeks 17–40, resulting in 24 total timepoints (weekly data from outside of this range were excluded due to low numbers of completed surveys).

## Measures

### *IPV Victimization*

On the weekly surveys, women were asked to report whether five types of IPV had occurred in the past week. Items included verbal abuse (“Name calling, yelling and screaming, making one of you feel bad about yourself?”), controlling behavior (“Controlling what someone can and cannot do, monitoring where someone is and who they are with, isolating someone from family or friends?”), physical abuse (“Throw something, push, shove, grab, slap, twist arm or hair?”), severe physical abuse (“Use a gun/knife; punched or hit with something that hurt; choked, kicked, beat up, slammed partner against wall?”), and sexual abuse (“Insist on having sex or force the other person to have sex even though the other person didn’t want to?”). If a participant endorsed that an IPV incident had occurred that week, they were then asked to identify the perpetrator (self and/or partner). For the primary analyses, all five types of IPV victimization were summed for each week and then dichotomized into 1 = IPV victimization occurred, or 0 = IPV victimization did not occur. As there was low incidence of self-reported IPV perpetration in the present sample (self-perpetration was reported on 6.6% of weekly surveys, as compared to 13.0% for partner perpetrated IPV, and co-occurred with partner perpetrated IPV 73.3% of the time), only incidents of IPV victimization by a partner (including bidirectional incidents) were included in the present analysis.

### *Economic Hardship*

The weekly surveys contained two yes or no questions about economic hardship. First, as food insecurity has been linked to IPV victimization over and above other socioeconomic factors (Melchior et al., 2009; Ricks et al., 2016), women were asked whether they had experienced food insecurity in the past week (“This week, the food I bought just didn’t last, and I didn’t have money to get more”). Next, they were asked about all other sources of economic hardship (“Other than buying food, did you have money problems this week?”). Responses to these two questions were coded as 1 = “yes” or 0 = “no” and summed, resulting in a single economic hardship item ranging from 0 to 2. To disaggregate within-person and between-person effects, economic hardship was centered in two ways. First, economic hardship was averaged across all weeks for each individual and the grand mean of economic hardship ratings

was subtracted from each of these scores to produce a time-invariant between-person centered economic hardship variable. Next, each woman's mean economic hardship score was subtracted from her weekly economic hardship score to produce a time-varying within-person centered economic hardship variable.

### Covariates

Prior literature shows that rates of IPV are higher among unmarried cohabitating couples compared to married couples (e.g., [Brownridge, 2008](#)). Additionally, because of the possibility that married and cohabitating couples share household economic resources to a greater extent than couples who are not living together, cohabitation status and marital status at the time of the initial in-lab assessment were effects coded such that not living with a partner served as the reference group and were included in the models as covariates.

### Data Analytic Strategy

Basic descriptive statistics were used to characterize the frequency and nature of IPV during pregnancy. Binary logistic multilevel modeling (Generalized Mixed Models, SPSS v27) was used as the general data analytic approach for predicting the odds of IPV victimization during pregnancy. Multilevel modeling is considered an optimal approach for analyzing intensive longitudinal data such as weekly diary data ([Bolger & Laurenceau, 2013](#)). This strategy was chosen because it accounts for the hierarchical structure of the data in which weekly assessments (lower level units) are nested within participants (upper level units) and allows for the characterization of within-person change processes. Due to the low frequency nature of IPV, all types of IPV were collapsed into a single binary outcome variable (i.e., did any IPV occur this week), thus binary logistic multilevel models were selected for their ability to handle categorical outcome data.

Both the first and second research aims were tested using binary logistic multilevel models. To test whether interindividual and intraindividual variation in economic hardship predicted odds of IPV victimization, a within-between analysis was performed in order to disaggregate the within and between-person effects of economic hardship on IPV ([Curran & Bauer, 2011](#)). In this model, the grand mean of economic hardship for the sample was subtracted from each individual's mean economic hardship in order to assess the effect of between-person differences in economic hardship on IPV victimization. In addition, each woman's mean economic hardship was subtracted from her own report of weekly economic hardship and used as a predictor in the model to assess the effect of within-person changes in economic hardship on weekly IPV victimization. This approach allowed us to examine whether women who had high levels of economic hardship on average, relative to others in the sample, had greater odds of IPV victimization, as well as whether individuals were more likely to experience IPV on weeks when they experienced greater economic hardship compared to their own average. Effects coded marital and cohabitation status were included as covariates in the model. Therefore, the final fixed effect model included an intercept and slopes for the effects of between-person economic hardship, within-person economic hardship, married, and cohabitating. The random effects model included an intercept variance.

To address the second research question of whether longitudinal change in IPV victimization across pregnancy is moderated by

economic hardship, a second model was specified in which gestational week (coded as Weeks 17–40 and then grand mean centered), between-person centered economic hardship, and their interaction were used to predict odds of IPV victimization. The final fixed effects model included an intercept, which estimates the mean odds of weekly IPV victimization, slope for time (i.e., gestational week), between-person economic hardship, and the interaction between time and economic hardship. Marital status and cohabitation status were also included as fixed effects in the model. The random effects included an intercept variance and slope variance for time.

### Power Analysis

A post hoc power analysis was conducted based on the 294 participants who reported on both IPV victimization and economic hardship. The intraclass correlation (ICC) was estimated based on the observed intercept variance of 2.089 and the fact that the logistic distribution has a variance of  $\pi^2/3$ , yielding an estimated ICC of  $2.089/(2.089 + 3.29) = 0.39$ . Using this ICC, we computed the effective sample size based on  $N = 4,253$  observations and an average of 15 observations per woman. Thus, the effective  $N$  was  $4,253/[1 + (15 - 1) \times .39] = 658$ . Using G\*Power ([Faul et al., 2007](#)), the two-tailed test of a single regression coefficient in a model with four predictors and  $\alpha = .05$  had 80% power to detect a correlation of .109, which translates to an odds ratio of 1.49. Given the effect sizes in our model, we concluded that we had adequate power to test the main study hypotheses.

## Results

### Descriptive Statistics and Preliminary Analyses

Participants completed an average of 14.47 ( $SD = 6.93$ , range = 1–24) weekly surveys between Weeks 17 and 40 of pregnancy, resulting in a total of 4,253 completed surveys. IPV victimization of any type was reported on 551 (13.0%) weekly surveys. Of the participants, 51% ( $n = 151$ ) endorsed one or more incidents of IPV victimization of any type during the assessment period. Compared to psychological (verbal or controlling) IPV, which was reported on 539 weekly surveys (12.7% of surveys,  $n = 151$ , range of incidents = 0–17), physical IPV was relatively infrequent, with physical, severe physical, or sexual IPV reported on just 70 weekly surveys (1.6% of surveys,  $n = 48$ , range of incidents = 0–5). Economic hardship was common in the present sample, with one or both indicators of economic hardship reported on 48.0% of weekly surveys ( $n = 240$ ). Zero-order correlations, means, and standard deviations for the study variables are presented in [Table 2](#).

### Aim 1: Do the Interindividual and Intraindividual Effects of Economic Hardship Predict Odds of IPV Victimization During Pregnancy?

In the first model, the odds of IPV victimization were predicted by between-person centered economic hardship and within-person centered economic hardship in order to assess whether the odds of IPV victimization during pregnancy are higher for women with levels of economic hardship that are high on average compared to others in the sample, and whether the odds of IPV victimization are higher on weeks when a woman's economic hardship is higher than her own within-person average. Results for the binary logistic

**Table 2**  
*Bivariate Correlations Between Study Variables*

Variable	1	2	3	4	5	6
1. Gestational week	—					
2. Between-person economic hardship	-.008	—				
3. Within-person economic hardship	-.101*	.000	—			
4. IPV victimization	-.073*	.072*	.071*	—		
5. Married	.006	-.155*	.000	-.071*	—	
6. Cohabiting	.007	-.093*	.000	.003	.391*	—
<i>M</i>	28.64	0.00	0.00	0.13	0.12	0.12
<i>SD</i>	6.37	0.57	0.49	0.34	0.78	0.78

*Note.* Correlations treat survey week as the unit of analysis and therefore ignore nonindependence within-participant. *N* = 294, Obs = 4,253. IPV = intimate partner violence.

\* *p* < .01.

multilevel model predicting IPV victimization are shown in Table 3. Consistent with Hypotheses 1a and 1b, both between-person and within-person economic hardship significantly positively predicted odds of IPV victimization during pregnancy. The exponentiated coefficient indicates that for every one unit increase in between-person economic hardship, the odds of experiencing IPV increased by .59. As the standard deviation of between-person economic hardship was .57, a one unit increase corresponds to approximately a two standard deviation increase in between-person economic hardship. In other words, a one standard deviation increase in between-person economic hardship corresponds to a 1.30–1 increase in the odds of IPV victimization.

Similar results were found for within-person economic hardship such that for every one unit increase in within-person economic

hardship, odds of IPV victimization occurring that week increased by .65. As the standard deviation of within-person economic hardship was .49, a one standard deviation increase in within-person economic hardship corresponds to a 1.28–1 increase in the odds of IPV victimization. Thus, women who endorsed high levels of subjective economic hardship overall during pregnancy were at increased risk for IPV victimization. Additionally, on weeks when women experienced greater economic hardship than was typical for them, risk of IPV also increased. Neither being married nor being unmarried but cohabiting with a partner were significant predictors of IPV victimization. The results for the random effects model indicated significant intercept variance, suggesting that after taking the predictors into account, there was still significant within-person variability in odds of IPV victimization.

**Table 3**  
*Binary Logistic Multilevel Regression Results Predicting IPV Victimization*

Model term	<i>b</i>	<i>SE</i>	<i>p</i>	Exp. (95% CI)	Variance	Wald <i>z</i>	<i>p</i>
<b>Model 1</b>							
Fixed effects							
Intercept	-2.362	.110	<.001	0.094 (0.076, 0.117)			
Between-person economic hardship	0.465	.193	.016	1.592 (1.091, 2.324)			
Within-person economic hardship	0.499	.100	<.001	1.647 (1.354, 2.004)			
Married	-0.230	.155	.138	0.794 (0.586, 1.077)			
Cohabiting	0.089	.149	.549	1.093 (0.816, 1.465)			
Random effects							
Intercept					2.089	7.686	<.001
<b>Model 2</b>							
Fixed effects							
Intercept	-2.388	.111	<.001	0.092 (0.074, 0.114)			
Gestational week	-0.048	.009	<.001	0.953 (0.936, 0.971)			
Between-person economic hardship	0.530	.195	.006	1.699 (1.161, 2.488)			
Gestational Week × Between-Person Economic Hardship	0.038	.017	.023	1.038 (1.005, 1.072)			
Married	-0.237	.155	.127	0.789 (.582, 1.070)			
Cohabiting	0.097	.149	.513	1.102 (.823, 1.476)			
Random effects							
Intercept					2.068	7.659	<.001
Gestational Week					0.001	0.905	.365

*Note.* *N* = 294, Obs = 4,253. Exp. = exponentiated coefficient; CI = confidence interval; *SE* = standard error; IPV = intimate partner violence.

## Aim 2: Do Longitudinal Changes in IPV Across Mid-to-Late Pregnancy Vary Based on Level of Economic Hardship?

In this second model, odds of IPV victimization were predicted by gestational week, between-person economic hardship, and their interaction. Results for the fixed and random effects for Model 2 are presented in Table 3. The fixed effect for gestational week was a significant negative predictor of IPV victimization, suggesting that on average the odds of experiencing IPV decreased as pregnancy progressed. Holding all other variables constant, for each successive week of pregnancy, the odds of IPV victimization decreased by .05. As in the previous model, the main effect of between-person economic hardship significantly positively predicted odds of IPV victimization, such that women who endorsed greater economic hardship during pregnancy had greater odds of experiencing IPV. There was also a significant interaction between time (i.e., gestational week) and economic hardship.

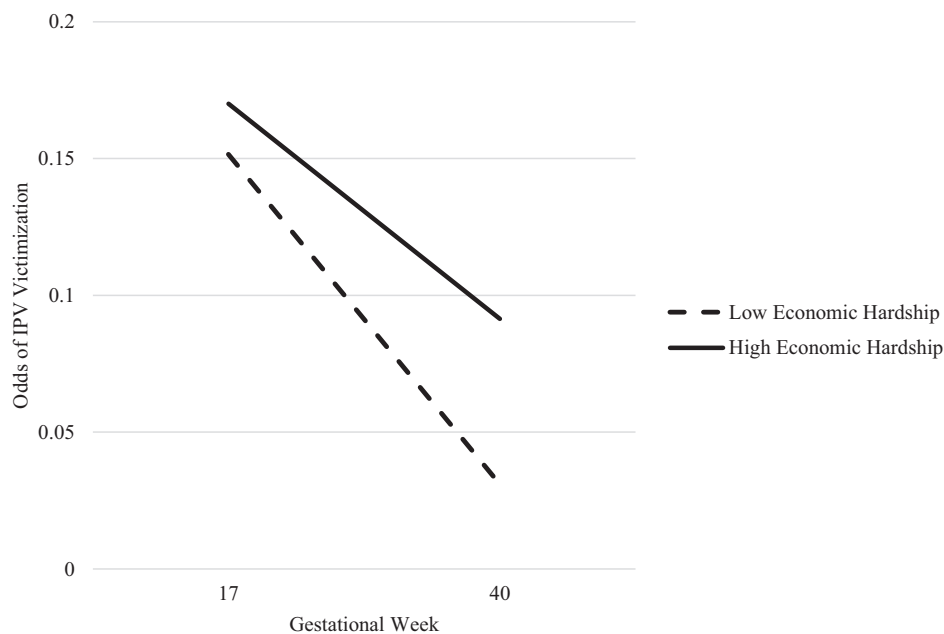
Given the significant interaction, a simple slopes analysis was conducted to estimate the effect of time separately for high levels of economic hardship (i.e., one standard deviation above the mean) and low levels economic hardship (i.e., one standard deviation below the mean). When economic hardship was low, the simple slope for gestational week was  $b = -0.07$ ,  $t(4,253) = -4.84$ ,  $p < .001$ . Thus, for women reporting low levels of economic hardship, gestational week was negatively associated with odds of IPV victimization such that for each successive week of pregnancy, the odds of experiencing IPV decreased by .07 ( $OR = 0.93$ , 95% CI [0.91, 0.96]). When economic hardship was high, the simple slope for gestational week was  $b = -0.03$ ,  $t(4,253) = -2.238$ ,  $p = .03$  ( $OR = 0.97$ , 95% CI [0.95, 1.00]), indicating that for women reporting high levels of

economic hardship during pregnancy, the odds of IPV decreased more gradually over the course of pregnancy. Figure 1 depicts the interaction between economic hardship and gestational week. In support of Hypothesis 2, compared to those who endorsed low levels of economic hardship on average, women who endorsed high levels of economic hardship were at higher risk for IPV throughout mid-to-late pregnancy, and displayed less a pronounced reduction in odds of IPV victimization over time.

## Discussion

The present study leveraged a longitudinal repeated measures design to examine the interindividual and intraindividual effects of economic hardship on IPV victimization during pregnancy. This study extended the literature in several important ways. First, we were able to assess IPV at many timepoints across pregnancy, which allowed us to examine longitudinal changes in IPV victimization at a time that is crucial to maternal and infant health. Additionally, the study design allowed for the between and within-individual effects of economic hardship to be disaggregated, revealing the novel finding that within-person increases in economic hardship serves as a proximal risk factor for IPV victimization. The sample composition was also a strength of the study. Most intensive longitudinal studies of IPV use college or emerging adulthood samples. Instead, we focused on pregnancy as another high-risk developmental period when women and fetuses are particularly vulnerable to the detrimental effects of IPV. By intentionally recruiting participants from the community who were at elevated risk for experiencing IPV (i.e., those with recent IPV experiences and those from socioeconomically disadvantaged backgrounds), we maximized our ability to

**Figure 1**  
Simple Slopes for the Effect of Time (Gestational Week) on Odds of IPV Victimization for Women With High and Low Average Economic Hardship



Note. IPV = intimate partner violence.

detect effects, while also increasing the representativeness and ecological validity of the findings.

With regard to the first study aim, as expected, economic hardship significantly predicted IPV victimization among pregnant women, such that women who endorsed greater economic hardship on average were more likely to experience IPV. This finding confirms that the well-documented association between economic disadvantage and IPV holds true during pregnancy (Benson et al., 2003; Golden et al., 2013; Lucero et al., 2016; Schwab-Reese et al., 2016). Extending this literature, we also found that women were at higher risk for IPV on weeks when they experienced increased economic hardship compared to their own within-person average, suggesting that increased economic hardship is a proximal contextual risk factor for IPV victimization during pregnancy. This novel finding has important implications for policy and prevention efforts, as it suggests that increasing economic stability among low-income families during the perinatal period may reduce the incidence of IPV.

The second aim of the study was to determine whether longitudinal changes in IPV across pregnancy vary based on level of economic hardship. Building upon prior research indicating that the prevalence of IPV tends to decrease from the preconception period to pregnancy (e.g., Taillieu & Brownridge, 2010), we found evidence that IPV victimization decreased on average across the second and third trimesters of pregnancy in the present sample. However, in support of our hypothesis, the effect of gestational week on odds of IPV victimization was moderated by economic hardship. For women reporting low levels of hardship, odds of IPV victimization declined steeply from mid-to-late pregnancy, but for women reporting high levels of economic hardship, odds of victimization decreased more gradually and remained comparatively elevated throughout pregnancy. Overall, these findings suggest that economic adversity and IPV exposure are compounding risk factors for pregnant women, as being exposed to one stressor increases risk for the other.

## Limitations

The results of this study should be considered in the context of several limitations. First, only women's reports of economic hardship and male perpetrated IPV were included in the analysis. Previous studies have found that financial stress increases both men's and women's IPV perpetration (Slep et al., 2010). As couple's reports of IPV are frequently discordant, including both partners' ratings of victimization and perpetration could yield additional insights (Armstrong et al., 2002). However, obtaining reports of IPV from both partners in community samples poses logistical and ethical challenges due to the potential for safety risks. Additionally, as only women in heterosexual relationships were represented in the present sample, the results cannot be assumed to generalize to the experiences of expecting same-sex couples. Understanding the factors influencing IPV among sexual and gender minority couples is an important area for further research.

Another limitation is that the subjective two-item measure used to assess economic hardship may have limited our ability to capture more nuanced variations in household finances. Our measure was chosen for its brevity to reduce participant burden and for its ability to capture both milder (i.e., general money problems) and more severe forms of economic hardship (i.e., food insecurity). However,

we were not able to assess the impact of other forms of economic hardship such as job loss or housing instability on risk of IPV. Although we attempted to include questions about multiple forms of abuse, we did not include a measure of economic abuse, which often co-occurs with other forms of relationship violence and may have had a unique impact on women's perceptions of economic hardship (Stylianou, 2018). Additionally, due to the infrequent nature of physical and sexual IPV in our sample, we were not able to determine whether economic hardship was differentially associated with different types of IPV, as has been found in some studies of nonpregnant women (e.g., Arenas-Arroyo et al., 2021).

## Future Research Directions

A variety of mechanisms could account for the association between economic hardship and IPV and require further research to clarify. Consistent with the family stress framework, increases in economic hardship could contribute to stress and irritability for both partners, and thereby increase the likelihood of escalating conflict (McCubbin et al., 1980). In some cases, conflict may be directly related to financial stress. For example, there is qualitative work suggesting that for pregnant women who rely on their partner for financial support, negotiating access to money can serve as a catalyst for violence (Bacchus et al., 2006). Additionally, strained financial resources may reduce a woman's ability to control if and how she and her partner interact (e.g., cannot access transportation or alternate housing), thus resulting in increased opportunities for arguments and violence to occur. Indeed, it is not clear in the present study whether the declines in IPV victimization for higher-resourced women reflect changes in the behavior of male perpetrators as the pregnancy advances, or whether women with greater access to financial resources leave violent relationships at higher rates once becoming pregnant compared to women for whom limited financial resources pose a barrier to leaving. Future research should include additional time-varying covariates that could potentially account for changes in the relationship between economic hardship and IPV victimization. Further research elucidating the specific mechanisms through which economic hardship contributes to IPV will be needed to inform prevention efforts.

Additionally, more research is needed to understand the maternal and infant outcomes associated with IPV during pregnancy. Although exposure to more frequent, chronic, and severe IPV during pregnancy is likely to be associated with increased risk of adverse outcomes for both mothers and infants (Alhusen et al., 2015), there is presently a dearth of research examining the effects of timing of IPV on maternal and infant outcomes. Studies that include multiple assessments of IPV and other episodic stressors across pregnancy may be helpful in identifying critical periods for screening and intervention.

## Policy and Prevention Implications

The findings of the present study suggest that providing financial assistance to low-income families that would reduce week-to-week fluctuations in economic hardship could help to prevent IPV against pregnant women. One such program available to low-income pregnant women, the Special Supplemental Nutrition Program for WIC, has been effective at improving household food security and neonatal health outcomes (Metallinos-Katsaras et al., 2011;

Testa & Jackson, 2021). Although women who endorse pregnancy IPV have higher rates of WIC utilization, it has not yet been determined whether IPV decreases as a result of WIC enrollment (Masho et al., 2019). However, despite this and other existing benefits programs in the United States, household income adequacy decreases sharply in the months preceding birth, primarily due to declines in women's earnings (Stanczyk, 2020). Strengthening policies related to paid parental and medical leave, unemployment benefits, and protections against discrimination for pregnant workers could be beneficial in reducing pregnancy IPV (D'Inverno et al., 2018). Unrestricted cash transfer and guaranteed income programs for pregnant women have also been explored, and these provide promising avenues for reducing IPV as well as improving birth outcomes (Brownell et al., 2016; Buller et al., 2018).

In summary, the present study sought to clarify the relationship between women's subjective reports of economic hardship and risk for IPV victimization throughout mid-to-late pregnancy, a time when women and their children are particularly vulnerable to negative health consequences associated with relationship violence. Leveraging women's weekly reports of IPV victimization during pregnancy, we demonstrated that increases in economic hardship serve as a proximal risk factor for pregnancy IPV victimization, and that risk for IPV remains elevated across gestation for women who experience high levels of economic hardship. Overall, the current findings suggest that pregnant women experiencing economic hardship are disproportionately impacted by IPV. Policies that increase economic security for pregnant women are likely to reduce the individual and societal burden of IPV.

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