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## Intimate Partner Violence in the Great Recession

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## Intimate Partner Violence in the Great Recession

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**Abstract** In the United States, the Great Recession was marked by severe negative shocks to labor market conditions. In this study, we combine longitudinal data from the Fragile Families and Child Wellbeing Study with U.S. Bureau of Labor Statistics data on local area unemployment rates to examine the relationship between adverse labor market conditions and mothers' experiences of abusive behavior between 2001 and 2010. Unemployment and economic hardship at the household level were positively related to abusive behavior. Further, rapid increases in the unemployment rate increased men's controlling behavior toward romantic partners even after we adjust for unemployment and economic distress at the household level. We interpret these findings as demonstrating that the uncertainty and anticipatory anxiety that go along with sudden macroeconomic downturns have negative effects on relationship quality, above and beyond the effects of job loss and material hardship.

**Keywords** Intimate partner violence · Recession · Relationship quality

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## Introduction

Social scientists have a long-standing interest in the effects of economic crises on family dynamics. Seminal studies of the Great Depression by Komarovsky (1940), Bakke (1940), Elder (1974/1998), and Liker and Elder (1983) carefully detailed the pernicious effects of unemployment, lost income, and economic hardship on marital conflict and quality. Decades later, Conger and his colleagues extended this work by documenting how income loss and economic hardship generated by the Farm Crisis of the 1980s led to feelings of economic strain and marital conflict (e.g., Conger et al. 1990, 1992). Together, these two bodies of work gave rise to the “family stress model,” which argues that unemployment and economic hardship lead to economic stress and strain, which in turn lead to marital conflict and ultimately to a decline in parenting quality and child well-being.

Approximately 75 years after the Great Depression and 25 years after the Farm Crisis, we examine the effects of the Great Recession on an extreme measure of relationship quality: domestic abuse. Drawing on longitudinal data from the Fragile Families and Child Wellbeing Study combined with U.S. Bureau of Labor Statistics (BLS) data on local area unemployment rates, we assess how household economic stress and macroeconomic conditions during the first decade of the twenty-first century, including the dramatic shock of the Great Recession, affected men’s violent and controlling behavior toward their wives, cohabiting partners, and romantic partners. Intimate partner violence (IPV) is a serious concern in and of itself. IPV in families with children poses additional concerns because children may also be victims of violence, suffer trauma from witnessing parental violence, and/or experience parental neglect as a consequence of violence (Appel and Holden 1998; Nicklas and MacKenzie 2013).

Our analysis advances prior work in three ways. First, we adopt a more rigorous approach to causal inference, using individual fixed-effects models and exogenous measures of macroeconomic conditions to identify the effect of the Great Recession on abusive behavior. Second, we consider how the pace of change in unemployment rates affects abuse. Prior research has typically measured recession effects using the level of unemployment rather than the speed at which labor market conditions are deteriorating. This distinction is subtle but important. Third, our data come from a large probability sample, which allows us to generalize our results to a known population: mothers who gave birth in large U.S. cities at the turn of the twenty-first century. Our sample is diverse in terms of race/ethnicity, education, and marital status, representing an improvement over the small purposive samples of (primarily) white married couples used in most prior work on economic crises.

We find that rapid increases in unemployment rates during the Great Recession were associated with increases in men’s abusive behavior and that this association persisted even after we controlled for individual- and household-level experiences of unemployment and material hardship. We interpret these findings as indicating that economic uncertainty plays an important role in relationship dynamics, above and beyond its direct effects on job loss and material hardship.

## Background

The Centers for Disease Control (CDC) defines IPV as behaviors perpetrated by a person's spouse or romantic partner that include physical violence, sexual violence, or psychological/emotional violence, including behavior designed to control a victim's movements, interpersonal contacts, and access to financial resources (Saltzman et al. 2002).

Prior empirical research has typically measured the prevalence of particular or grouped abusive behaviors over the past year or over a lifetime. Estimates vary depending on the range of behaviors examined, the population studied, and the period covered. A review article focusing on physical violence found annual prevalence rates of violence against women in the range of 10 % to 15 % (Wilt and Olson 1996). Using a more inclusive definition, encompassing physical, sexual, and emotional abuse, a study of women seeking primary health care in South Carolina found that 20 % of women reported being the victims of IPV in their current or recent relationship (Coker et al. 2000). In contrast, a study of more socioeconomically advantaged women in Washington and Idaho found prevalence rates of about 8 % (Thompson et al. 2006). National estimates of the prevalence of IPV against women range from 8 % to 15 % annually, with estimates of lifetime prevalence being much higher and varying depending on the exact definition of IPV used (Moracco et al. 2007; Thompson et al. 2006; Wilt and Olson 1996).

## Theoretical Perspectives on Economic Conditions and IPV

In theory, sharp economic downturns could increase abusive behavior through two distinct causal pathways. In the first, the direct experience of job loss and material hardship increases abusive behavior. Spouses, who might otherwise have kept negative behaviors in check, may buckle under the stress of challenging economic circumstances, allowing abusive behavior to emerge. Notably, research on the Great Depression and the Farm Crisis focused on the effects of male unemployment on family functioning, whereas the recent Great Recession took place in an era in which rates of female labor force participation were far higher.

Theoretically, male unemployment may lead to more abuse not only by increasing stress but also by undermining men's feelings of control and economic security, creating an urge to exert greater control over their partners (Melzer 2002). In contrast, women's employment has uncertain effects on their risk of being the victim of abuse. On the one hand, women's employment adds to a couple's collective resources and provides some insurance against male job loss, thus buffering some against the economic stresses of recession. Further, if women have their own sources of income and the opportunity for social ties through employment, they may have more power in their relationships and a credible threat of leaving if conditions became unfavorable, which could provide protection from abuse (Aizer 2010). On the other hand, women's employment could put them at greater risk of abuse by contributing to their partner's feelings of loss of control, powerlessness, and failure to live up to the male breadwinner norm (Fox et al. 2002; Jewkes 2002; MacMillan and Gartner 1999; Stark 2007).

In the second pathway, declining macroeconomic conditions increase abusive behavior by increasing uncertainty and fear among a broad segment of the population.

Although this pathway is largely neglected in previous research on macroeconomic conditions and family functioning, both theory and laboratory experiments in psychology and behavioral economics have suggested that anticipation and fear of negative outcomes have powerful effects on behavior (Baumeister et al. 2007). Caplin and Leahy (2001) described how feelings of uncertainty and anxiety shape decision-making, and Loewenstein et al. (2001) argued that situations of economic uncertainty generate anticipatory emotions that affect people's behavior. Research has also suggested that a loss of control in one domain, such as economic circumstances, may manifest in greater efforts at control in another domain, such as intimate relationships (Stets 1995; but see Umberson et al. 1998). Together, this literature provides a strong rationale for why the uncertainty engendered by adverse macroeconomic conditions might affect intimate partner relationships, not only among those who directly experience job loss, but also among those who anticipate the loss of a job or economic assets or who experience other anxieties related to deteriorating macroeconomic conditions.

### **Prior Empirical Research**

A large and varied literature has investigated the direct effects of job instability and material hardship on IPV. Research on the family stress model documents a link between economic crises and marital quality (e.g., Conger et al. 1992; Elder 1974/1998; Liker and Elder 1983). More recently, researchers have found that at the individual level, economic vulnerability, employment instability, and perceptions of economic strain are associated with domestic abuse (Benson et al. 2003; Fox and Benson 2006), as are husband's unemployment (Fox et al. 2002), low income (Cunradi et al. 2002), and economic hardship (Golden et al. 2013; Hardie and Lucas 2010).

The relationship between women's employment and IPV is more complex. Indeed, prior work has focused primarily on the ways in which abuse impedes women's ability to obtain or maintain employment rather than on how women's employment influences abuse (Brush 2011; Tolman and Wang 2005). One national study that examined the risk factors for IPV found that employed women are less likely to be physically and sexually abused than unemployed women but are no less likely to be the victims of chronic emotional abuse (Coker et al. 2000). A Canadian study found that the effects of women's employment on IPV were contingent on male employment; women's employment was protective when their male partners were also employed but increased the risk of abuse when their partners were not employed (MacMillan and Gartner 1999). Recent research found that increases in women's wages relative to men's were associated with reductions in women's abuse, consistent with power/bargaining theory (Aizer 2010).

Unfortunately, as Conger et al. (2010) recently noted, nearly all the prior work on economic hardship and marital quality (and, we would note, much of the work on IPV) suffers from problems of omitted variable bias. The individual-level measures of unemployment, low income, and economic hardship used in the studies of the Great Depression and the Farm Crisis—as well as in studies of IPV during normal business cycles—are likely to be associated with a host of other difficult-to-observe, individual-level characteristics that also lead to low-quality unions and IPV. Prior research, therefore, does not tell us whether economic strain causes IPV, or whether an omitted

variable—such as impulsivity, aggression, or anti-social tendencies—is the root cause of both economic strain and IPV. Studies using individual-level measures may also suffer from problems with reverse causality because violent behavior may cause economic strain (Johnson and Ferraro 2000; Lloyd 1997).

An alternative approach to identifying the effect of economic hardship on relationship quality is to use area-level unemployment rates as the primary explanatory variable. This approach is attractive because aggregate-level measures are plausibly exogenous to individual characteristics (insofar as individual-level relationship quality is unlikely to cause area-level unemployment and other omitted individual-level characteristics are unlikely to cause shocks to area-level unemployment and changes in relationship quality), and thus do not have the same problems of reverse causality or omitted variables bias that plague individual-level measures. This approach follows a long line of literature examining the relationship between area-level unemployment and individual-level outcomes (i.e., Giuliano and Spilimbergo 2014; Hoynes 2002; Ruhm 2000), as well as a more recent set of studies examining the effects of the Great Recession on families and well-being (i.e., Cohen 2014; Latif 2014; Pilkauskas et al. 2012).

In addition, aggregate measures, such as the unemployment rate, have the virtue of measuring both the likelihood that a given individual is unemployed as well as any broader effects that a high-unemployment environment may have. Only one study that we know of (Peterson 2011) used macroeconomic indicators to estimate the effect of economic conditions on IPV—specifically, physical assault. Using data for the period 1993–2005, this study found a weak association between national unemployment rates and individual reports of physical IPV. Extrapolating from his estimates, Peterson (2011) predicted that the Great Recession would not increase IPV. Although Peterson's study is an improvement over past studies in terms of minimizing bias resulting from omitted variables and reverse causality, his estimates are based on fluctuations in national-level unemployment between 1993 and 2005, which were small compared with the changes in conditions that occurred during the Great Recession; the study also ignored variation across localities in economic conditions. Several other studies have examined how neighborhood conditions are related to IPV. Merging neighborhood-level data obtained from the U.S. Census with micro-level data on violence obtained from individual-level surveys, several researchers have found a positive association between neighborhood disadvantage (measured by unemployment rates, poverty, or other indicators) and IPV (Benson et al. 2003; Fox and Benson 2006; Golden et al. 2013; O'Campo et al. 1995; Van Wyk et al. 2003).

Another limitation of the literature is that most studies of economic conditions and IPV have not taken a serious look at the role of economic uncertainty and the potential effects of uncertainty on the broader population. Yet, evidence suggests that uncertainty may influence relationship quality. For example, economic uncertainty, as measured by individual's perceptions of the risk of job loss, is associated with lower relationship satisfaction (Voydanoff 1990). Recent research on the Great Recession also points to an important role for economic uncertainty in shaping parenting behaviors (Brooks-Gunn et al. 2013; Lee et al. 2013). Lee et al. (2013), for example, found that large increases in local area unemployment, over and above levels of unemployment, increase harsh parenting. Similarly, Brooks-Gunn et al. (2013) found that declines in consumer

confidence (measured by the Michigan Consumer Sentiment Index) are associated with increases in harsh parenting. Although in principle, the area-level studies of IPV, such as those by Peterson (2011) and Fox, Benson, and colleagues (e.g., Benson et al. 2003; Fox and Benson 2006), could capture similar uncertainty effects, these studies either lack the variation in economic conditions induced by times of pronounced recession or they employ point-in-time measures of economic conditions and therefore do not measure the kind of economic shocks that are likely to induce feelings of uncertainty.

One potential strategy for measuring uncertainty is to examine the pace of change in economic conditions (Kahneman et al. 1991). Although high levels of unemployment are a good proxy for economic hardship in the population, individuals may become psychologically accustomed to prevailing conditions (Frederick and Loewenstein 1999) and come to see them as normal. Measuring the pace of change in economic conditions, therefore, may be a better measure of the uncertainty felt by individuals in dynamic environments than is measuring the level of economic conditions. This approach has been usefully employed in research on the effects of neighborhood change on racially motivated crime (Green et al. 1998) as well as in work on the effects of changes in unemployment on fertility (Sobotka et al. 2011) and on parenting during the Great Recession (Lee et al. 2013).

An additional limitation of the literature is that studies that examine periods of economic recession do not use representative samples, and studies that use representative samples do not examine periods of recession. For example, studies focusing on the Great Depression or the Farm Crisis deal with large macroeconomic shocks, but their samples are small and confined to specific geographic areas (such as rural Iowa counties in the case of Conger's studies), homogenous populations (such as the nearly all-white samples used in Liker and Elder's (1983) seminal work), and married couples. In contrast, the studies employing broadly representative samples (e.g., Benson et al. 2003; Hardie and Lucas 2010; Peterson 2011) are limited in terms of the range of macroeconomic fluctuations they cover.

### **IPV in the Great Recession**

In this study, we draw on rich, longitudinal data on a heterogeneous sample of women from the Fragile Families and Child Wellbeing Study to investigate the effects of the Great Recession on IPV. Using individual- and household-level data on hardship and unemployment, we estimate a set of lagged dependent variable (LDV) and individual fixed-effects models that examine the effects of these measures on IPV. We also merge individual-level data on abusive behavior with exogenous information on unemployment rates for the metropolitan statistical area (MSA) in which respondents resided. We use these data, which cover the years leading up to and including the Great Recession, to estimate how exposure to poor economic conditions and rapid changes in conditions shape the incidence of IPV. Our approach also allows us to consider both direct and indirect effects of declining economic conditions on IPV. We use household-level measures of material hardship and unemployment and local unemployment rates to capture the relationship between the personal experience of economic distress and IPV. Then, we use measures of changes or shocks in unemployment to capture the effects of economic uncertainty on abusive behavior from intimate partners, controlling for individual-level experiences of hardship and unemployment.



## Data and Methods

The Fragile Families and Child Wellbeing Study (FFS) is a longitudinal study of births in large American cities between 1998 and 2000. Births were sampled using a three-stage sampling design in which cities were sampled from among cities with populations of 200,000 or more people, hospitals were sampled within cities, and births were sampled within hospitals. The FFS interviewed the parents of 4,898 focal children at the time of the child's birth and followed these families over time, seeking to reinterview the mother and father of the focal child at 1, 3, 5, and 9 years after the birth (Reichman et al. 2001).

The FFS is well suited for estimating the effect of the recession on IPV.<sup>1</sup> Detailed questions about IPV were asked at each of the post-birth interviews, including questions about physical violence as well as questions about controlling behavior. The FFS also asked questions about economic hardship and parents' labor force participation, which can be used to construct individual- and household-level measures of unemployment and economic well-being. In addition, the design of the sample and the fielding schedule created substantial temporal and spatial heterogeneity in the economic conditions to which couples were exposed. Mothers were sampled in 20 American cities, and survey waves were staggered by city. Within each city, the timing of the interviews varied across respondents by several months. Importantly, the fifth and most recent wave of data collection was conducted between 2007 and 2010, coinciding closely with the years of the Great Recession, which lasted from December 2007 to June 2009 (National Bureau of Economic Research n.d.). Rather than simply inferring the effect of the Great Recession by extrapolating from associations measured during earlier macroeconomic downturns that were much less severe (e.g., the recession of the early 2000s), these data allow us to include behaviors that occurred during the Great Recession as well as during the recession of 2001.

We focus on a longer period (2001–2010) than the official period of recession (2007–2009) in order to exploit the greater variation in economic conditions that comes with including nonrecession years and to increase power and precision. However, we speak directly to the question of the effects of the Great Recession, as distinct from general business cycle effects, by using the parameters from our model to predict outcomes based on the actual economic conditions observed during the Great Recession. We also include a model specification that allows economic conditions to have nonlinear effects on IPV. This modeling choice allows us to capture the extent to which the dramatic negative shocks seen in select cities in 2002 and in all cities during

<sup>1</sup> Prior research on economic conditions and IPV has often made use of the National Survey of Families and Households (NSFH) or the Project on Human Development in Chicago Neighborhoods (PHDCN), which were last fielded in 2001–2003 and 2000–2001, respectively; neither can be used to directly assess the effects of the Great Recession. Other studies, such as the General Social Survey (GSS), which was fielded during the Great Recession, do not measure IPV. Three surveys are, however, well suited to examining the effect of the Great Recession on IPV: the FFS, the National Longitudinal Survey of Youth-97 (NLSY-97), and National Longitudinal Study of Adolescent Health (Add Health) conducted interviews during the Great Recession and collected information on IPV in cohabiting and marital unions. However, the Add Health and the NLSY-97 studies are limited by their cohort design, including only young adults aged 24–28 (NLSY-97) or 24–32 (Add Health) at the time of the 2008 interviews in their samples. In contrast, the FFS sample consists of parents of a birth cohort and captures a wide range of parental ages. Further, the FFS sample focus on parents adds to the social significance of the results because children are directly affected.



the Great Recession had a different effect than the more modest economic fluctuations that occurred throughout the decade.

Our main analytic sample includes all mothers. Our dependent variables are whether a mother reports being in a violent or controlling romantic relationship at the time of the interview. We focus on all mothers rather than limiting the sample to mothers in a romantic partnership. Restricting the sample to the latter would have ignored one pathway through which the recession may have affected the risk of IPV: namely, by reducing the proportion of women in a romantic partnership. Prior research has indicated that IPV reduces union formation and increases union dissolution (Anderson 2010; Bowlus and Seitz 2006; Cherlin et al. 2004; Kingston-Riechers 2001) and that mothers exposed to worse economic conditions during the Great Recession were significantly less likely to be married or cohabiting (Schneider et al. *forthcoming*).<sup>2</sup>

In a review article on marital quality, Glenn (1990) cautioned against restricting the sample to those in unions. He reasoned that low-quality relationships are at high risk of dissolution; therefore, analyses of predictors of relationship quality based on intact couples will be biased because low-quality, unstable relationships are systematically excluded from the sample. By focusing on all mothers, we avoid this potential bias. We also conduct separate analyses using samples of (1) mothers in romantic partnerships, (2) mothers in coresidential partnerships, and (3) mothers in stable coresidential partnerships. In all cases, the results are consistent with those based on the main sample (estimates discussed in the Results section and presented in Table 8 in the appendix).

### **Violent and Controlling Behavior**

Our dependent variables are constructed from six items designed to measure whether the mother of the focal child was subject to any violent or controlling behavior by her current coresidential partner. Specifically, mothers were asked to “think about how [husband/partner] behaves towards you. For each statement I read, please tell me how often he behaves this way” (response categories were “often,” “sometimes,” or “never”):

1. He tries to keep you from seeing or talking with your friends or family.
2. He tries to prevent you from going to work or school.
3. He withholds money, makes you ask for money, or takes your money.
4. He slaps or kicks you.
5. He hits you with a fist or an object that could hurt you.
6. He tries to make you have sex or do sexual things you don’t want to do.

Although the reference period in the question is not explicit, the phrasing emphasizes current behavior. Some of these items were drawn from the broader set of

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<sup>2</sup> We conducted a set of supplementary analyses to examine whether experiencing IPV at time  $t$  for women in romantic relationships was associated with the dissolution of that romantic relationship by time  $t + 1$  in the FFS. We also examined whether experiencing IPV at time  $t$  for women in romantic relationships was associated with being in any romantic relationship at time  $t + 1$ . In accord with the prior literature, we found that IPV exposure was associated with dissolution by the next wave and with being in a new romantic relationship at the next wave.

questions that make up the Conflict Tactics Scales, which are well validated and have been employed widely in research on IPV (Straus 1979; Straus et al. 2006/1980). Other items were drawn from Lloyd (1997), who derived measures from her interviews with domestic violence victims. These items have been used in similar abbreviated form in prior research (e.g., Charles and Perreira 2007; Golden et al. 2013; Isacco et al. 2010; Nicklas and Mackenzie 2013). There are two key advantages to our survey-based approach to measuring IPV. First, rather than focusing only on physical aggression, the survey items allow us to examine controlling behavior, which has ill effects of its own (Stark 2007) and which is also a frequent precursor to physical violence (O’Leary 1999). Second, although self-reported measures may be susceptible to underreporting, we expect such bias to be far less extreme than the bias that comes with using administrative records, such as arrests or calls to police (Rennison and Welchans 2000).

The six questions on violent and controlling behavior were asked at each follow-up survey, and we use them to create three dichotomous dependent variables. The first, “violent or controlling behavior,” is coded as 1 if mothers report that a spouse, cohabiting partner, or noncoresidential romantic partner “sometimes” or “often” engages in one or more of the six violent or controlling behaviors. The second, “controlling behavior,” is coded as 1 if mothers report that a spouse, cohabiting partner, or noncoresidential romantic partner sometimes or often “tries to keep you from seeing or talking with your friends or family,” “tries to prevent you from going to work or school,” or “withholds money, makes you ask for money, or takes your money.” The third, “violent behavior,” is coded as 1 if mothers report that a spouse, cohabiting partner, or noncoresidential romantic partner sometimes or often “slaps or kicks you,” or “hits you with a fist or an object that could hurt you.” For each of the three dependent variables, mothers who reported that spouses or partners “never” engaged in the behaviors in question are coded as 0 for that survey wave. Mothers who report not having a romantic partner are coded as 0.<sup>3</sup>

Our dependent variables measure abuse reported by mothers who are currently in a romantic relationship, and their report is about the current partner. Ideally, we would also be able to examine how economic conditions affected IPV among women who were recently in a relationship but who were single at the time of interview. However, two data limitations prevent us from performing this analysis. First, although data on the experience of abuse just prior to breakup are collected from mothers at the Wave 2–4 interviews of the survey, they are not available for Wave 5, which is the survey wave that captures experiences during the Great Recession. Second, in Waves 2–4, the questions about violence are asked only of women who ended their relationships with the focal child’s father, and not of women who had recently ended relationships with new partners. Additionally, we lack information about abuse by nonromantic partners. For example, a mother may experience abuse by a former partner (e.g., child’s father) with whom she has contact but no romantic relationship.

Thus, we do not address the question of whether high unemployment rates increase the likelihood that a mother will experience violent or controlling behavior. Rather, we

<sup>3</sup> We include the item asking women about whether their current partner “tries to make you have sex or do sexual things you don’t want to do” in our combined measure of controlling or violent behavior. However, we do not use this item in constructing the two narrow measures of controlling behavior and of violent behavior. We chose not to use this measure in constructing those subcategory outcomes because the wording is too vague to distinguish between verbal efforts at sexual control versus violent sexual behavior.

ask whether economic distress and exposure to high unemployment rates increase the likelihood that a mother will be in a violent or controlling romantic relationship at the time of our interview.

### Individual Economic Distress

We construct several measures of individual economic distress, including economic hardship, couple unemployment, and individual unemployment. “Any economic hardship” is coded as 1 if the mother reported that she experienced within the last 12 months at least one or more material hardships from a list of 10 items asked at each survey wave.<sup>4</sup> We assessed the robustness of the results to the use of an additive measure of economic hardship (summing each item and creating a variable that ranged in value from 0 to 10). This measure performed very similarly to the dichotomous indicator. We use mothers’ reports of economic hardship because men who are the fathers of the focal child are interviewed.

“Couple unemployment” is coded as 1 if either the mother or her spouse/partner was unemployed and looking for work at the time of the survey. For mothers in some type of romantic relationship (married, cohabiting, or dating), the unemployment variable is coded as 1 if either the mother or partner is unemployed; for mothers without a partner, unemployment is coded as 1 if the mother is unemployed.

We also construct separate measures of mother’s and father’s/partner’s labor force participation, again using mother’s reports for consistency. Male partners are coded as unemployed, out of the labor force, or currently working. Here, we follow BLS convention in coding respondents as being out of the labor force if they are not working for pay and not currently looking for work. In the FFS, this means that respondents who are in jail/prison, enrolled in school, stay-at-home parents, on disability, in a halfway house or rehabilitation, or retired are coded as being out of the labor force. This measure can be constructed only for women who have a current romantic partner. Thus, we employ this measure only when using the sample of women currently in romantic relationships. We construct an analogous measure of mother’s own employment status based on her report.

### Area-Level Economic Conditions

Economic conditions varied considerably over the 20 cities in which FFS mothers resided and over the period 2001–2010, when the interviews were conducted. We exploit this spatial and temporal variation in economic conditions by using information on mother’s place of residence at baseline to merge measures of MSA unemployment rates to each mother’s record. To assess robustness to selective residential mobility, we

<sup>4</sup> The 10 items, asked in regard to experiences over the 12 months prior to interview, are as follows: (1) received free food or meals, (2) ever hungry because could not afford food, (3) could not pay full amount of rent or mortgage, (4) moved in with other people because of financial problems, (5) evicted from your home or apartment for not paying the rent or mortgage, (6) stayed in a shelter, abandoned building, an automobile, or other place not meant for housing, (7) could not pay the full amount of electricity, gas, or oil bill, (8) had gas or electric service turned off or heating oil not delivered because of nonpayment, (9) had telephone disconnected because of nonpayment, and (10) needed medical care but did not see a doctor or go to the hospital because of the cost. The second item was not asked at Wave 3, and so the value is carried forward from Wave 2.

also estimate models limited to mothers who remained in their baseline city (results reported in Table 8 in the appendix).

We measure the unemployment rate using data from the BLS Local Area Unemployment Statistics (BLS LAUS). The BLS LAUS data provide the best available information on subnational unemployment rates. BLS LAUS unemployment rates are estimated from models using data from the Current Population Survey (CPS), the Current Employment Statistics (CES) program, and state unemployment insurance systems. We employ the average rate of unemployment over the 12 months prior to interview in the mother's MSA. This captures the prevailing level of unemployment in the FFS cities over a reasonable reference period for the questions on violent and controlling behavior and serves as a proxy for economic hardship within these cities.

To measure economic uncertainty, we construct a measure of the 12-month percentage change in unemployment in mothers' MSAs, where positive values indicate worsening conditions and negative values indicate improving conditions. This specification allows us to test the idea that the pace of change in economic conditions affects a mother's risk of experiencing violent or controlling behavior from her spouse or partner. We look at the percentage change in unemployment rather than the absolute change because we believe that the former is a better indicator of a shock than the latter. Although respondents in cities with consistently high unemployment may benchmark their expectations and economic sentiments to that prevailing rate, shocks to unemployment—as operationalized by large relative changes in the rate over the year—may be more disruptive of expectations and more likely to shape economic sentiments and feelings of insecurity (i.e., Lee et al. 2013).

## Control Variables

We account for a range of background characteristics of mothers in our models of the relationship between individual, household, and city economic conditions and IPV. Our general approach is to control for mother's baseline characteristics in order to avoid including endogenous regressors in the model.

Race/ethnicity is associated with both the risk of unemployment and household economic hardship as well as with the risk of IPV victimization (Moracco et al. 2007). We adjust for mother's race/ethnicity with dichotomous indicators for black, non-Hispanic; Hispanic; and other, non-Hispanic (versus white, non-Hispanic). Education serves as a protective factor for household economic distress and for IPV victimization (Moracco et al. 2007; Thompson et al. 2006). We include a set of dichotomous indicators for mother's educational attainment, measured as high school diploma/GED, some college, or a BA or more education (vs. less than high school). We also include an indicator for nativity, an indicator for mother's own family background (living with both of her parents at age 15), and a time-varying measure of marital status.

Another possible confounding factor is household composition. If some mothers are more likely than others to have additional children or young children in the household, and if these factors are also associated with relationship status and IPV (Sorenson et al. 1996), then such aspects of household composition may confound the association between a worsening unemployment rate and the risk of experiencing IPV. We draw on data from the household roster, completed at each interview, to construct a measure of the presence of children under age 2 in the household and the number of minors in

the household. We present simple descriptive statistics for all of the control variables in Table 6 in the appendix.

## Analytic Approach

We used pooled data from Waves 3–5 of the survey and analyze person-wave observations. In the interest of balanced samples, and because questions about violence were not asked until Wave 2, we present models that analyze violent and controlling behavior from Waves 3–5. For example, Wave 2 data are used to provide lagged measures of violent and controlling behavior for the Wave 3 outcomes. In the lagged model as well as the other two models, the indicators for hardship and unemployment are measured contemporaneously with our outcome variables. For example, for data collected at Wave 5, hardship and unemployment are measured between 2007 and 2010—the period of the Great Recession.

There were 4,898 mothers in the sample at baseline, and so there are a total of 14,694 person-wave observations possible over Waves 3–5. However, because of attrition, 4,231 mothers participated in the Wave 3 interview, 4,139 participated in the Wave 4 interview and 3,515 participated in the Wave 5 interview. With this restriction, a total of 11,885 person-wave observations are available. We limit the sample to mothers who responded to consecutive survey waves and who therefore have data on the dependent variable at two consecutive waves. That requirement allows us to maintain a consistent sample for comparing estimates from the simple logistic regression models and the LDV models. This restriction reduces the sample size by 1,072 cases to 10,813 cases. An additional 240 person-wave observations were missing data on our controls. In total, we are missing data on 1,229 person-wave observations for an analysis sample of 10,656 for the models using area-level rates and changes in unemployment. The sample size is slightly smaller (10,584) for the analyses of violent or controlling behavior that use individual- and household-level measures of economic distress because of modest missing data on those predictors.<sup>5</sup>

Because mothers are clustered within cities, we adjust for the nonindependence of observations by using cluster-robust standard errors implemented with the Stata command *cluster* (*clustervar*).<sup>6</sup> Our models include fixed effects for city and for interview wave. An alternative approach would be to use hierarchical linear models or multilevel models to estimate the relationship between area-level economic conditions and violent or controlling behavior. We do not do this because our primary concern is not with explaining city-level variation in abusive behavior, but rather with correcting for problems of clustering when examining how a city-level predictor is related to our

<sup>5</sup> We compared the respondents with complete data that we include in our analysis with respondents who are deleted because of item missingness on the control variables. In general, we found few differences between the two groups and no significant differences in terms of IPV; household hardship; the share black, white, or Hispanic; postsecondary education; household composition; family background; or marital status. The only significant differences were on couple unemployment (21 % vs. 17 %), age (25 vs. 26), being of “other, non-Hispanic” race/ethnicity (3.5 % vs. 1.4 %), having less than a high school education (33 % vs. 24 %), and having a high school diploma (31 % vs. 38 %).

<sup>6</sup> Because mothers are also observed as many as three times, observations are also clustered within respondents. Adjusting for clustering by mother rather than city returns much smaller standard errors. Correcting for clustering on two dimensions (person and city) does not substantially change the standard errors from those estimated with clustering only for city.

individual-level outcome and adjusting for potential confounding resulting from unobserved features of city and survey wave. For this purpose, fixed effects with cluster robust standard errors are appropriate (Arceneaux and Nickerson 2009; Primo et al. 2007). In separate analyses (not shown), we ran a set of models that included random effects for cities, and the results were consistent with those presented here.

We begin by regressing violent and controlling behavior outcomes on individual- and household-level measures of economic distress. We do so first by using the measures of couple unemployment and household hardship and by employing the analysis sample that includes single (unpartnered) mothers in the risk set. We next examine whether mother's and father's/partner's employment status have different effects on mother's risk of experiencing IPV. Here, we limit the analysis sample to mothers in a romantic relationship because single women cannot, by definition, have unemployed partners.

Next, we estimate models that regress outcomes on local-level unemployment rates. We also incorporate a measure of the pace of unemployment change (the percentage change) that captures the shock of the Great Recession. Finally, we estimate models that include both the individual-level measures of economic distress and the area-level measures of unemployment. In analyses using area-level measures of unemployment, macroeconomic measures should be exogenous with respect to individual-level characteristics. As discussed in more detail in the Results section, we also assess the sensitivity of the results to selective migration and attrition. Here, too, the results from our main model are robust.

## Results

### Descriptive Results

Figure 1 shows trends in unemployment for the 20 FFS cities from 1999 through 2010. The left panel of the figure displays the average unemployment rate over the prior year, and the right panel of the figure displays the percentage change in the unemployment rate over the past year. The figure demonstrates how the staggered timing of interviews and the distribution of respondents across cities created considerable spatial and temporal variation in unemployment rates over the survey period.

In all cities, the unemployment rate was relatively low at the time of the focal child's birth (1998–2000). In cities where births were sampled in 1998, the economy continued to be strong at the time of the second wave of data collection (1999). In cities where births were sampled in 2000, however, unemployment rates had increased markedly by the time of the second interview (2001) as a result of the recession brought on by the crash in dot-com stocks. In most cities, unemployment increased between the second and third interviews, when children were about age 3. In the early cities, the economy worsened between Waves 3 and 4, when children were age 5, whereas in the later cities it improved. In the early cities, Wave 5, when children were age 9, coincided with the beginning of the Great Recession; in the later cities, Wave 5 took place a year or more after the onset of the Great Recession.

On average and across all survey waves, a sizable minority of mothers reported being in abusive relationships. Pooling across the three waves, 10.4 % of mothers

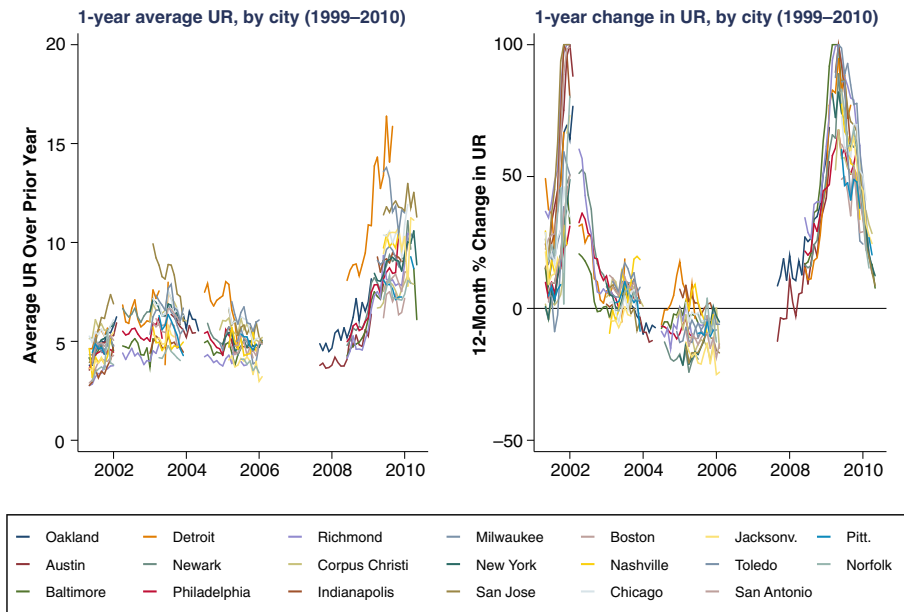


Fig. 1 MSA unemployment rate (UR) levels and changes (1999–2010)

reported being in violent or controlling relationships; a similar share, 9.5 %, reported being in controlling relationships; and a much smaller share, 1 %, reported being in violent relationships. Clearly, controlling behavior is much more common than violent behavior. We also note that the prevalence of abusive behavior declines somewhat across waves, which aligns with both the expectation that aging and relationship maturation reduce abusive behavior and the expectation that violent relationships are more likely to dissolve. These simple tabulations do not suggest a spike in abusive behavior at Wave 5, which coincides with the Great Recession.

### Individual- and Household-Level Economic Distress and Violent or Controlling Behavior

In Table 1, we present results for the association between individual- and household-level economic distress and our three measures of abusive behavior: a combined measure of violent and controlling behavior, a measure of controlling behavior only, and measure of violent behavior only. For each outcome, Model 1 presents estimates from a simple logistic regression specification, Model 2 shows estimates from a LDV specification, and Model 3 provides estimates from an individual fixed-effects model. In all models, the measures of economic hardship and couple unemployment are entered at the same time. We present the full set of regression coefficients in Table 7 in the appendix.

Focusing first on economic hardship, Model 1 shows that hardship is associated with men’s violent and controlling behavior toward their wives or partners. Mothers who report one or more hardships are more likely to report being subjected to violent or controlling behavior. We estimate the size of these effects by comparing the predicted



**Table 1** Unemployment and household economic hardship on the risk of exposure to a (1) violent or controlling, (2) controlling, or (3) violent romantic relationship

	IPV (violence/control)			Controlling Behavior			Violent Behavior		
	Logit (1)	Lagged DV (2)	Individual FE (3)	Logit (1)	Lagged DV (2)	Individual FE (3)	Logit (1)	Lagged DV (2)	Individual FE (3)
Any Economic Hardship	0.838***	0.768***	0.447***	0.795***	0.725***	0.404**	1.455***	1.384***	1.321***
Any Unemployed Parent <sup>a</sup>	0.306**	0.315**	0.353**	0.323**	0.334***	0.404**	0.178	0.124	-0.183
Wave Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
City Fixed Effects	✓	✓		✓	✓		✓	✓	

*Notes:* Estimates from logistic regression, logistic regression with an LDV, and logistic regression with individual fixed effects are shown (Waves 3–5). The measure of “Any Unemployed Parent” equals 1 if mother is not in a romantic relationship and is unemployed or if mother is in a romantic relationship and either she or father/new partner is unemployed; variable equals 0 if mother is not romantically involved and is not unemployed or if mother is romantically involved and neither she nor father/new partner is unemployed. Models 1 and 2 include time-invariant and time-varying controls. Model 3 includes only time-varying controls. Controls are for mother’s education at baseline, mother’s race/ethnicity, mother’s age, mother’s immigration status, presence of household children at baseline, mother’s own biological parents coresident when she was age 15, mother’s marital status, presence of children under the age of 2 in the household, and number of children in the household.

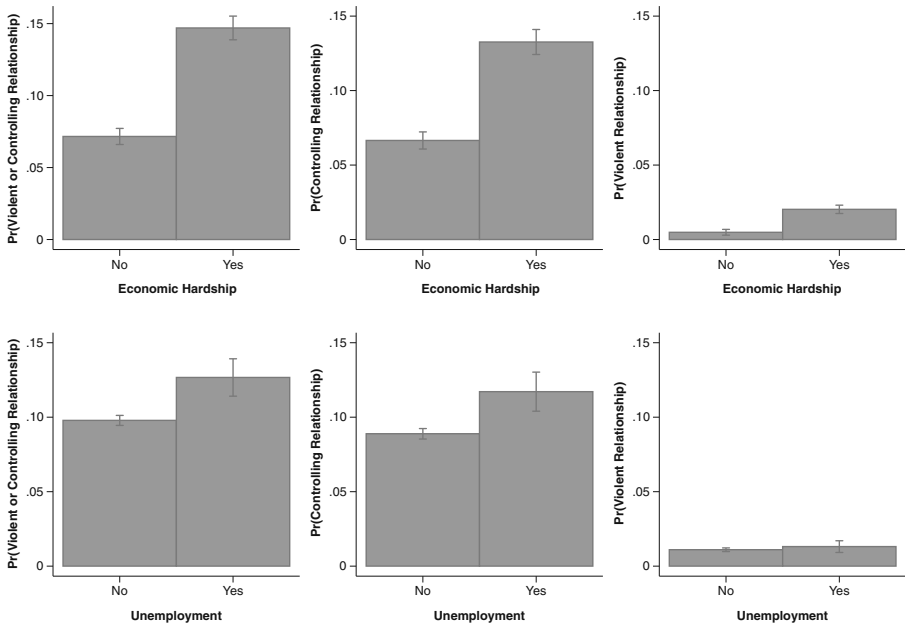
<sup>a</sup> Variable equals 1 if mother is not coresiding and is unemployed, or if mother is coresiding and either she or father/new partner is unemployed. Variable equals 0 if mother is not coresiding and is not unemployed, or if mother is coresiding and neither she nor father/new partner is unemployed.

\*\*  $p < .01$ ; \*\*\*  $p < .001$

probability of being in an abusive relationship for mothers who do and those who do not experience material hardship. Mothers who experience economic hardship are approximately twice as likely to be the victims of violent or controlling behavior (15 % vs. 7 %) or controlling behavior (13 % vs. 7 %), and are much more likely to experience violent behavior (2 % vs. 0.05 %) than mothers who do not experience hardship. These estimates are plotted in Fig. 2.

Model 2 uses a LDV specification, which controls for father’s or partner’s abusive behavior at the prior survey wave. Model 2 shows that, net of past abusive behavior, hardship remains associated with men’s abusive behavior. This specification yields results that are very similar to those obtained from the simple logistic regression. The control for prior abuse partially accounts for unobserved factors that may cause both abuse and hardship, but it does not eliminate the possibility that the relationship is spurious or results from reverse causality.

The third specification includes a person fixed effect, which adjusts for all time-invariant characteristics of mothers. This specification does not control for changing circumstances that may cause both hardship and abuse, such as a change in partners. It also does not address the fact that abusive behavior may be causing economic hardship. Including the person fixed effect reduces the magnitude of the association between economic hardship and controlling behavior, but it does not alter the association with violent behavior. The reduction in the magnitude of the hardship coefficient suggests that time-invariant omitted variables contribute to the relationship in the previous specifications. However, a statistically significant relationship between hardship and controlling behavior remains, even after we adjust for time-invariant characteristics of mothers.



**Fig. 2** Predicted share of married mothers in violent or controlling unions, controlling unions, and violent unions by economic hardship and unemployment. The figure is based on the estimates from Model 1 of Table 1

We next examine the relationship between couple unemployment and violent and/or controlling behavior. Examining predicted probabilities, mothers exposed to couple unemployment are more likely to experience violent or controlling behavior (13 % vs. 10 %) or controlling behavior (12 % vs. 9 %) than those not exposed. These estimates are plotted in Fig. 2. The association is statistically significant in all model specifications for abusive behavior and controlling behavior, but we find no significant relationship between couple unemployment and violent behavior on its own. The fixed-effect specification does not reduce the magnitude of the relationship between couple unemployment and controlling behavior.

The estimates presented thus far are based on all mothers, including those who are not currently in a romantic relationship. This construction allows us to examine the overall risk that a mother is in a violent or controlling romantic relationship. However, this approach does not allow us to separately examine how men's and women's unemployment differentially affects the risk of abuse. In Table 2, we reestimate the models on the sample of women in romantic unions now including separate indicators for men's and women's labor force status.

As before, we see significant effects of economic hardship on violent/controlling behavior, on controlling behavior, and on violent behavior alone. Male partner's unemployment is also significantly related to abusive behavior and to controlling behavior, but not to violent behavior. The estimated coefficients for male partner's unemployment are also approximately 50 % larger than the coefficients for mother's own unemployment in the models that include controlling behavior in the outcome. However, none of the estimates of male- and female-specific employment status are significant in the individual fixed-effects models.

We also examined a measure of couple unemployment that distinguished among couples in which neither, one, or both partners were unemployed (results available upon request). We find significant associations between the risk of abuse and one-partner being unemployed (vs. none) and both partners being unemployed (vs. none). This result appears in the simple logistic regression and the LDV model. Although the coefficients are of the same magnitude in the individual fixed-effects models, they are not statistically significant.

Neither hardship nor unemployment is a perfect indicator of economic distress brought on by the Recession. Some mothers experience material hardship or unemployment even in a strong labor market because of lack of human capital or other barriers to work. Nevertheless, these measures are commonly used in previous research and are the best options we have to measure economic distress at the individual level. Interestingly, hardship is associated with men's violent behavior, whereas couple unemployment is not. One plausible interpretation is that men's violent behavior causes material hardship by causing stress and disorder in the household, which undermine a mother's ability to manage household bills and finances. In subsequent analyses, we show that violent behavior is not related to other measures of economic distress. We also show that controlling behavior is more responsive to economic conditions than violent behavior.

### **Area-Level Unemployment Rates and Violent or Controlling Behavior**

We next shift our focus from individual-level to area-level measures of economic distress, using the sample of mothers and the same three model specifications as used in Table 1: a simple logistic regression model (M1), a LDV model (M2), and a person

**Table 2** Couple unemployment and household economic hardship on the risk of being in a romantic union that is (1) violent/controlling, (2) controlling, or (3) violent

	IPV (Violence/control)			Controlling Behavior			Violent Behavior		
	Logit (1)	Lagged DV (2)	Individual FE (3)	Logit (1)	Lagged DV (2)	Individual FE (3)	Logit (1)	Lagged DV (2)	Individual FE (3)
Any Economic Hardship	0.923***	0.826***	0.533***	0.871***	0.771***	0.467**	1.443***	1.358***	1.733***
Male Partner's Labor Force Status									
Employed (ref.)	—	—	—	—	—	—	—	—	—
Unemployed	0.364*	0.360*	0.200	0.380*	0.387*	0.237	0.784	0.742	1.230†
Out of labor force	0.212*	0.148	-0.058	0.198†	0.124	-0.053	0.668*	0.726*	0.154
Female Respondent's Labor Force Status									
Employed (ref.)	—	—	—	—	—	—	—	—	—
Unemployed	0.202†	0.191	0.233	0.194	0.195	0.287	-0.155	-0.301	-1.168†
Out of Labor Force	0.226**	0.190*	0.059	0.181†	0.140	0.043	0.287	0.239	-0.389
Wave Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
City Fixed Effects	✓	✓	—	✓	✓	—	✓	✓	—

*Notes:* Estimates from logistic regression, logistic regression with an LDV, and logistic regression with individual fixed effects are shown (Waves 3–5). Models 1 and 2 include time-invariant and time-varying controls. Model 3 includes only time-varying controls. Controls are for mother's education at baseline, mother's race/ethnicity, mother's age, mother's immigration status, presence of household children at baseline, mother's own biological parents coresident when she was age 15, mother's marital status, presence of children under the age of 2 in the household, and number of children in the household.

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

fixed-effects model (M3). Because we now focus on area-level predictors, the LDV and fixed-effects controls are not as necessary as they were in the previous models. However, we use this specification to maintain parallelism across our analyses.

Our results are reported in Table 8 in the appendix. We find no relationship between unemployment rates averaged over the past year and men's abusive behavior toward wives or partners. The unemployment rate at the local level is an aggregate of individual-level unemployment in an MSA and can be thought of as an exogenous indicator of the likelihood that an individual in that locality is unemployed.<sup>7</sup> It is noteworthy, then, that this measure is not related to men's abusive behavior. One interpretation of this null result is that the previously documented relationship between individual-level economic distress and abuse is spurious, driven by unobserved time-varying factors or reverse causality. Another is that these area-level unemployment rates correspond to a somewhat different population (all 18- to 64-year-olds in the labor force) than our study sample of mothers and their partners, who are mostly in their 20s, 30s, and 40s, and who may or may not be in the labor force. Unemployment rates are then a somewhat crude proxy for individual unemployment among our sample.

Our individual-level measure of unemployment pertains to employment status in the week prior to interview. When we use area-level unemployment rates at the time of interview (row 2)—rather than averaged over the prior year (row 1)—or at three months prior to interview or longer lags (rows 3–6), the point estimate of unemployment is directionally consistent with theory. That said, the coefficient is not statistically significant. In sum, there is at most a very weak relationship between the average unemployment rate over the past year and mother's risk of experiencing violent or controlling behavior in her coresidential relationship.

### **The Pace of Change in Unemployment and Violent or Controlling Behavior**

The analyses reported thus far mirror the approaches commonly used in prior research. However, neither the individual-level nor the area-level unemployment rate approach takes account of the dramatic changes in economic conditions that occurred during the Great Recession. To capture this shock, our next set of analyses includes a measure of the percentage change in the local unemployment rate over the year prior to interview. During the Great Recession, many localities experienced a doubling of the unemployment rate, and we expect this rapid deterioration in labor market conditions to affect feelings of economic uncertainty and thus also, perhaps, behavior in relationships.

Consistent with this idea, Table 3 shows a statistically significant relationship between the percentage change in the unemployment rate and men's violent or controlling behavior. Large increases in unemployment are positively related to mother's risk of experiencing violent or controlling behavior, or controlling behavior on its own. Violent behavior, however, is not associated with large increases in the unemployment rate. We use the estimates from Model 1 to calculate the predicted probability that mothers experience violent or controlling behavior or just controlling behavior across the observed range of change in

<sup>7</sup> The coefficients shown in Table 8 in the appendix are reduced form estimates of the relationship between MSA-level unemployment rates and our three outcomes. Although area-level unemployment rates could in theory be used to instrument for individual-level unemployment, IV models are not advised when no significant relationship is present in the reduced form (Angrist and Krueger 2001).

**Table 3** Area-level unemployment rate (UR) levels and percentage changes on the risk of being in a romantic union that is (1) violent/controlling, (2) controlling, or (3) violent

	IPV (violence/control)			Controlling Behavior			Violent Behavior		
	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
UR Level (average over prior year)	-0.029	-0.038	-0.042	-0.019	-0.027	-0.029	-0.027	-0.022	-0.079
UR Change (12-month change)	0.401*	0.454*	0.453*	0.406*	0.472*	0.482*	-0.496	-0.551	-0.531
Wave Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
City Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Notes:* Estimates from logistic regression, logistic regression with an LDV, and logistic regression with individual fixed effects are shown (Waves 3–5). Models 1 and 2 include time-invariant and time-varying controls. Model 3 includes only time-varying controls. Controls are for mother’s education at baseline, mother’s race/ethnicity, mother’s age, mother’s immigration status, presence of household children at baseline, mother’s own biological parents coresident when she was age 15, mother’s marital status, presence of children under the age of 2 in the household, and number of children in the household.

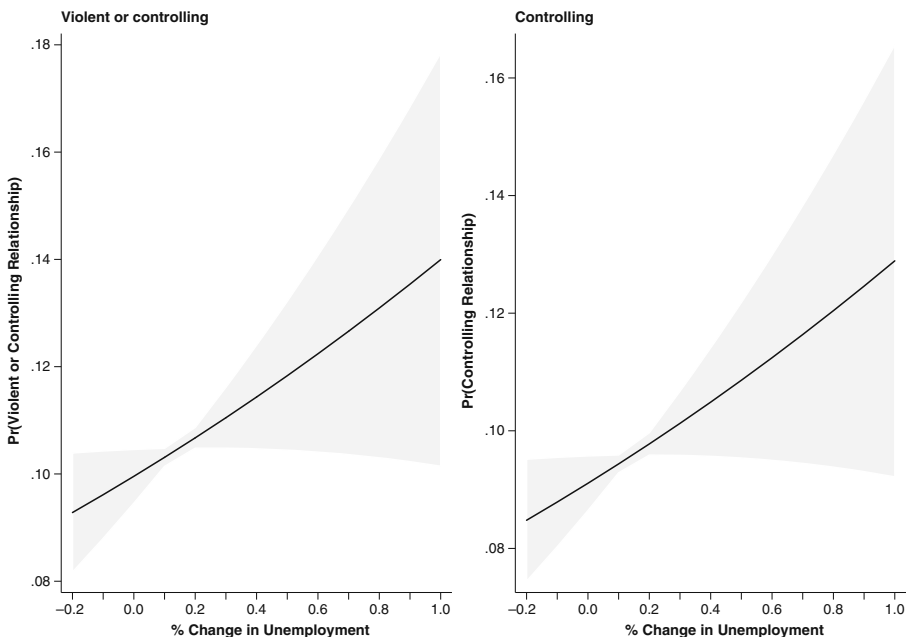
\**p* < .05

unemployment. When the unemployment rate worsens by 50 % over the prior 12 months, the prevalence of abuse rises from 10 % to 12 %; when the unemployment rate doubles within a year, abuse rises to 14 %. These estimates are plotted in Fig. 3.

Parallel with our prior results, we also estimate a LDV specification and an individual fixed-effects specification. In both models, the percentage change in unemployment continues to be significantly associated with the risk of violent or controlling behavior and with the risk of controlling behavior, but has no relationship with only violent behavior. The magnitude of the coefficients changes little across the models, providing some support for the contention that the area-level measures are exogenous to individual characteristics.

We also conduct separate analyses in which we restrict our sample to mothers currently in a romantic relationship, mothers currently living with a partner, and mothers who have been in stable coresidential relationships across consecutive waves. The results, presented in Table 9 in the appendix, are quite similar to those discussed earlier. Notably, the results are somewhat weaker when we limit our sample to mothers in romantic relationships, and the results are somewhat stronger when we focus on women in coresidential romantic relationships.

We investigate potential nonlinearities in the relationship between the shock of recession and abusive behavior by disaggregating the percentage change in unemployment into categories. The results reported in Table 4 show that the increase in abusive behavior is driven by large macroeconomic shocks; increases of 50 % or more in the unemployment rate over the past year are associated with increases in men's controlling behavior. The effect of such large shocks is also significantly different from improving unemployment rates, or modestly worsening rates of 5 % to 25 % (although only at the  $p < .10$  level). More modest increases in the unemployment rate are not significantly



**Fig. 3** Predicted share of married mothers in violent or controlling unions, controlling unions, and violent unions by percentage change in unemployment. The figure is based on the estimates from Model 1 in Table 3



**Table 4** Area-level unemployment rate (UR) levels and nonlinear measure of percentage changes on the risk of being in a romantic union that is (1) violent/controlling, (2) controlling, or (3) violent

	IPV (violence/control)			Controlling Behavior			Violent Behavior		
	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
UR Level (average over prior year)	-0.017	-0.022	-0.014	-0.009	-0.013	-0.002	-0.026	-0.017	-0.061
UR Change (12-month change)									
Improving (<-0.05)	0.001	0.060	0.202	-0.053	0.002	0.144	0.198	0.272	0.460
Stable (-0.05-0.05)	—	—	—	—	—	—	—	—	—
Worsening (0.05-0.25)	0.115	0.132	0.131	0.131	0.150	0.164	-0.437	-0.442	-0.773 <sup>†</sup>
Worsening (0.25-0.50)	0.237 <sup>†</sup>	0.233 <sup>†</sup>	0.183	0.256	0.277 <sup>†</sup>	0.254	-0.129	-0.158	-0.118
Worst (≥0.50)	0.303 <sup>†</sup>	0.353 <sup>†</sup>	0.403*	0.291	0.344 <sup>†</sup>	0.407*	-0.390	-0.395	-0.520
Wave Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
City Fixed Effects	✓	✓		✓	✓		✓	✓	

*Notes:* Estimates from logistic regression, logistic regression with an LDV, and logistic regression with individual fixed effects are shown (Waves 3–5). Models 1 and 2 include time-invariant and time-varying controls. Model 3 includes only time-varying controls. Controls are for mother's education at baseline, mother's race/ethnicity, mother's age, mother's immigration status, presence of household children at baseline, mother's own biological parents coresident when she was age 15, mother's marital status, presence of children under the age of 2 in the household, and number of children in the household.

<sup>†</sup>  $p < .10$ ; \*  $p < .05$

associated with abusive behavior. As before, the percentage change in unemployment is not related to physical violence. These results support the idea that rapidly deteriorating macroeconomic changes can lead to behavioral change. Table 5 is consistent with the idea that whereas small perturbations in the economy can be taken in stride, large and rapid changes lead to more controlling behavior toward mothers from male partners.

The rapid deterioration in labor market conditions experienced during the Great Recession may have increased abusive behavior because it pushed more people out of the labor market and increased the incidence of economic hardship in ways not captured by the area-level unemployment rates explored in Table 8 in the appendix. Alternatively, it may have affected behavior by engendering fear and uncertainty among a broader population. If the latter were true, we would expect the relationship between area-level changes in unemployment and our outcomes to persist after adjusting for the individual- and household-level measures of unemployment and hardship.

Table 5 presents estimates from models that include both individual-level measures of unemployment and economic hardship and area-level measures of unemployment and percentage change in unemployment. In the first column, we present the estimates from Table 3 of the effect of change in area-level unemployment rates on IPV. The estimates in this column are not adjusted for couple unemployment and household hardship. In the second column, we adjust for these couple and household-level measures and again present the coefficient on change in area-level unemployment.

**Table 5** Area-level unemployment and household economic hardship on the risk of being in a romantic relationship that is (1) violent or controlling, (2) controlling, or (3) violent: Mediation of area-level measures by household-level measures

	Without Individual Measures	With Individual Measures <sup>a</sup>	% Change <sup>b</sup>
<b>IPV (violence/control)</b>			
Logit model	0.401*	0.395*	-1
LDV model	0.454*	0.459*	1
Individual fixed-effects model	0.453*	0.462*	2
<b>Controlling Behavior</b>			
Logit model	0.406*	0.401*	-1
LDV model	0.472*	0.479*	1
Individual fixed-effects model	0.482*	0.517*	7
<b>Violent Behavior</b>			
Logit model	-0.496	-0.391	
LDV model	-0.551	-0.402	
Individual fixed effects model	-0.531	-0.578	

*Notes:* The logit and lagged DV models include time-invariant and time-varying controls. The Individual FE model includes only time-varying controls. Controls are for mother's education at baseline, mother's race/ethnicity, mother's age, mother's immigration status, presence of household children at baseline, mother's own biological parents coresident when she was age 15, mother's marital status, presence of children under the age of 2 in the household, and number of children in the household.

<sup>a</sup> Individual measures of economic hardship and couple unemployment.

<sup>b</sup> Change in coefficients only calculated for results significant at  $p < .10$ .

\* $p < .05$

Even after we control for couple and household distress, the coefficients on the area-level measure of percentage change remain significant, positive, and quite similar in size to the estimates presented in Table 3 and in column 1 of Table 5.

In this respect, we find little evidence for the first pathway—the idea that area-level measures are simply picking up individual-level economic effects. Instead, these results are consistent with the idea that rapid increases in unemployment generate a general climate of fear and uncertainty that affects a broad population, not just those who experience job loss or hardship. Men's controlling behavior toward romantic partners increases when uncertainty and fear are in the air, even after we adjust for couple- and household-level economic distress.

We also assess the robustness of our results to several modeling alternatives. We first considered the possibility that some mothers may have moved in response to high levels of unemployment in their baseline city. In the results presented earlier, we assigned every mother the economic conditions of her baseline city. We also find consistent results when we exclude the 7 % of mothers who moved to a different MSA over the follow-up. The estimates that exclude movers are shown in Table 9 in the appendix.

Second, sample attrition could potentially bias our results if mothers at high risk of abuse are more likely to be missing from follow-up surveys. We reestimated our main models by limiting the analysis sample to mothers who completed all three interviews, Waves 3–5. As shown in Table 9 in the appendix, our results are consistent with the preferred models, suggesting that attrition is not a major source of bias in this instance.

## Discussion

A long tradition of social science research dating back to the Great Depression has shown that times of economic upheaval are also times of family upheaval. Since that time, gender systems and the institution of marriage have changed dramatically: women's labor force participation rates have surged, and dual-income couples have displaced the male breadwinner model as the dominant family form. Nevertheless, our research indicates that economic upheaval continues to have a disruptive effect on male–female relationships. In particular, the rapid worsening of local economies in the Great Recession led to an increase in men's controlling behavior toward their wives and romantic partners. This pattern aligns with a dynamic in which a loss of control in one domain (the economy) leads men to assert greater control in another domain (their intimate relationships). Here, the uncertainty and anticipatory anxiety of the Great Recession can be thought of as gendered and as leading men to exercise a coercive control over female partners (Stark 2007). This perspective also helps to make sense of our finding that the rise in women exposed to controlling behavior was not accompanied by a rise in those exposed to physical violence in their romantic relationships.

Typically, recessions are assumed to affect family functioning among those who lose their jobs but not necessarily among those who are more fortunate. We would argue, however, that this rendering misses a major source of recession effects. We interpret our results as demonstrating that the uncertainty and anticipatory anxiety that go along with sudden macroeconomic downturns can have a strong impact on relationship dynamics and that this impact may operate in particularly gendered ways by threatening men's sense of control in the economic domain. The fact that the effects of unemployment shocks persist

even after we control for individual-level measures of unemployment and material hardship further supports the idea that economic uncertainty, apart from actual hardship, has an important effect on relationship quality. Our findings mesh with and contribute to theories that emphasize the role of anticipatory emotions in decision-making and other behavior (Baumeister et al. 2007; Caplin and Leahy 2001; Loewenstein et al. 2001).

Our study has some limitations that should be taken into account. Although our data allow us to include romantic and cohabiting relationships as well as marital unions, they do not include nonparents or families living outside urban areas and thus cannot be generalized to these other groups. We also miss women who end their relationship with a violent partner between survey waves. We have, however, examined data on the prevalence of physical abuse (including homicide, rape, and assault) by intimates from the U.S. Bureau of Justice Statistics (BJS) at the national level for the years 1993–2010, and these data show little evidence of marked shifts in the trend in physical abuse during the recession. This finding is in accord with our results and Peterson (2011), both of which show no evidence of a relationship between macro-economic conditions and physical abuse. The national-level BJS data, however, do not include reports of controlling behavior, the type of abuse for which we find evidence of an increase with worsening economic conditions.

Another limitation is attrition from the FFS over time. By the fifth wave, 28 % of mothers are no longer in the sample. There is also a good deal of nonresponse in the Wave 3 and Wave 4 surveys. Interestingly, however, different groups of mothers are nonrespondents at these two waves, suggesting that survey nonresponse is driven in part by the difficulty in locating mothers rather than simply their refusal to participate. Although there is some risk that excluding mothers who were not interviewed at a given survey wave may have biased our results, tests for robustness suggest that attrition is not a major source of bias.

A further limitation of our study is that we cannot determine whether men's controlling behavior in relationships increased because the Great Recession affected the stock of relationships or, alternatively, because a recession changed behavior within existing relationships. It is possible that controlling relationships that would have dissolved in ordinary times remained intact because feelings of economic security discouraged union dissolution and because actual economic constraints brought on by a recession made it financially impossible to set up separate households. It is also possible that the Recession caused some men to exhibit controlling behavior who would not have done so were it not for the stress of a recession. In theory, either of these pathways is plausible and both may have occurred in response to the Recession. Regardless of which pathway dominated, from the standpoint of practical and social significance, the net effects are the same.<sup>8</sup>

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<sup>8</sup> To assess the relative importance of changes in behavior versus changes in composition, we examined several new models. First, we looked at the effects of unemployment and percentage change in unemployment on the likelihood of mothers' entering an abusive partnership, conditional on not being in a coresidential partnership at the time of the previous interview. Second, we looked at the effects of unemployment and percentage change in unemployment on the likelihood of mothers' leaving an abusive partnership, conditional on being in a partnership at time of the previous interview. Finally, we looked at the effects of unemployment and percentage change in unemployment among mothers who were coresiding with the same partner in consecutive waves. In each model, the coefficients for percentage change in unemployment were similar to those in the original model, although none was statistically significant. These findings suggest to us that the effects identified in the main model are due to both changes in behavior and changes in composition.

A similar problem exists for estimating the incidence of violent behavior. In our analyses, we find no association between rapid increases in unemployment and the presence of physical violence in existing relationships. However, we observe violent behavior only for mothers who are romantically involved with a partner. If a mother leaves a violent relationship, she is coded as experiencing no violence. Although the same limitation exists for controlling behavior, it is possible that mothers are less likely to leave a controlling partner than a violent partner, and therefore we are more likely to observe the former than the latter. At the same time, we expect that our pattern of findings—*increase in controlling behavior and not physical violence*—goes beyond differential selection out of relationships. Our results are also consistent with the theory that men's controlling behavior increases when a core part of their masculine identity—that of the male breadwinner—is threatened (i.e., MacMillan and Gartner 1999; Melzer 2002; Stark 2007).

Finally, we focus on men's perpetration of IPV and do not examine how labor market conditions affect women's perpetration. Women's perpetration of IPV is an important topic of research, and estimating how it responded to the Great Recession would be worthwhile. Unfortunately, our ability to examine this question is quite constrained by the available data. The FFS asked each of the biological parents of the focal child at reinterview about IPV victimization by the other biological parent if they remained in a romantic relationship with one another. However, many parents formed new relationships with new partners. Unfortunately, only mothers were asked about the IPV perpetration of new partners. Fathers were not asked this same set of question about their new partners. Consequently, our ability to examine female IPV perpetration during the Great Recession is limited to those couples that are still romantically involved nine years after the birth of the focal child. This is a select sample and one we purposefully do not focus on in this article, instead including relationships with both the focal children's fathers and new partners.

The Great Recession led to a great deal of economic hardship for families across the United States. As our study documents, it also led to another type of hardship: an increase in women's exposure to abusive behavior. The increase in controlling behavior is of concern in and of itself because of its harmful effects on women's health and employment (Brush 2011). It is also of concern because all households in our study contain children who are potentially witnessing and experiencing this behavior first-hand. Research on patterns of abusive behavior also suggests that controlling behavior is a precursor to physical violence. The fact that we do not find an increase in physical violence in our study or in administrative records is reassuring, but this issue merits further attention.

To conclude, we present evidence that the shock of the Great Recession had reverberations for family functioning that go beyond job loss and hardship at the household level. We argue that these ripple effects of the economic downturn are most accurately captured by using an exogenous measure of the pace of change in macroeconomic conditions: in particular, a measure of how unemployment in a locality today compares with unemployment in that locality last year. We find clear and robust evidence that the pace of change in unemployment increased men's controlling behavior. We argue that measures of the pace of change in unemployment should be standard practice in studying the effects of macroeconomic conditions on family functioning and related outcomes. We also argue that recession

effects cannot be fully captured by individual or household measures of job loss or material hardship. Recessions also lead to feelings of fear and insecurity, and this uneasy mindset changes the way people behave in relationships and is likely to affect behavior in many ways.

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## Appendix

**Table 6** Descriptive statistics

	Mean (%)
IPV	10.4
Controlling behavior	9.5
Violent behavior	1.1
Experiencing Household Unemployment	21
Experiencing Household Economic Hardship	47
MSA-Level Unemployment	5.7
Percentage Change in MSA-Level Unemployment	18
Age (years)	25
Mother's Race/Ethnicity	
White, non-Hispanic	22
Black, non-Hispanic	48
Other, non-Hispanic	27
Hispanic	3
Mother's Education	
Less than high school	33
High school diploma/GED	31
Some college	25
College degree (BA) or more	11
Foreign-born	14
Lived With Both Parents at Age 15	43
Married	36
Number of Household Children	2.5
Children Under Age 2 in Household	36

**Table 7** Full results from Models 1–3 of Table 1 for combined IPV (violence or controlling) outcome

	IPV (violence/control)		
	Logit (1)	Lagged DV (2)	Individual FE (3)
Any Economic Hardship	0.838***	0.768***	0.447***
Any Unemployed Parent <sup>a</sup>	0.306**	0.315**	0.353***
Mother's Race/Ethnicity			
White, non-Hispanic (ref.)	—	—	—
Black, non-Hispanic	-0.309**	-0.278**	—
Other, non-Hispanic	-0.009	-0.005	—
Hispanic	0.296	0.212	—
Mother's Education			
Less than high school (ref.)	—	—	—
High school diploma/GED	-0.395***	-0.347***	—
Some college	-0.373***	-0.328***	—
College degree (BA) or more	-0.888***	-0.735***	—
Foreign-born	0.382***	0.26**	—
Lived With Both Parents at Age 15	0.014	-0.017	—
Mother's Age	0.03***	0.028***	—
Married	0.732***	0.710***	0.805***
Number of Household Children	0.006	0.105	0.017
Children Under Age 2 in Household	0.054	0.005	0.087
Lagged Measure of IPV	—	1.46***	—
Wave 3	0.482***	0.402***	0.57***
Wave 4	0.368***	0.343***	0.431***
Wave 5 (ref.)	—	—	—
Austin	0.323***	0.161**	—
Baltimore	0.319***	0.116*	—
Detroit	0.224***	0.125***	—
Newark	-0.144***	-0.176***	—
Philadelphia	0.245***	0.121***	—
Richmond	0.371***	0.287***	—
Corpus Christi	0.115***	0.019	—
Indianapolis	0.156**	0.012	—
Milwaukee	0.013	-0.100*	—
New York	0.009	-0.073*	—
San Jose	0.095 <sup>†</sup>	-0.005	—
Boston	0.112 <sup>†</sup>	0.017	—
Nashville	-0.497***	-0.581***	—
Chicago	0.054	-0.026	—
Jacksonville	0.225***	0.178***	—
Toledo	-0.025	-0.111***	—
San Antonio	-0.584***	-0.614***	—



**Table 7** (continued)

	IPV (violence/control)		
	Logit (1)	Lagged DV (2)	Individual FE (3)
Pittsburgh	0.012	-0.139*	—
Norfolk	0.058	-0.068	—
<i>N</i>	10,584	10,584	2,030

<sup>a</sup> Variable equals 1 if mother is not coresiding and is unemployed, or if mother is coresiding and either she or father/new partner is unemployed. Variable equals 0 if mother is not coresiding and is not unemployed, or if mother is coresiding and neither she nor father/new partner is unemployed.

<sup>†</sup>  $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

**Table 8** Area-level unemployment rate (UR) levels on the risk of being in a romantic union that is (1) violent/controlling, (2) controlling, or (3) violent

	IPV (violence/control)			Controlling Behavior			Violent Behavior		
	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
1 UR Level (prior year average)	-0.010	-0.017	-0.018	0.001	-0.006	-0.004	-0.048	-0.045	-0.102
2 UR Level (at interview)	0.025	0.018	0.016	0.031	0.025	0.026	-0.078	-0.086 <sup>†</sup>	-0.141
3 UR Level (lagged 3 months)	-0.002	-0.001	-0.001	0.014	0.014	0.014	-0.092 <sup>†</sup>	-0.090	-0.110
4 UR Level (lagged 6 months)	-0.024	-0.028	-0.027	-0.018	-0.022	-0.016	-0.030	-0.026	-0.061
5 UR Level (lagged 9 months)	-0.029	-0.040	-0.057	-0.022	-0.033	-0.049	0.019	0.027	-0.021
6 UR Level (lagged 12 months)	-0.019	-0.037	-0.033	-0.022	-0.041	-0.034	0.036	0.042	-0.037
7 UR Level Categories (prior year average)									
<4.7 % (ref.)	-	-	-	-	-	-	-	-	-
4.7-5.7 %	-0.124	-0.135	-0.187	-0.146	-0.168	-0.239	0.600*	0.555 <sup>†</sup>	0.222
5.7-6.5 %	-0.074	-0.102	-0.116	-0.077	-0.119	-0.130	0.031	-0.027	-0.089
6.5-8.6 %	-0.087	-0.135	-0.248	-0.075	-0.138	-0.263	0.184	0.177	-0.113
>8.6 %	-0.149	-0.186	-0.159	0.059	-0.093	-0.013	0.398 <sup>†</sup>	0.423 <sup>†</sup>	-0.557
Wave Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
City Fixed Effects	✓	✓		✓	✓		✓	✓	

*Notes:* Estimates from logistic regression, logistic regression with an LDV, and logistic regression with individual fixed effects are shown (Waves 3-5). Each cell in each numbered model shows the coefficient from a separate model; the UR terms are entered individually not as a group. Models 1 and 2 include time-invariant and time-varying controls. Model 3 includes only time-varying controls. Controls are for mother's education at baseline, mother's race/ethnicity, mother's age, mother's immigration status, presence of household children at baseline, mother's own biological parents coresident when she was age 15, mother's marital status, presence of children under the age of 2 in the household, and number of children in the household.

<sup>†</sup>  $p < .10$ ; \* $p < .05$

**Table 9** Area-level unemployment rate (UR) levels and percentage changes on the risk of being in a union that is (1) violent/controlling, (2) controlling, or (3) violent

	IPV (violence/control)			Controlling Behavior			Violent Behavior		
	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE	Logit	Lagged DV	Individual FE
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
<b>Preferred Estimates (Table 5)</b>									
UR level (average over prior year)	-0.029	-0.038	-0.042	-0.019	-0.027	-0.029	-0.027	-0.022	-0.079
UR change (12-month change)	0.401*	0.454*	0.453*	0.406*	0.472*	0.482*	-0.496	-0.551	-0.531
<b>Excluding Respondents Not Residing in Baseline State</b>									
UR level (average over prior year)	-0.010	-0.019	-0.025	-0.004	-0.013	-0.018	0.045	0.058	-0.006
UR change (12-month change)	0.393 <sup>†</sup>	0.439*	0.459*	0.399*	0.455*	0.479*	-0.442	-0.495	-0.492
<b>Excluding Respondents Who Missed a Survey (Waves 3–5)</b>									
UR level (average over prior year)	-0.053	-0.063	-0.051	-0.044	-0.055	-0.040	-0.019	-0.016	-0.063
UR change (12-month change)	0.410 <sup>†</sup>	0.455 <sup>†</sup>	0.457*	0.440 <sup>†</sup>	0.493*	0.467*	-1.313 <sup>†</sup>	-1.340 <sup>†</sup>	-0.648
<b>Only Women in Romantic Relationships</b>									
UR level (average over prior year)	-0.010	-0.025	-0.026	0.006	-0.008	0.004	-0.023	-0.021	-0.036
UR change (12-month change)	0.350 <sup>†</sup>	0.396 <sup>†</sup>	0.483 <sup>†</sup>	0.330	0.392 <sup>†</sup>	0.454 <sup>†</sup>	-0.475	-0.508	-0.588
<b>Only Women in Coresidential Romantic Relationships</b>									
UR level (average over prior year)	-0.005	-0.027	-0.049	0.014	-0.003	-0.001	0.111	0.125	0.028
UR change (12-month change)	0.509*	0.576*	0.779**	0.433 <sup>†</sup>	0.497 <sup>†</sup>	0.604 <sup>†</sup>	-0.414	-0.449	0.176
<b>Only Women in Stable Coresidential Romantic Relationships</b>									
UR level (average over prior year)	0.004	-0.022	-0.021	0.015	-0.011	-0.003	0.141 <sup>†</sup>	0.201 <sup>†</sup>	-0.167
UR change (12-month change)	0.454*	0.538*	0.852*	0.361	0.434 <sup>†</sup>	0.732 <sup>†</sup>	-0.163	-0.420	2.182

**Table 9** (continued)

	IPV (violence/control)			Controlling Behavior			Violent Behavior		
	Logit (1)	Lagged DV (2)	Individual FE (3)	Logit (1)	Lagged DV (2)	Individual FE (3)	Logit (1)	Lagged DV (2)	Individual FE (3)
Wave Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
City Fixed Effects	✓	✓		✓	✓		✓	✓	

*Notes:* Estimates from logistic regression, logistic regression with an LDV, and logistic regression with individual fixed effects robustness to modeling alternatives are shown (Waves 3–5). Models 1 and 2 include time-invariant and time-varying controls. Model 3 includes only time-varying controls. Controls are for mother’s education at baseline, mother’s race/ethnicity, mother’s age, mother’s immigration status, presence of household children at baseline, mother’s own biological parents coresident when she was age 15, mother’s marital status, presence of children under the age of 2 in the household, and number of children in the household.

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$

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