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Women's Education, Marital Violence, and Divorce: A Social Exchange Perspective

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Abstract

Drawing on social exchange theories, the authors hypothesized that educated women are more likely than uneducated women to leave violent marriages and suggested that this pattern offsets the negative education – divorce association commonly found in the United States. They tested these hypotheses using 2 waves of young adult data on 914 married women from the National Longitudinal Study of Adolescent Health. The evidence suggests that the negative relationship between women's education and divorce is weaker when marriages involve abuse than when they do not. The authors observed a similar pattern when they examined the association of women's proportional earnings and divorce, controlling for education. Supplementary analyses suggested that marital satisfaction explains some of the association among women's resources, victimization, and divorce but that marital violence continues to be a significant moderator of the education – divorce association. In sum, education appears to benefit women by both maintaining stable marriages and dissolving violent ones.

Keywords

couple violence; divorce; National Longitudinal Study of Adolescence Health (Add Health); social exchange theory

Women's educational attainment has risen dramatically in the past three decades, with the yearly number of American women awarded a 4-year college degree now exceeding men by over 10% (National Center for Education Statistics, 2010). Accompanying this trend is an increasingly negative correlation between women's education and divorce (Amato, 2010; Cherlin, 2010). A comparison of American women who married in 1975 – 1979 to those who married in 1990 – 1994 revealed a 10% drop in the divorce rate for women with a 4-year college degree and an 8% increase in the divorce rate for women without a high school degree (Martin, 2006). This divergence creates the current educational gradient in divorce, whereby college-educated women are less than half as likely to get a divorce as women with a high school degree or less (Martin, 2006; McLanahan, 2004).

The relationship between resources and divorce is often interpreted using theories of social exchange (Homans, 1950, 1958; Sayer, England, Allison, & Kangas, 2011; Schoen, Astone, Rothert, Standish, & Kim, 2002; Thibaut & Kelley, 1959). Exchange theories imply that the relationship between women's education and divorce should be negative, not positive; women who have greater resources should be less dependent on their husbands because they have more attractive alternatives. Available opportunities make it more likely that they will divorce their husbands when they are dissatisfied with the relationship. Educated women,

for example, have greater financial security than uneducated women because they have access to better paying jobs. Singlehood will not be as much a financial problem for them. Education may also correlate with other human capital characteristics (e.g., health) that increase the likelihood of remarriage to a “better” spouse. When women perceive more attractive alternatives and are not dependent on their current relationship, they should be more likely to leave. When they lack options and are dependent on their spouse, they should be more likely to stay in relationships, even when those relationships are troubled (Thibaut & Kelley, 1959).

So why does the social exchange hypothesis not hold for women’s education and divorce? A likely explanation is that education increases marital satisfaction, which then outweighs attractive alternatives (Amato, 1996). Women in satisfying relationships are unlikely to spend time searching for better options, even though such options are available. Furthermore, rising rates of educational homogamy concentrate resources in educated couples, raising the quality of these marriages and exacerbating the educational gradient in divorce (England, 2004; McLanahan, 2004; Press, 2004; Schwartz & Mare, 2005).

The education – divorce association may depend on whether the marriage is a happy one or not — a statistical interaction. It may be that the independence associated with education promotes divorce only in unhappy marriages. Wives in unsatisfactory marriages have the incentive to contemplate and investigate alternatives, and if they are educated, their alternatives are likely to be more attractive. Wives in satisfactory marriages have no incentive to consider alternatives or to take advantage of outside opportunities.

Research suggests that abused women are more likely to get divorced (e.g., Bowlus & Seitz, 2006) but, to our knowledge, no one has examined whether the effects of abuse depend on a women’s education. Research on women in domestic violence shelters provides some support for the proposition. For example, a study of 100 women living in a shelter found that education was the strongest correlate of permanently leaving their abusive relationships (Rusbult & Martz, 1995). Indeed, education was a stronger correlate of leaving than 34 other person- and relationship-level variables, including the severity of abuse, the man’s history of violence, and the woman’s income and employment status. On the basis of their review of the literature, Anderson and Saunders (2003) suggested that women’s education and other socioeconomic resources are the most important and consistent predictors of relationship termination (see also Rhatigan, Street, & Axsom, 2006).

Although informative, results from studies of shelter samples have limited generalizability. They tend to undersample violence that is less serious and that involves people of higher education. Moreover, given that all the women in these studies have been abused, they are unable to examine whether the association between education and divorce is different in abusive and nonabusive relationships. In the current study, we directly assessed this interaction in a nationally representative sample of married young adult women.

Earnings

The arguments made above about women’s education could also be made about women’s earnings, because earnings also reduce women’s economic dependence on their husbands (e.g., Dugan, Nagin, & Rosenfeld, 1999). There are, however, theoretical reasons to suspect that women’s education and earnings might be differentially associated with divorce. Gary Becker (1981), in his influential *A Treatise on the Family*, argued that women’s earnings should be positively associated with divorce. He stated, “Women with higher earnings gain less from marriage than other women do because higher earnings reduce the demand for children and the advantages of the sexual division of labor in marriage” (p. 231). In other

words, women's earnings should increase the likelihood of divorce because women have a comparative advantage to men in child care and household activities, giving couples in which the woman works less outside the home than the man an advantage over couples in which the woman contributes equally or more earnings than her husband. Becker further argued that market capital (i.e., employment and earnings) is one of the few characteristics for which negative assortative mating is optimal for marital stability, so that husbands with the highest proportional earnings relative to their wives have the lowest risk of divorce. On the other hand, he argued that education is among the many attributes for which partner similarity increases marital quality and stability, consistent with findings of increased educational homogamy (McLanahan, 2004; Schwartz & Mare, 2005) and of the educational gradient in divorce.

Research on women's employment and earnings has found mixed support for Becker's (1981) hypothesis, with several studies finding no relationship between women's investments in market capital (i.e., employment and earnings) and divorce (Amato, 2010; Kalmijn, Loeve, & Manting, 2007; Schoen, Rogers, & Amato, 2006; Teachman, 2010; Sayer et al., 2011). Summarizing this literature, Amato (2010) suggested that the mixed evidence results from women's income having offsetting effects on marital stability: decreasing stability by upsetting the traditional division of household labor, and increasing stability by reducing economic hardship. In sum, it is unclear what to expect regarding the association between women's earnings and divorce, and therefore it is not surprising that the evidence is mixed. It is clear, however, that women's income and employment are not as beneficial for marital stability as is women's education.

From a social exchange perspective, employment and earnings should be similar to education in increasing divorce risk for women in unsatisfactory marriages. As with education, employment and earnings provide wives viable alternatives to bad marriages. Schoen et al. (2002) tested this hypothesis by examining whether the effect of wives' full-time employment on divorce varied by the spouses' marital happiness (an index that included physical violence). Their analyses were based on a hazard model of divorce among 2,988 married couples of the National Survey of Families and Households. Using a measure of employment that was contemporaneous with divorce, they found support for the hypothesis: Women in unhappy marriages were more likely to get divorced if they were employed, whereas employment did not affect divorce in happy marriages. On the other hand, when they included a lagged measure of women's employment, the employment – marital unhappiness interaction disappeared. This raises the possibility that analyses with contemporaneous measures of employment and divorce capture the effect of women's planning for their lives after divorce. An anticipation of divorce may lead to employment rather than employment leading to divorce. Causal direction is less ambiguous when considering education and divorce, as educational certification likely takes years to complete.

It is also questionable whether employment is the ideal financial measure of a woman's opportunities outside her current marriage. A woman may be employed in a low-paying job that will not sustain her if she gets a divorce. A woman's earnings are probably a better indicator of her financial situation and therefore her economic independence. Perhaps even better is a measure of proportional earnings. A woman who outearns her husband has an incentive to find a higher earning partner who will contribute more to the total household income (Becker, 1981). Similarly, a wife who earns proportionally less than her husband will stay married because, if she left, she would be unable to live in the style to which she is accustomed. Rogers (2004) examined the effects of women's earnings and proportional earnings on divorce for approximately 2,000 married respondents from the Marital Instability Over the Life Course Study (Booth, Amato, Johnson, & Edwards, 1993). She

found that both women's earnings and proportional earnings increased the risk of divorce. In addition, consistent with the social exchange hypothesis, she found that the positive effect of wives' proportional earnings on subsequent divorce was greater in marriages perceived as unhappy. In the current study, we extended her analyses to another data set, focused on abuse as a measure of low marital quality, and included comparisons to women's education.

The Current Study

The primary purpose of this study was to determine whether the relationship between a woman's education and divorce is different in violent marriages. Our hypothesis was that educated wives are more likely than uneducated wives to get divorced when they are victimized by their spouses, and less likely to get divorced in nonabusive marriages. We also tested for statistical interactions between victimization and full-time employment, women's earnings, and proportional earnings. We predicted that women with financial resources, however measured, are more likely to get divorced when they are victimized by their spouses, and less likely to get divorced in nonabusive marriages. Finally, we performed supplementary analyses in which we examined three additional associations: (a) whether the effects of women's education on divorce depend on the seriousness of the victimization and whether the violence was mutual (Johnson, 1995), (b) whether the effects of education and victimization on divorce are similar for men, and (c) whether relationship dissatisfaction operates similarly to victimization in its association with divorce.

We tested our primary hypotheses with a sample of 920 married women over two young-adult waves of the National Longitudinal Study of Adolescent Health (Add Health). We selected Add Health women who were married at the third wave of data collection and included covariates to predict the monthly hazard that these marriages would dissolve in the 6-year period between the third and fourth waves. Because education, earnings, and victimization were measured prior to divorce, we are fairly confident that we specified the correct temporal ordering of concepts. Finally, we introduced a rich array of control variables — including religiosity, parental divorce and education, partner race and education, prior cohabitation, marital duration, substance use, and childhood physical abuse — that prior research has shown are predictive of divorce, women's educational attainment, and/or partner violence (Amato, 2010; Jose, O'Leary, & Moyer, 2010; Lyngstad, 2004; Rogers, 2004; Power, Rodgers, & Hope, 2010; Teachman, 2002).

Method

Sample

Data for this study come from Add Health, a nationally representative school-based longitudinal survey of U.S. adolescents enrolled in Grades 8 through 12 in the 1994 – 1995 school year. We refer readers to Add Health's website, sponsored by the Carolina Population Center, for details on the study's stratified sampling design (<http://www.cpc.unc.edu/projects/addhealth>).

All available students in the sampled schools participated in an in-school survey administered in the fall of 1994, and approximately 200 students from each school completed more detailed in-home surveys the following spring. In-home respondents were reinterviewed three additional times: in (a) 1996 (Wave II), (b) 2001/2002 (Wave III), and (c) 2007/2008 (Wave IV). Data for the present study primarily come from Waves III and IV, with two background variables collected from the Wave I in-home interview.

Our analytic sample consisted of all married young adult women at Wave III whose subsequent marital and educational status could be ascertained at the Wave IV survey. At

the time of the Wave III survey, female Add Health respondents were young adults with an average age of 22 years. This is several years younger than the national median age of female first marriage, which in 2001 was 25.1 years (U.S. Census Bureau, 2011). Not surprisingly, female marriage in the Add Health young adult survey was fairly infrequent. Of the 8,030 women interviewed, 1,394 (17%) reported being currently married. This sample of Add Health married women is nationally representative only of women who marry at younger ages, a demographic group that is also likely to be at greater risk of divorce. We return to the issue of sample selectivity when we discuss our results.

We restricted the sample of 1,394 married women in five additional ways. First, we focused our analyses on those married women ($n = 1,210$; 87%) who completed Wave IV of Add Health, which was 6 years after Wave III, and asked respondents about changes in their marital status. Second, we dropped respondents with inconsistent marriage dates across the waves, because it was unclear in these cases whether the relationship information referred to the same marriage. We matched marriages at each wave using the reported year the marriage began. These dates aligned for 90% of the married women ($n = 1,092$) and were within 2 years for over 97%, but some wives reported start dates that varied widely between the two waves. We dropped 23 respondents whose marriage start dates differed by more than 2 years between waves. We also dropped 47 respondents who reported being married at Wave III but reported at Wave IV that this marriage had ended prior to the Wave III interview date. Again, it becomes unclear whether the information at the two time points referred to the same marriage. Third, to ensure the correct temporal ordering of educational attainment and divorce, we dropped eight married women who began their college education after the Wave III interview and potentially following a divorce. Fourth, we dropped six women from the analyses who were married at Wave III but whose husbands were deceased by Wave IV. Finally, less than 5% of the remaining women had missing observations for any given covariate. To maintain statistical power, we used mean replacement for two measures with higher rates of missing data: (a) earnings (4% missing) and (b) household income (7% missing). After listwise deletion of remaining cases with missing data, our final sample included 914 married women.

Measures

Descriptive statistics for our dependent and independent variables are displayed in Table 1. All descriptive statistics, and the hazard models that follow, are weighted to correct for Add Health's stratified sampling design. These weights adjust variable means, regression coefficients, and standard errors for clustering and unequal probability of sample selection. Although we analyzed a data set of person-observations (discussed below), these descriptive statistics are presented in the person format because time to divorce was our only time-varying variable.

Divorce—Respondents were asked at Wave IV if they are currently divorced from their spouse and, if so, the month and year that the identified marriage ended. We used this information to create a dichotomous measure of divorce, coded 1 for those months when respondents were no longer married prior to the Wave IV administration date. Almost 30% of all women who were married at Wave III reported a divorce in the months prior to Wave IV. Of those women who divorced between Waves III and IV ($n = 256$), the average time to divorce was 37 months.

Resource measures—We created four measures of wives' resources. First, we measured educational attainment using self-reported measures of respondents' highest level of education at the time of the Wave IV survey. Education was measured along an ordinal scale ranging from high school dropout to postgraduate degree. In preliminary analyses (not

shown), we found a nonlinear education – divorce association, such that women with at least a college degree were significantly less likely to get divorced than women without a degree. To operationalize this nonlinear association, we created a dichotomous measure of education, coded 1 for women who completed a 4-year college degree prior to divorce or Wave IV, whichever occurred first, and 0 otherwise. By Wave IV, approximately 20% ($n = 203$) of married women in our sample had completed a 4-year college degree. This is only slightly lower than the 22% of American women age 25 to 34 in 2009 who had completed a college degree (U.S. Census Bureau, 2012), with the difference likely due to right-truncation of the youngest cohorts. To examine whether this truncation affected our results, we included a covariate for age into our models and, in unlisted analyses, examined whether our primary findings varied for the younger age cohorts. These age interactions were nonsignificant, suggesting that our results are generalizable to all observed ages. Note that whether a woman achieved her degree prior to or after marriage did not matter for our purposes. A woman who gets a college degree before marriage may be able to attract a husband with high resources, and his resources may affect the risk of divorce, but we controlled for this possibility by including his resources in our analyses. We should therefore have been able to estimate the net association between wives' education and time to divorce.

Second, we measured employment status using a binary variable, coded 1 if a respondent reported working at least 35 hr per week at Wave III. As such, this measure captures greater involvement than more fleeting measures of employment used elsewhere (Schoen et al., 2002). Of the 920 married female respondents in our sample, 451 (49%) were employed full time at Wave III.

Third, we created a measure of independent income received from wages or salaries, including tips, bonuses, and overtime pay, and income from self-employment. Fourth and last, we created a measure of proportional earnings representing the proportion of total household income that was earned by the wife. On average, wives in our sample earned slightly less than 40% of the total household income at Wave III. For both linear and proportional earnings, we also explored models with quadratic terms (Rogers, 2004). In neither case did we observe significant nonlinear effects, so these parameters were omitted from the presented analyses.

Marital victimization—As part of the relationship history at Wave III, respondents were asked detailed questions about their current (or most recent) relationship. This included a number of questions targeting relationship conflict and violence. Our index of marital victimization was a composite measure based on the responses to three questions. First, respondents were asked how often their partner threatened, pushed, shoved, or threw something at them. Second, they were asked how often their partner slapped, hit, or kicked them. Finally, respondents were asked how often they had been injured in a fight with their partner. We dichotomized each of these items to create a summative variety scale that captured the number of reported victimization indicators, ranging from 0 (*no victimization*) to 3 (*all three victimization items reported*). Of the 920 married women in our sample, 202 (22%) reported the presence of at least one indicator of victimization in their relationship. Of these women, 33 (16%) had a college degree. Women with a college degree were also less likely to report victimization compared to women without a degree (16% vs. 24%).

Wives' characteristics—Our empirical models controlled for a range of known correlates of education, victimization, and divorce measured at Wave III. Age is a straightforward measure reported in years. Race is based on the following self-report item: "Which one category best describes your racial background?" Our sample was 78% White (the reference category), 7% Black, 12% Hispanic, and 3% "other race." We controlled for

religiosity with a scale that captured the frequency of religious attendance. On average, the married women in our sample attended religious services on a monthly basis. We also controlled for prior relationship history with a dummy variable, coded 1 for the 15% of respondents who reported a cohabitation experience with a different partner prior to marriage. We included a self-reported drinking behavior with a mean index of three drinking items: (a) frequency of alcohol use, (b) frequency of binge drinking, and (c) frequency of drunkenness.

Our models also included a number of family background variables. We included a dummy variable, coded 1 for the 26% of respondents who reported that their parents or other adult caregivers had slapped, hit, or kicked them as a child. We also included two measures taken from the Wave I in-home survey. Parental education captured the education of the resident parent with the highest education, coded 1 if either parent completed a college degree or higher and 0 otherwise, and we examined the Wave I household roster to determine whether respondents had lived in a household with both biological parents when they were adolescents. Forty-three percent of our sample had lived in families that were not intact at the time of the first adolescent survey.

Husbands' characteristics—We constructed several spousal characteristics from wives' reported relationship details. It is important to note that we controlled for spousal victimization, on the basis of women's reports of their own violence against their husbands. This not only allowed us to test whether the effect of wives' resources varied with the mutuality of marital violence but also helped to account for potential selection effects associated with wives' violence. For example, women with a propensity toward violence may be more likely to get victimized by their husbands and enter unstable marriages that result in divorce. The measure of husbands' victimization was coded the same as wives' victimization.

We also constructed measures of husbands' age, race/ethnicity, and education. These measures are all coded using the same scales as the wives' counterparts.

Couple characteristics—We included three couple-level characteristics potentially related to wives' resources, victimization, and/or divorce. Children in the marriage was coded 1 for wives who reported a completed pregnancy in the marriage. We also controlled for marital duration, calculated as the difference between the Wave III marriage start date and the Wave III interview date. Finally, we controlled for total household income, converted to a \$10,000 metric to reduce decimal places in reported coefficients.

Analysis

To examine the influence of victimization and women's resources on risk of divorce between the Wave III and Wave IV interview dates, we used a series of hazard models, which are ideal for working with censored observations (Cox, 1972). The 664 married women in our study who remained married at Wave IV were right-censored, and we addressed this issue with the Cox (1972) proportional hazard model. This class of models makes no assumption about the exact shape of the baseline hazard (Allison, 1995). These models do assume, however, that the shape of the hazard is consistent across individuals and proportional over time. A nonsignificant chi-square test of the Schoenfeld (1982) residuals confirmed that we did not violate the proportionality assumption. Finally, we note that the exponentiated coefficients from the Cox regression, which take the form of hazard ratios, are interpreted in much the same way as exponentiated logistic regression coefficients; that is, a hazard ratio over 1.0 suggests an increasing risk of divorce for a 1-unit increase in the

independent variable at any given month, whereas a hazard ratio under 1.0 suggests a similarly decreasing risk.

Our modeling strategy required that we restructure the data from an individual-based data set to a time-based data set, in which each observation refers to the unit of time (i.e., months) and each woman contributes multiple records. Women were considered at risk for divorce at each monthly interval that they remained married. On average, the married women in our sample were observed for 37 months. Our final analytic sample consisted of 61,011 person-month observations.

Before estimating multivariate Cox models with controls, we estimated reduced-form models using varying measures of wives' resources (i.e., education, full-time employment, earnings, and proportional earnings). We then estimated full models with only the significant investment measures. Following the multivariate models, we present results from sensitivity analyses of victimization seriousness, mutual victimization, men's divorce, and marital dissatisfaction. All models were estimated in STATA version 11 using the SVY commands, which adjust regression coefficients and standard errors for survey design effects.

Results

We first estimated reduced-form, survey-adjusted event history models of divorce that included partner victimization, measures of women's resources (i.e., education, full-time employment, earnings, and proportional earnings), and interactions between victimization and the resource measures. The primary goal of these analyses was to compare the various financial resource measures. The results of these regressions are presented in Table 2. Consistent with the educational gradient in divorce, we found a strong and significant negative main effect of education on divorce (Model 1). We also found, consistent with our social exchange hypothesis, that the negative association between education and divorce was stronger in marriages that involved high levels of abuse. A similar pattern of main and interaction effects was observed for wives' proportional earnings: The negative association between high proportional income and divorce was weaker when husbands were abusive. These statistical interactions were not observed for employment or independent earnings. Independent earnings, however, did have a significant negative main effect on divorce. We included proportional earnings (along with education) in the fully specified models to determine whether its effects remain with controls.

Four multivariate models of determinants of women's divorce are presented in Table 3. Model 1 includes main effects of the respondents' characteristics. Models 2 and 3 sequentially introduce interactions between victimization and education and proportional earnings. Model 4 is a fully specified model that includes both interaction terms and spousal and couple characteristics.

In Model 1, we observed the expected negative association of women's education with divorce. Net of other covariates, the hazard of divorce is approximately 60% lower for women with a college degree than for women without a college degree (odds ratio: $e^{-.86} = 0.42$). The effect of proportional earnings is negative — the expected direction — but it is not significant. Victimization also had the expected negative effect, but it was statistically significant only with a one-tailed test ($t = 1.81, p = .07$). Consistent with prior research, we found that younger married women were more likely than their older peers to get divorced (Bumpass, Castro Martin, & Sweet, 1991; Heaton, 2002; Teachman, 2002). Although the coefficient estimates were in the theoretically expected directions, we did not find evidence

that cohabitation, parental separation, heavy drinking, or religiosity had independent associations with divorce.

Model 2 included the interaction between women's education and marital victimization. Consistent with our social exchange hypothesis, the association between education and divorce varied significantly by marital victimization. In Figure 1 we graphically portray the pattern by presenting the survival functions of divorce across two levels of women's educational status (no college vs. at least some college) and three values of victimization, holding all other covariates at their means. We coded victimization as high if the woman reported two of the violence items and low if she reported one. Note that because the figure shows the probability of remaining married, a high value on the y-axis indicates a low probability of divorce. It shows that women with college degrees were more likely to get divorced than less educated women, unless those marriages involved high levels of violence. Violence did not have much effect on the survival of marriages of women without a college education. When victimization was high, women with at least a college degree were over 10% more likely to get divorced within the 6-year period than women with less than a college degree. In nonviolent marriages (the modal category), however, college-educated women were approximately 20% less likely to get divorced than women without a college degree.

Model 3 added the interaction between women's proportional earnings and marital victimization to Model 1. Similar to the education interaction, and consistent with a social exchange argument, the interaction was positive and significant. The interaction is depicted in Figure 2, in which we plotted the survival functions of marriage by proportional earnings and victimization, holding all other covariates at their means. The figure shows that women who earned higher relative income were more likely to get divorced than those who earned lower income in marriages with high levels of violence. On the other hand, women's whose earnings were proportionally higher were less likely to get divorced in nonviolent marriages. This pattern is similar to the one observed with education.

In Model 4, we included both interaction terms and controlled for the characteristics of the husband and the couple. Both interaction coefficients remained significant, suggesting that at least some of the effects of wives' education and proportional income were independent of one another. The fact that the interactions were observed with controls for the husband's characteristics suggests that they cannot be attributed solely to assortative mating and selection processes. Neither were the proportional earnings findings explained by total household earnings. Finally, none of the husband or couple covariates reached significance at standard levels, suggesting that they were not predictive of divorce net of the wives' characteristics.

In sum, we found support for our primary hypotheses that women's education typically protects against divorce but that this association weakens in abusive marriages. In addition, we found a similar pattern for wives' proportional income, net of education. Together, these patterns suggest that educational and financial resources benefit women by increasing marital stability in nonabusive marriages and promoting divorce in abusive marriages.

Supplementary Analyses

In supplementary analyses, we examined whether (a) the interaction between women's education and marital violence depends on the seriousness of the violence, (b) this interaction depends on the mutuality of the violence, (c) similar patterns are observed for men, and (d) relationship dissatisfaction operates similarly to victimization or attenuates the victimization – divorce association. To address the first proposition, we disaggregated the violence index into its dichotomous components (i.e., verbal threats, hitting, and hurting)

and, in separate models, interacted each component of victimization with women's education. Across the three items, the interaction terms were consistently positive and significant (coefficients for education interaction: $\beta_{\text{education} \times \text{threats}} = .54, p < .01$; $\beta_{\text{education} \times \text{hit}} = .54, p < .05$ (two-tailed); $\beta_{\text{education} \times \text{hurts}} = .86, p < .01$). The effect of education on divorce did not appear to depend on the nature or seriousness of that violence.

To explore whether the association between women's education and divorce varies by the mutuality of the violence, we introduced a three-way interaction into the model (education \times victimization \times respondent's abuse of partner), along with the associated two-way interactions (education \times victimization, education \times abuse of partner, victimization \times abuse of partner). The three-way interaction was not significant, and the only significant two-way interaction was between education and victimization. This suggests that the association between education and divorce does not depend on whether the violence is unidirectional or mutual violence.

To compare the women's results to men's, we followed the same progression of event history models as shown in Table 3 for a sample of 492 married men. Neither education nor proportional earnings was significantly protective against men's divorce, net of other covariates. Husband's self-reported victimization, however, was a significant positive predictor of divorce, but interactions between husband's education and victimization and husband's proportional earnings and victimization were nonsignificant, suggesting that the association between men's resources and divorce are unaffected by marital violence.

In our final supplementary analyses, we replaced our measure of victimization with a measure of relationship dissatisfaction, operationalized by women's self-reports of how much they loved their husbands and how much they felt their husbands loved them (rated on a 4-point Likert scale, reverse coded). These analyses tested whether victimization and marital dissatisfaction were similarly associated with divorce. We also estimated a full model with all victimization and dissatisfaction interactions to test whether our victimization interactions were independent of marital dissatisfaction.

In Table 4 we present four models that incorporate relationship dissatisfaction. The results in in Model 1 suggest that the main effects of education and proportional earnings do not change much when dissatisfaction is included in place of victimization. Models 2 and 3 included interactions between dissatisfaction and the resource measures. The negative effects of education and proportional earnings on divorce were weaker for women who were dissatisfied with their marriages. Finally, in Model 4 we reintroduced victimization and estimated four interactions among dissatisfaction, victimization, and the two resource measures. The results suggest that the interaction between victimization and education remains a significant predictor of divorce net of the dissatisfaction interactions. The interaction between victimization and proportional earnings, on the other hand, was statistically nonsignificant. It appears that victimization effects for women with high proportional earnings may at least in part driven by dissatisfaction with their marriages. Note, however, that the contemporaneous measurement of dissatisfaction and victimization make it difficult to determine causal ordering. It may be that victimization causes dissatisfaction, which then interacts with proportional earnings to increase divorce risk. We are thus reluctant to draw causal conclusions about the association among dissatisfaction, victimization, and divorce.

In sum, our supplementary analyses suggested that the relationship between women's education and divorce does not depend on the seriousness of their victimization or whether the violence is mutual. In addition, we found no evidence of statistical interactions for men. Finally, we found that relationship dissatisfaction operated similarly to victimization in its

association with divorce but that the moderation of victimization by education persisted net of marital dissatisfaction and interactions of dissatisfaction with education and proportional earnings.

Discussion

In this study, we examined the association among women's education, divorce, and victimization in a nationally representative sample of young adult married women. Consistent with much recent research, we found a strong and significant negative main effect of women's educational attainment on the risk of divorce. This finding provides further evidence that educated women tend to have more stable marriages than uneducated women.

Our primary interest was whether the association between women's education and divorce is different in abusive marriages. On the basis of exchange theory, we hypothesized that education and its associated resources affect opportunities outside marriage. Opportunities outside marriage are salient for women in abusive marriages, and educated women are more likely than uneducated women to consider and act on those opportunities. We found strong support for this hypothesis. The negative effect of women's education on divorce was stronger in abusive marriages than in nonabusive marriages. The greater tendency for educated women to leave abusive marriages was substantial. For example, in highly violent marriages, women with a college degree had over a 10% greater probability of divorce in the observed time period than women without a college degree.

We also found that women's proportional earnings operated in much the same manner as education. In support of exchange theory, women who earned a high proportion of the total family income were more likely to get divorced if they were abused. On the other hand, the effect of women's proportional earnings on divorce was negative in nonabusive marriages. We did not find evidence that the effects of women's employment on divorce depended on the quality of marriage. We argued that employment is not a good indicator of women's prospects after marriage. Our findings for employment are consistent with Schoen et al.'s (2002) findings when they used a lagged measure of women's employment, but not when they used a contemporaneous employment measure. We suggest that the latter finding reflects the effects of divorce on employment.

Neither did we find evidence that the effects of women's absolute earnings on divorce depended on the quality of marriage. Our finding that proportional earnings, and not absolute earnings, affected divorce suggests that women were comparing their outside opportunities to their current circumstances. They were responding to whether they would be better off after divorce, not whether they would be able to get by financially. In other words, they were considering whether they would be able to live at the economic level, and therefore the lifestyle, to which they were accustomed. Our findings are consistent with Rogers's (2004) finding that the positive effect of wives' proportional earnings on subsequent divorce was greater in marriages perceived as unhappy.

Of interest is that the negative or insignificant main effects of employment, earnings, and proportional earnings on divorce contradict Becker's (1981) argument that women's market investments disrupt the family division of labor and increase the risk of divorce. Indeed, they suggest the opposite, that wives who are employed, have higher earnings, or earn more than their husbands are more likely to stay in their marriages than wives who are less financially secure. This certainly suggests that women's increased labor force participation and wages are not undermining young adult marriages.

These findings also suggest a paradoxical association between women's opportunities and divorce. On the one hand, women's education and proportional earnings reduce the likelihood of divorce in marriages in which women are not victimized. This is probably because these resources are correlated with a host of individual characteristics (e.g., wealth, cultural capital, physical attractiveness, health, IQ) that both select women into quality marriages and help maintain those marriages over time. On the other hand, should the relationship become contentious and violent, these resources create alternatives for women that then increase the likelihood of divorce. Understanding the exact mechanisms underlying these patterns is worth future research effort. One of the most interesting avenues is the implied reversal in a person's desire for outside opportunities. In happy marriages, spouses are less likely to be tempted by attractive alternatives, but the same alternatives may take center stage when the marriage sours. Exploring this transition with in-depth qualitative interviews appears a particularly fruitful avenue for understanding changes in relationship perceptions and preferences.

Our supplementary results, which focused on marital satisfaction, provide further evidence for exchange theory. They suggest that women were responding both to marital quality and to their husband's violence. Thus, women with economic resources were likely to leave unhappy marriages, regardless of whether they involve abuse. Similarly, degree-earning women were more likely than less educated women to leave violent marriages, regardless of their feelings of dissatisfaction. It could be that education has independent effects because it sensitizes women to abuse or raises their marital aspirations, and not because it increases the availability of outside opportunities. This could also explain why victimization did not moderate proportional earnings in models that included dissatisfaction and interactions between dissatisfaction and wives' resources.

Do educational and financial resources result in women leaving a relationship too soon? Perhaps some of the marriages that included abuse were happy marriages overall, or at least marriages that could have been repaired. If resources ease decisions to leave whenever times get tough, advantaged women may not persevere in potentially beneficial marriages. This is an empirical question that requires more fine-grained data to distinguish violence from minor disagreements and temporary periods of partner alienation. Such analyses would require long term and in-depth analyses of marriages.

Our findings have implications for trends in both marital violence and marital stability. As indicated earlier, there have been large increases in women's educational attainment in the last 30 years, and this trend has produced more stable marriages. Our finding that educated women are likely to leave violent marriages suggests that the increases in women's education should reduce rates of domestic violence. In a population with many educated women, violent marriages are likely to break up. In addition, because education is negatively related to marital violence (Sorenson, Upchurch, & Shen, 1996), the marriages of educated women are likely to be less violent. Overall, the effects of rising women's education include increased marital quality and an increased quantity of stable marriages. Consistent with these arguments, research has found a decline in intimate partner victimization over the past two decades. The U.S. Bureau of Justice Statistics (2007) reported that rates dropped by over 50% between 1993 and 2004, from 5.8 reported victimizations per 1,000 U.S. residents in 1993 to 2.6 per 1,000 residents in 2004. Future research should focus on how much of this decline may be attributed to changes in women's education and its relationship to marriage and divorce.

Following prior research in this area, our primary attention was on women, but the exchange principles described earlier could also apply to men's resources. We explored this possibility in our supplementary analyses and found no support: Husbands' education and proportional

income had no effects on divorce, regardless of whether the men were victimized. Future research should examine why the relationship among resources, marital quality, and divorce is different for men.

Our study benefits from its nationally representative sample of married young adults. Its limited age coverage (i.e., 6 young-adult years), however, means we are unable to speak to divorces that occur later in marriage or to marriages that occur later in life. We do not feel this is a strong limitation, however, because the age range of our sample covers the mean ages of first marriage for men (28.7) and women (26.5; (U.S. Census Bureau, 2011), and research suggests that divorce is most likely to occur within the first 7 years of marriage (Cherlin, 1981). Our sample thus covers the important demographic categories for understanding divorce correlates.

We interpreted our findings from a social exchange perspective, such that educated and proportionally higher earning wives are able to take advantage of alternatives and leave abusive marriages. It is possible, however, that our observed patterns reflect husbands' perceptions and decisions. Perhaps abusive men feel threatened by successful wives, which then increases divorce risk. Nonabusive men may not feel threatened and thus stay with successful women. Evidence that women who are dissatisfied with their marriages also are more likely to get divorced, regardless of their resources, argues against this possibility. We leave it to future research with more fine-grained measures to examine whether wives' educational and financial attainment affects husbands' divorce decisions.

As Amato (2010) noted in his recent review of divorce research, more studies should distinguish marital separation from divorce to understand whether the former's ambiguity is associated with the same or different predictors than divorce. Unfortunately, Add Health does not ask respondents about separation status or dates, making it impossible to replicate our event history analyses with separation as the outcome. However, the questionnaire does ask if a spouse is currently living with the respondent at the Wave IV survey date. In unlisted sensitivity analyses, we omitted 47 married women not living with their husbands from our estimated models and found virtually identical results. Although we did not directly estimate time to separation, these analyses suggest that the reported analyses of divorce are not driven by separation. Future research with better separation measures should compare the exchange hypothesis for both marital outcomes.

A final limitation is the small number of educated women in our sample who had violent marriages. This is a problem when using a representative sample, because rates of intimate partner violence are relatively low, particularly for educated women. A common method of generating a large sample of victimized women is to focus on women's shelters or domestic violence programs, but this method comes at the cost of selecting women who have already left their violent relationships, suffer from severe forms of abuse, and are likely less educated and more disadvantaged.

In sum, women who are educated and earning high incomes relative to their husbands are more likely than their counterparts to stay in good marriages and leave bad marriages. We cannot say whether these are optimal decisions, but they do appear to result in the women being relatively happier.

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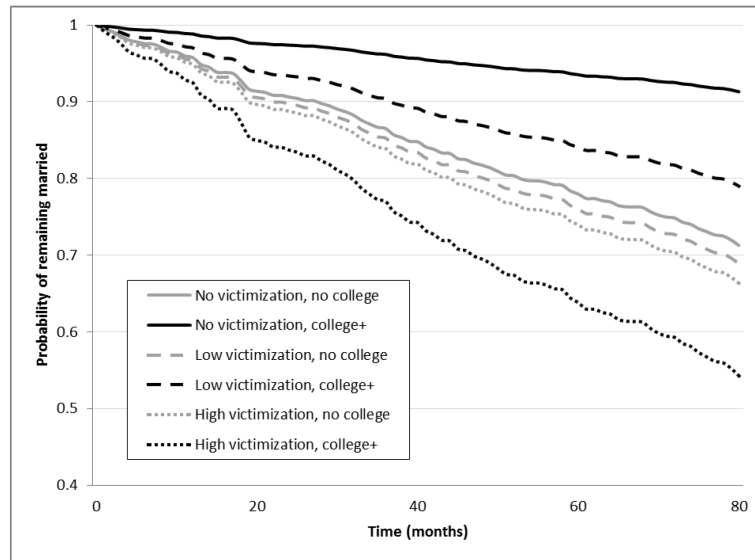


Figure 1.
Survival Function of Women's Marriage by Education and Victimization.

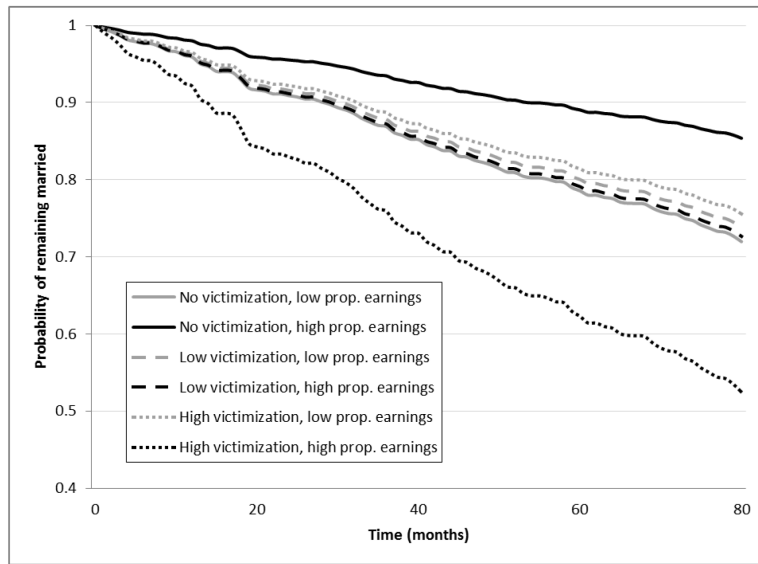


Figure 2. Survival Function of Women's Marriage by Proportional Earnings and Victimization.

Table 1

Variable Descriptions and Descriptive Statistics (N = 914 Married Women)

| Variable Name | Description | M | SD |
|---------------------------|---|-------|-------|
| Wives' characteristics | | | |
| Divorce | 0 = still married to partner, 1 = divorced from partner, measured at Wave 4 (W4) | .27 | .45 |
| Time to divorce | Number of months between Wave 3 (W3) interview date and divorce date among 250 divorced women. | 37.64 | 23.51 |
| Age | R's age, in years, at time of W3 survey | 22.46 | 1.61 |
| White | 0 = non-White, 1 = White | .78 | .42 |
| Black | 0 = non-Black, 1 = Black | .07 | .26 |
| Hispanic | 0 = Non-Hispanic, 1 = Hispanic | .12 | .33 |
| Other race | 0 = White, Black, or Hispanic, 1 = other race | .03 | .17 |
| Religiosity | R's frequency of religious attendance in 12 months prior to survey. Range: 0 = a few times or less to 3 = once a week or more. | 1.61 | 1.09 |
| Prior cohabitation | 0 = no cohabitation prior to current marriage, 1 = any cohabitation prior to current marriage | .15 | .36 |
| Heavy Drinking Scale | R's level of heavy drinking based on 3 items ($\alpha = .84$): how many days R drank alcohol, how many days R drank 5 or more drinks in a row, how many days R was drunk or very high on alcohol, during 12 months prior to survey. Range: 0 = none to 6 = every day or almost every day. | 0.80 | 0.93 |
| Parental physical abuse | 0 = no parental physical abuse, 1 = at least some parental physical abuse | .25 | .44 |
| Parental education | Education of resident parent with highest level of education. 0 = less than a college degree, 1 = college degree or more. | .27 | .45 |
| Parental separation | Family status measured from Wave 1. 0 = both biological parents in household, 1 = biological mother or father missing from household. | .42 | .50 |
| Victimization | Self-reported sum of 3 dichotomous items: (a) partner threatened with violence, pushed, shoved or threw something at R that could hurt; (b) partner slapped, hit or kicked R; and (c) R had an injury, such as a sprain, bruise, or cut because of a fight with partner, 12 months prior to survey. Range: 0 = none to 3 = all forms of violence. | 0.35 | 0.80 |
| Proportional earnings | Proportion of total household income accounted for by respondent's reported earnings (earnings divided by household income), ranges from 0-1. | .39 | .32 |
| Education (W4) | R's education, measured at W4. 0 = Less than a college degree, 1 = college degree or more | .22 | .42 |
| Full-time employment | Employment status at W3. 0 = unemployed or part time, 1 = employed full time | .49 | .51 |
| Husbands' characteristics | | | |
| Age | Spouse's age, in years, at time of W3 survey | 25.39 | 4.16 |
| White | 0 = non-White, 1 = White | .75 | .44 |
| Black | 0 = non-Black, 1 = Black | .08 | .27 |

| Variable Name | Description | <i>M</i> | <i>SD</i> |
|------------------------------|---|----------|-----------|
| Hispanic | 0 = <i>non-Hispanic</i> , 1 = <i>Hispanic</i> | .13 | .34 |
| Other race | 0 = <i>White, Black, or Hispanic</i> , 1 = <i>other race</i> | .04 | .21 |
| Education | Partner's education, measured at W3. 0 = <i>less than a college degree</i> , 1 = <i>college degree or more</i> . | .14 | .35 |
| Victimization | Self-reported sum of 3 dichotomous items: (a) threatened partner with violence, pushed, shoved or threw something at partner that could hurt; (b) slapped, hit, or kicked partner; and (c) gave partner an injury because of a fight, 12 months prior to survey. Range: 0 = <i>none</i> to 3 = <i>all forms</i> . | 0.46 | 0.83 |
| Couple characteristics | | | |
| Child in marriage | 0 = <i>no children</i> , 1 = <i>at least one child</i> | .60 | .50 |
| Marital duration at W3 | Duration of marriage (in years) at W3 | 2.01 | 1.66 |
| Total household income | Self-reported income from all sources in the past calendar year (including respondent report of spouse income, in tens of thousands, range: 0 – 40). | 3.17 | 2.18 |
| Relationship dissatisfaction | Standardized summed scale of 2 items at W3: (a) how much respondent loves partner and (b) how much partner loves respondent (reverse coded). | -0.11 | 1.69 |

Note: All values are population weighted.

Table 2
 Hazard Models of Victimization, Resources, and Wives' Divorce (N = 60,780 Person-Observations; 914 Persons)

| Variable | Model 1: Education | | | Model 2: Earnings | | | Model 3: Employment | | | Model 4: Proportional Earnings | | |
|--------------------------|--------------------|------|------|-------------------|------|------|---------------------|------|------|--------------------------------|------|------|
| | B | SE | HR | B | SE | HR | B | SE | HR | B | SE | HR |
| Victimization | 0.18* | 0.09 | 1.20 | 0.27** | 0.09 | 1.31 | 0.14 | 0.12 | 1.15 | 0.01 | 0.12 | 1.01 |
| Resource measure | -1.45** | 0.45 | 0.24 | -0.15* | 0.07 | 0.86 | 0.00 | 0.20 | 1.00 | -0.73* | 0.28 | 0.48 |
| Victimization × resource | 0.77* | 0.32 | 2.16 | 0.00 | 0.07 | 1.00 | 0.26 | 0.16 | 1.30 | 0.78** | 0.25 | 2.18 |

Note: HR = hazard ratio.

* $p < .05$.

** $p < .01$.

Table 3
 Hazard Models Predicting Divorce Among Married Women (N = 60,780 Person-Observations; 914 Persons)

| Variables | Model 1 | | Model 2 | | Model 3 | | Model 4 | | |
|--------------------------------|---------|------|---------|------|---------|------|---------|------|------|
| | B | SE | B | SE | B | SE | B | SE | HR |
| Wives' characteristics | | | | | | | | | |
| Age | -0.14* | 0.05 | -0.13* | 0.05 | -0.15** | 0.06 | -0.14* | 0.06 | 0.87 |
| Black | 0.38 | 0.32 | 0.43 | 0.31 | 0.24 | 0.36 | 0.69 | 0.81 | 1.99 |
| Hispanic | -0.14 | 0.27 | -0.14 | 0.26 | -0.15 | 0.27 | -0.62 | 0.46 | 0.54 |
| Other race/ethnicity | 0.32 | 0.41 | 0.32 | 0.41 | 0.34 | 0.41 | 0.15 | 0.50 | 1.16 |
| Religiosity | -0.08 | 0.08 | -0.08 | 0.08 | -0.07 | 0.08 | -0.06 | 0.08 | 0.95 |
| Prior cohabitation | 0.35 | 0.27 | 0.34 | 0.27 | 0.37 | 0.27 | 0.37 | 0.27 | 1.45 |
| Heavy drinking | 0.09 | 0.08 | 0.10 | 0.08 | 0.12 | 0.08 | 0.13 | 0.09 | 1.14 |
| Parental physical abuse | -0.15 | 0.18 | -0.22 | 0.19 | -0.16 | 0.19 | -0.32 | 0.21 | 0.72 |
| Parental education | 0.06 | 0.20 | 0.11 | 0.20 | 0.04 | 0.20 | 0.11 | 0.19 | 1.11 |
| Parental separation | 0.17 | 0.16 | 0.21 | 0.16 | 0.19 | 0.15 | 0.23 | 0.16 | 1.26 |
| Victimization | 0.16 | 0.09 | 0.10 | 0.09 | -0.08 | 0.11 | -0.20 | 0.13 | 0.81 |
| Proportional earnings | -0.35 | 0.28 | -0.41 | 0.29 | -0.73* | 0.31 | -0.65* | 0.31 | 0.52 |
| Education | -0.86* | 0.37 | -1.32** | 0.48 | -0.87* | 0.36 | -1.12* | 0.48 | 0.33 |
| Victimization × prop. earnings | | | | | 0.78** | 0.24 | 0.72 | 0.26 | 2.06 |
| Victimization × education | | | 0.86** | 0.30 | | | 0.68* | 0.30 | 1.98 |
| Husbands' characteristics | | | | | | | | | |
| Age | | | | | | | 0.00 | 0.02 | 1.00 |
| Black | | | | | | | -0.46 | 0.79 | 0.63 |
| Hispanic | | | | | | | 0.61 | 0.46 | 1.84 |
| Other | | | | | | | 0.40 | 0.47 | 1.49 |
| Education | | | | | | | -0.28 | 0.38 | 0.76 |
| Victimization | | | | | | | 0.10 | 0.12 | 1.11 |
| Couple characteristics | | | | | | | | | |
| Child in marriage | | | | | | | 0.02 | 0.22 | 1.02 |

| Variables | Model 1 | | Model 2 | | Model 3 | | Model 4 | | HR |
|--------------------------------|----------|----|----------|----|----------|----|----------|------|------|
| | B | SE | B | SE | B | SE | B | SE | |
| Marital duration | | | | | | | 0.05 | 0.06 | 1.05 |
| Total household income (\$10k) | | | | | | | 0.00 | 0.04 | 1.00 |
| <i>F</i> | 4.72**** | | 3.87**** | | 4.27**** | | 2.67**** | | |
| <i>df</i> | 116 | | 115 | | 115 | | 105 | | |

Note: White is reference category for wives' and husbands' race. HR = hazard ratio; prop. = proportional.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4

Hazard Models Predicting Divorce Among Married Women, Including Relationship Dissatisfaction (N = 60,780 Person-Observations, 914 Persons)

| Variables | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|----------------------------------|---------|------|----------|------|---------|------|---------|------|
| | B | SE | B | SE | B | SE | B | SE |
| Wives' characteristics | | | | | | | | |
| Age | -0.15** | 0.05 | -0.15*** | 0.05 | -0.14* | 0.05 | -0.11 | 0.06 |
| Black | 0.29 | 0.36 | 0.26 | 0.37 | 0.46 | 0.31 | 0.72 | 0.84 |
| Hispanic | -0.10 | 0.28 | -0.12 | 0.27 | -0.09 | 0.28 | -0.70 | 0.48 |
| Other race/ethnicity | 0.44 | 0.38 | 0.46 | 0.38 | 0.40 | 0.39 | 0.10 | 0.48 |
| Religiosity | -0.10 | 0.08 | -0.12 | 0.08 | -0.08 | 0.08 | -0.07 | 0.08 |
| Prior cohabitation | 0.32 | 0.28 | 0.31 | 0.26 | 0.34 | 0.27 | 0.28 | 0.26 |
| Heavy drinking | 0.09 | 0.08 | 0.10 | 0.08 | 0.08 | 0.08 | 0.10 | 0.09 |
| Parental physical abuse | -0.18 | 0.19 | -0.21 | 0.18 | -0.18 | 0.18 | -0.30 | 0.20 |
| Parental education | 0.07 | 0.20 | 0.11 | 0.20 | 0.04 | 0.19 | 0.12 | 0.19 |
| Parental separation | 0.15 | 0.16 | 0.14 | 0.16 | 0.12 | 0.15 | 0.15 | 0.16 |
| Relationship dissatisfaction | 0.10 | 0.05 | 0.09 | 0.06 | -0.05 | 0.07 | -0.03 | 0.08 |
| Victimization | | | | | | | -0.15 | 0.14 |
| Proportional earnings | -0.36 | 0.28 | -0.41 | 0.29 | -0.46 | 0.27 | -0.62 | 0.32 |
| Education | -0.85* | 0.37 | -0.85* | 0.35 | -0.87* | 0.36 | -1.10* | 0.47 |
| Dissatisfaction × prop. earnings | | | | | 0.36*** | 0.09 | 0.27* | 0.12 |
| Dissatisfaction × Education | | | 0.47*** | 0.11 | | | 0.35*** | 0.09 |
| Victimization × prop. earnings | | | | | | | 0.44 | 0.26 |
| Victimization × education | | | | | | | 0.61* | 0.28 |
| Husbands' characteristics | | | | | | | | |
| Age | | | | | | | 0.00 | 0.02 |
| Black | | | | | | | -0.46 | 0.82 |
| Hispanic | | | | | | | 0.67 | 0.47 |
| Other | | | | | | | 0.42 | 0.45 |

| Variables | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|--------------------------------|---------|----|---------|----|----------|----|---------|------|
| | B | SE | B | SE | B | SE | B | SE |
| Education | | | | | | | -0.24 | 0.38 |
| Victimization | | | | | | | 0.09 | 0.13 |
| Couple characteristics | | | | | | | | |
| Child in marriage | | | | | | | 0.04 | 0.22 |
| Marital duration | | | | | | | 0.01 | 0.06 |
| Total household income (\$10K) | | | | | | | 0.00 | 0.04 |
| <i>F</i> | 3.89*** | | 5.94*** | | 11.02*** | | 8.57*** | |
| <i>df</i> | 116 | | 115 | | 115 | | 102 | |

Note: White is reference category for wives' and husbands' race. *HR* = hazard ratio; prop. = proportional.

* $p < .05$.

** $p < .01$.

*** $p < .001$.