VIOLENCE AGAINST WOMEN IN U.S. METROPOLITAN AREAS: CHANGES IN WOMEN’S STATUS AND RISK, 1980–2004

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This article examines the impact of women’s status on rates of violence against women using longitudinal data from the National Crime Survey and National Crime Victimization Survey for 40 U.S. metropolitan areas for the period 1980 to 2004. Drawing on feminist and routine activities perspectives, we specify hypotheses about the association between women’s status and violent victimization, some of which predict different effects depending on whether the offender is a stranger, intimate, or known (nonintimate) other. Consistent with feminist and other perspectives, we find that absolute increases in women’s labor force participation, income, and education are associated with decreases in violence against women.

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in intimate partner violence. Our findings also provide limited support for the backlash hypothesis by showing that increases in female labor participation relative to men are associated with increases in intimate partner violence but not with increases in violence by others. Consistent with routine activities theory, the data also indicate that absolute increases in female labor force participation are associated with increases in victimization by strangers and by known others. Furthermore, we find that absolute increases in female voter participation are associated with decreases in violence for all victim–offender relationship categories. The findings thus show that changes in the status of women have both positive and negative associations with violence victimization, and that comparative analyses of different types of violence are necessary for clarifying the sources of violence against women.

The status of women in the United States has changed in important ways during recent decades. Between 1970 and 2008, women’s rate of labor force participation increased from 43 percent to 59 percent (U.S. Department of Labor, 2009), the wage gap between men and women decreased (U.S. Department of Labor, 2010), and women made significant gains in political participation, as evidenced by voter turnout and election to public offices (Institute for Women’s Policy Research, 2004). These changes in the labor market and political arenas have brought considerable benefits to women in terms of economic well-being and participation in public affairs. Criminologists and other researchers have suggested that these gains also influenced women’s vulnerability to violent victimization. However, the nature and direction of these effects are not yet clear, and the research findings have at times been contradictory.

Frequently, theory and research point to the potential positive as well as negative consequences of the gains in status for women. One argument is that improvements in women’s status—whether economic or political—have produced lower rates of victimization among women (see Bailey and Peterson, 1995; Vieraitis, Kovandzic, and Britto, 2008; Whaley and Messner, 2002, for discussion of this argument). This proposition has been tested in the study of rape, domestic abuse, and intimate partner homicide with mixed results (e.g., Brewer and Smith, 1995; Dugan, Nagin, and Rosenfeld, 1999; Linsky, Bachman, and Straus, 1995; Peterson and Bailey, 1992; Vieraitis, Kovandzic, and Britto, 2007; Whaley, 2001). In contrast, other researchers have suggested that advances in women’s status may have increased rather than decreased their rates of victimization. Russell (1975), for example, argued that the narrowing of the male–female status gap may have been threatening for men in some instances, and consequently, violence against women may have increased as the result of a “backlash” effect (also see Bailey, 1999; DeWees and Parker, 2003; LaFree and Hunnicutt, 2006; Whaley and Messner, 2002). Lifestyle and routine activities theories
predict a similar outcome but for a different reason: Increases in labor force participation may increase women’s risk for victimization by placing them at work or in other out-of-home activities where exposure to violence by strangers and other nonfamily members is higher (Cohen and Felson, 1979; Gartner, Baker, and Pampel, 1990; Hindelang, Gottfredson, and Garofalo, 1978).

The complexity of the research findings suggests that multiple mechanisms may link women’s status with their risk for violent victimization. Some factors may increase victimization and others may decrease it, so that the net change may be positive or negative depending on which mechanism is stronger in a particular setting. To disentangle the mechanisms by which the status of women affects their risk of victimization, it is important to examine the major explanations in the literature within a single study, using data that are capable of addressing multiple hypotheses.

In this research, we examine violence against women using a unique data source—the Metropolitan Statistical Area (MSA)-level data from the National Crime Victimization Survey (NCVS, previously known as the National Crime Survey, NCS). More specifically, we examine female rates of nonlethal violent victimization in the 40 largest U.S. MSAs for the period 1980 to 2004. Kruttschnitt, McLaughlin, and Petrie (2004) in their National Research Council report on violence against women concluded that one of the most important deficiencies of the research conducted in this area is the lack of longitudinal and comparative studies. Use of the NCS-NCVS MSA-level data allows us to examine variations in risk over time and across places, and to extend studies of violence against women beyond homicide and crimes known to the police. The data also allow us to compare the factors associated with women’s violent victimization across major types of victim–offender relationship (i.e., stranger, intimate partner, and other known relationships) over time in a single study.

Although the theoretical literature suggests that the motivational and opportunity structures of crime may vary by victim–offender relationship (Williams and Flewelling, 1988), researchers rarely have examined the link between women’s status and female victimization rates across specific victim–offender relationships (for exceptions, see Bailey and Peterson, 1995; Vieraitis, Kovandzic, and Britto, 2008). Prior to the release of the NCS-NCVS MSA data, researchers could not produce self-reported victimization rates for subnational geographic areas below the regional level (Lauritsen and Schaum, 2005). This study is the first to use self-reported victimization rates to compare patterns of female victimization by strangers, intimate partners, and other known offenders across places and over time. We begin by reviewing the theoretical and methodological issues most central to our research.
PRIOR RESEARCH

Research on women’s status and violence includes macrolevel, microlevel, and multilevel studies of gender and victimization and of gender and offending (e.g., Heimer and Kruttschnitt, 2006; Kruttschnitt, 1993). Given the focus of this study, our review focuses on macrolevel research on violence against women. This literature presents a complex picture of the relationship between women’s status and violent victimization largely because it addresses both the absolute status of women and the relative status of women compared with men; yet studies are not always clear about this distinction. The relative status of women has been the focus of feminist theories and research on gender-based differences in privilege and power in society. The link between the absolute status of women and violence, in contrast, may be better understood with additional considerations derived from routine activities theories of victimization. Our review highlights the theoretical distinction between feminist and routine activities perspectives. The design and results of the empirical studies are summarized in table S.1 of the online supporting material.1

FEMINIST PERSPECTIVES ON GENDER INEQUALITY AND VIOLENCE AGAINST WOMEN

Feminist theories and research have identified the need for a gender-specific approach, which in turn has led to more systematic exploration of the structural and social contexts of women’s victimization (Daly and Chesney-Lind, 1988; Simpson, 1989). For many feminist scholars, gender stratification, or the differential access of males and females to resources, shapes women’s experiences with victimization (Bart and Moran, 1993; Jaggar, 1983). This perspective is exemplified by two different views. The first view, which Whaley and Messner (2002) call the ameliorative hypothesis, argues that violence is more socially acceptable in patriarchal societies where women have a lower social status relative to men, and consequently, reductions in gender inequality should be associated with lower levels of violence against women (see Dobash and Dobash, 1979; Martin, 1976, for earlier statements of this hypothesis). The second view, known as the backlash hypothesis, argues that reductions in gender inequality may increase violence against women when men feel threatened by relative improvements in women’s status and the breakdown of traditional gender roles (Russell, 1975; also see Brownmiller, 1975; Williams and Holmes, 1981).

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The ameliorative and backlash hypotheses have stimulated a body of empirical research, which includes studies of state-level variation in spousal violence (Yllo, 1983; Yllo and Straus, 1990), studies of state-, MSA-, and city-level variation in rape (e.g., Bailey, 1999; Baron and Straus, 1987; Ellis and Beattie, 1983; Linsky, Bachman, and Straus, 1995; Martin, Vieraitis, and Britto, 2006; Peterson and Bailey, 1992; Whaley, 2001), and studies of state-, city-, and cross-national variation in homicide (e.g., Bailey and Peterson, 1995; Brewer and Smith, 1995; Gartner, Baker, and Pampel, 1990; Gauthier and Bankston, 1997; Marvell and Moody, 1999; Stout, 1992; Vieraitis, Kovandzic, and Britto, 2008; Whaley and Messner, 2002). The results from these studies are far from uniform. Some studies have reported evidence supporting the ameliorative hypothesis that lower levels of gender inequality are associated with lower rates of rape (Baron and Straus, 1987) and wife abuse (Straus, 1994). Other studies suggest that the relationship between gender inequality and victimization is more complex. Depending on the specific type of gender inequality (e.g., income or labor force participation), the results vary considerably across studies and often lead to contradictory conclusions. The relationship between income inequality and female victimization rates, for example, has been reported to be negligible in some studies (see, e.g., Brewer and Smith, 1995; Ellis and Beattie, 1983; Eschholz and Vieraitis, 2004), significantly positive in others (supporting the ameliorative hypothesis; see, e.g., Peterson and Bailey, 1992), and significantly negative in others (supporting the backlash hypothesis; see, e.g., DeWees and Parker, 2003; Vieraitis and Williams, 2002). The evaluation of women’s relative labor force participation (independent of their income) likewise has produced mixed results (e.g., Brewer and Smith, 1995; DeWees and Parker, 2003; Macmillan and Gartner, 1995; Vieraitis and Williams, 2002).

To reconcile the seemingly conflicting evidence and further understand the inequality–violence relationship, research has moved in two directions. The first is to disaggregate overall victimization rates by victim–offender relationship. Drawing a cross-sectional sample of 138 U.S. cities for 1980, Bailey and Peterson (1995) compared female homicide victimization across a variety of relationships (spouses, boyfriends, family members, friends-acquaintances, and strangers) and found that the results differ across types of homicide. The rate of women being killed by their husbands was significantly and positively associated with male–female inequality in education and employment; the rate of acquaintance homicide also was higher under conditions of greater inequality in income; however, the rate of stranger homicide was unrelated to any of these indicators of gender inequality. Thus, Bailey and Peterson’s (1995) work suggested that the victim–offender relationship may shape the effect that gender inequality has on homicide. If a similar process applies to nonlethal violence, the rates of nonlethal violence by intimate partners also may be more affected by gender power structures than the rates of stranger violence. Therefore, studying variation
in subcategories of violence may help explain the contradictory results of some previous research.

The second development in this literature is the analysis of change in gender inequality (rather than absolute levels) and its association with change in women’s risk for victimization. Theoretically, the link between gender inequality and violence is implicitly longitudinal and therefore better tested with data over time. Yet, because longitudinal data on violence against women are difficult to obtain (Gelles, 2000; Kruttschnitt, McLaughlin, and Petrie, 2004), existing studies typically have relied on cross-sectional data, and evidence from longitudinal studies only recently has begun to accumulate. Among these studies, Dugan, Nagin, and Rosenfeld (1999) examined trends in intimate partner homicide rates for 29 U.S. cities from 1976 through 1992. Using two measures of relative status (relative education and relative earnings), they found positive relationships between women’s status and rates of intimate partner homicide, but none of the relationships was statistically significant. In subsequent research, Dugan, Nagin, and Rosenfeld (2001, 2003) expanded their sample to 48 cities and a longer study period (1976–1996). As part of this analysis, the researchers examined changes in women’s education relative to men and found that women’s relative gain in education was significantly associated with lower levels of intimate partner homicide for females, thus providing support for the ameliorative hypothesis. The research also found evidence for retaliatory violence, and according to the authors, the challenge is to “specify the conditions under which exposure-reducing ‘opportunity’ and retaliation-inducing ‘motivational’ effects should occur” (Dugan, Nagin, and Rosenfeld, 2003: 194).

In short, a review of the literature reveals the following two key issues for research: 1) the nature of the association between gender inequality and violence against women, and 2) the potential differences in mechanisms across victim–offender subtypes of violence. Our use of the NCS-NCVS MSA data allows us to address these issues longitudinally using data on nonlethal violence, and with much less missing information on victim–offender relationship than is found in studies of homicide. Most violence against women involves harmful but nonlethal violence. In 2005, for example, NCVS data estimate that the rate of nonlethal violence against women (aged 12 years and older) was approximately 17 per 1,000, whereas the rate of female homicide was 2.3 per 100,000 (Bureau of Justice Statistics, n.d.; Catalano, 2006), thus producing a ratio of nonlethal to lethal violence of more than 700 to 1. Studying nonlethal forms of violence is thus important and the focus of our analysis.

2. In recent years, roughly 35 percent of Supplementary Homicide Report (SHR) data are missing information on the victim–offender relationship (Catalano, 2007).
ROUTINE ACTIVITIES AND EXPOSURE TO VIOLENCE

Although gender inequality has been a key focus of research on violence against women, the absolute socioeconomic well-being of women is another important part of the story. As Bailey (1999: 50) observed, “in terms of vulnerability, women’s absolute socioeconomic status may have a dramatic impact on the supply of potential … victims.” Routine activities and lifestyle theories (Cohen and Felson, 1979; Hindelang, Gottfredson, and Garofalo, 1978) offer a theoretical framework for examining how dimensions of the absolute status of women may be linked to their risk for victimization. Feminist writing on violence against women also has considered women’s absolute status (see Vieraitis, Kovandzic, and Britto, 2008, for a review), but routine activities and lifestyle theories offer the most detailed account of the mechanisms that may account for these relationships. The utility of these perspectives for understanding violence against women is, in particular, highlighted by the work of Gartner and her colleagues (Gartner, 1990; Gartner, Baker, and Pampel, 1990).

Drawing on motivational, control, and opportunity explanations of homicide, Gartner (1990) examined cross-national variation in the rates of homicide across gender and age subgroups in 18 countries (U.S. included) from 1950 to 1980. In light of a variety of economic, social, demographic, and institutional developments in these countries, Gartner predicted that the movement of women into the labor force would increase women’s rates of homicide victimization because the shift away from household activities would result in reductions in guardianship, elevating women’s risk for violence. In support of this hypothesis, Gartner (1990) found significantly higher rates of femicide, or homicide of women, in nations where more women participated in the labor force.

Gartner’s (1990) discussion of female labor force participation has important implications for understanding the etiology of victimization. Instead of focusing strictly on issues of women’s subordination and gender conflict, the routine activities approach focuses on changes in women’s activity patterns (e.g., in labor markets) that increase exposure to offenders. Gartner, Baker, and Pampel (1990) extended this discussion to incorporate women’s education and income, suggesting that these variables are more direct indicators of women’s access to economic resources. As such, the gains in women’s income and education (either individually or collectively) are hypothesized to be protective and thus should reduce female victimization rates. In short, labor force participation per se is argued to increase exposure to victimization, whereas gains in education and income are expected to protect women. The distinction between dimensions of women’s status provides a theoretical basis for testing whether each factor has a unique effect on women’s victimization.
Routine activities and lifestyle theories similarly suggest that victim–offender relationships are important factors to consider when evaluating women’s risk for violence. According to these theories, working outside the home may increase opportunities for female victimization by increasing women’s exposure to strangers and other potential offenders. In contrast, the participation of women in the labor force may reduce their opportunities for victimization within the family by lessening the dependence of women on their abusers and by reducing the amount of exposure in the home (Dawson, Bunge, and Balde, 2009). In other words, the impact of women’s absolute status on violence may vary across victim–offender relationships, just as the impact of women’s relative status may vary across victim–offender subtypes of violence. Consistent with this view, researchers have found that long-term trends in women’s victimization vary depending on victim–offender relationship (Browne and Williams, 1993; Dugan, Nagin, and Rosenfeld, 2003; Lauritsen and Heimer, 2008; Rosenfeld, 1997, 2000). Together, these findings again underscore the possible differences in the mechanisms leading to violence at the hands of strangers, intimate partners, and other known offenders.

BEYOND THE ECONOMIC STATUS OF WOMEN: POLITICAL PARTICIPATION THROUGH VOTING

Thus far, the literature on women’s status and victimization has focused on women’s status in economic sectors as measured by income, education, labor force participation, and occupation (Dawson, Bunge, and Balde, 2009). The potential association between women’s political status and victimization, in contrast, has been largely ignored. According to the Institute for Women’s Policy Research (2004), the position of women in the American political system consists of various components, including voting, representation in elected offices, and institutional resources. Although a complete evaluation of the effects on victimization of all of these indicators of women’s political status is desirable in the long run, in this article, we take a first step by examining whether women’s voting behavior is associated with their rates of victimization, independent of the effects of economic factors. This analysis follows other research on political participation that reports a negative association between voter turnout and crime (Lee, 2008; Lee and Bartkowski, 2004; Rosenfeld, Messner, and Baumer, 2001).

Prior research has suggested some theoretical mechanisms through which women’s participation in voting may significantly influence their risk for victimization. From a policy-making perspective, female voting may affect victimization rates by creating a safer environment through the promotion of social changes directed at improving women’s safety and crime control. For example, when women exercise their right to vote, the result may be more female elected officials (Cook, 1994; Plutzer and Zipp, 1996; Sigelman and Sigelman, 1982) and an increase in laws, policies, and
programs designed to address issues of violence against women. Consistent with this argument, Swers (1998) found that female representatives are more likely than males to vote for bills concerning women’s issues, and that this pattern was true for the votes cast for the 1994 Omnibus Crime Bill that contained the Violence Against Women Act—a law that provided, for the first time, federal funding for domestic violence programs and new provisions for enhanced investigation and prosecution of violence against women. At the state and local levels, research also shows that women, both as voters and as elected officials, are more likely than men to prioritize bills, policies, and programs related to women’s issues, including children, families, and social services (for reviews of the literature, see Paxton, Kunovich, and Hughes, 2007; Seltzer, Newman, and Leighton, 1997). If these laws and policies are effective in benefiting and protecting women, a greater turnout of female voters is likely to be associated with lower rates of violence against women.

Alternatively, we can draw on the criminological literature to suggest another possible mechanism linking female voting and female victimization. Specifically, Rosenfeld, Messner, and Baumer (2001) built on the work of Coleman (1990) and others (Portes, 1998; Putnam, 1993) to argue that civic engagement should reduce crime by increasing formal or informal social control, strengthening the effectiveness of social norms, and providing resources for effective goal attainment. They reported that homicide rates are lower in counties and metropolitan areas where levels of social trust and voter turnout are higher, regardless of other population and socioeconomic influences. Similarly, Lee and colleagues found that civic engagement (measured as voter turnout and as the number of social and civic organizations) is associated with lower rates of county-level homicide (Lee and Bartkowski, 2004), robbery, and aggravated assault (Lee, 2008). In light of these studies, it is plausible that women’s participation in democratic rituals such as voting may affirm their membership in the larger community; this may help build social networks and provide women with more resources to reduce crime, and result in a negative association between levels of female voter turnout and rates of violence against women.

Given these possibilities, our study adds a focus on women’s political participation—in the form of voting—to the traditional research focus on women’s economic status and victimization. To date, very few studies have examined the victimization of women as a function of female political participation (e.g., Linksy, Bachman, and Straus, 1995; Straus, 1994; see also DeWees and Parker, 2003). Yet women’s political status often is considered a correlate of gender inequality (see Institute for Women’s Policy Research, 2004). We therefore include female voter turnout in our analyses as a first step in assessing whether this dimension of women’s political participation helps explain female victimization rates, after women’s economic status is taken into account.
THE CURRENT STUDY

Based on existing theory and the research discussed, we derived several hypotheses about how changes in the relative and absolute status of women may influence victimization. Because the literature is as yet unclear regarding support for alternative mechanisms, the hypotheses are, at times, competing. Moreover, the contribution of these mechanisms may vary, depending on specific victim–offender relationships. Although the clearest hypotheses pertain to violence against women generally, our reading of the literature indicates that some mechanisms may be more important for particular forms of violence (i.e., by intimates, strangers, and other known offenders). We therefore suggest and assess the mechanisms leading to specific forms of violence, as well as the mechanisms underlying violence against women generally. Given that this is the first study to frame these questions in a single analysis, we consider these to be orienting questions rather than formal hypotheses, in the strict sense. With this caveat in mind, we propose the following:

1. According to the ameliorative hypothesis, increases in the status of women relative to men will empower women by reducing the traditions, stereotypes, and myths that support the domination of women by men, thus leading to decreases in rates of violence against women. Because power differentials between men and women are most salient in intimate relationships, intimate partner violence may be particularly susceptible to changes in gender inequality in comparison with other types of violence. In other words, the ameliorative effect may be more likely to influence the rates of intimate partner violence than the rates of nonintimate violence.

2. According to the backlash hypothesis, men may resist the increased relative power of women and use physical force to keep women in their traditional place, thereby increasing rates of violence against women. Such an effect, if it exists, may have a larger influence on intimate partner violence than on stranger violence or violence by other known offenders.

3. According to a routine activities hypothesis, increases in the absolute status of women, as manifested by an increased level of female labor force participation, may increase exposure and thus lead to increases in the rates of female victimization by strangers and other known offenders.

4. According to what we term the protective hypothesis, increases in the absolute status of women, in terms of increased income, education, and more participation in voting, may improve women’s access to economic and social resources and promote social changes and
public policies that protect women and stigmatize violence. These effects are likely to be important for reducing the rates of intimate partner violence. We also expect these effects to reduce stranger violence and violence committed by other known offenders.

To examine these expectations, we study changes in female victimization rates among the 40 largest MSAs in the United States from 1980 through 2004. The use of victim self-report data enables us to extend existing longitudinal research by studying a broad range of nonlethal violence, including rape, assault, and robbery, regardless of whether the incident is known and recorded by the police. The data also provide detailed information about the victim–offender relationship for each incident of violence experienced by women, allowing analyses of the factors associated with the different types of violence to be compared in a single study. These features of the data make it possible for us to respond to the National Research Council report calling for more comparative studies that join analyses of intimate partner violence with other forms of violence experienced by women (Kruttschnitt, McLaughlin, and Petrie, 2004). In addition, the ability to estimate rates of violence against women for 40 MSAs over time provides sufficient statistical power for studying how gender inequalities are associated with differences in violence rates both across places and over time.

DATA AND METHODS

THE NCS-NCVS MSA SAMPLE

The NCS-NCVS is a major national household survey that has served as the nation’s primary source of information on criminal victimization and on crimes not reported to the police since 1973 (U.S. Department of Justice, 2004). The 1980–2004 NCS-NCVS MSA data are special subsets of the NCS-NCVS national files created by the Bureau of Justice Statistics (BJS) and the U.S. Census Bureau to allow for the estimation of subnational victimization rates for the 40 largest MSAs (Lauritsen and Schaum, 2005; U.S. Department of Justice, Bureau of Justice Statistics, 2007). These MSAs are defined by their core county areas, and together, they represent approximately 40 percent of the U.S. population (see figure S.1 of the online supporting material for a map of the MSAs). The NCS-NCVS MSA data currently constitute the only subnational self-report victimization data on nonlethal violence against women covering an extended time period.\footnote{3. It is possible to construct regional-level estimates of rates of violence against women with the national-level NCVS files beginning in 1996. However, for our purposes, region is too heterogeneous, and the small number (4) of regions and years available for modeling would not provide sufficient statistical power to assess our hypotheses.}
Previous research has identified MSAs as an important unit of analysis for the study of crime (e.g., Blau and Blau, 1982; Land, McCall, and Cohen, 1990; Messner, 1982; Peterson and Bailey, 1992). Scholars have maintained that the MSA level of analysis is desirable for measuring the effects of labor and housing markets in particular (Bound and Holzer, 2000; Iceland, Weinberg, and Steinmetz, 2002; McCall, 2001). Labor market, housing, education, and other opportunities in urban areas transcend county and city boundaries (e.g., Burr et al., 1992; Crutchfield, Geerken, and Gove, 1982; Fossett and Kiecolt, 1989). Moreover, research on women’s labor force experiences (Jones and Rosenfeld, 1989; Odland and Ellis, 1998) and gender socioeconomic inequality (Cohen, 1998; Cotter et al., 1997) has emphasized the appropriateness of the MSA level of analysis. Given the focus of this study on women’s labor market experiences, we evaluate the impact of women’s status on their risk for victimization at the MSA level. The analysis also extends Rosenfeld, Messner, and Baumer’s (2001) research, which found that an MSA’s rate of voting is related to its rate of homicide.

MEASURES

Female Victimization Rates by Victim–Offender Relationship

For each MSA, we used incident records from the NCS-NCVS MSA data to estimate annual rates of violent victimization that included incidents of rape, robbery, aggravated assault, and simple assault for females aged 12 years and older. The details summarizing the methodological issues involved in the rate estimation are provided in online supporting material and briefly described here. The rates were estimated by victim–offender relationship to distinguish violence among intimate partners, other known offenders (i.e., known nonintimates), and strangers. To reduce random year-to-year fluctuations, it was necessary to pool the rates of female victimization to create estimates for five, 5-year periods (1980–1984, 1985–1989, 1990–1994, 1995–1999, and 2000–2004). This procedure resulted in 200 MSA-period-specific rates of female victimization for each category of

4. Because the number of incidents within each MSA is relatively small compared with that reported in the national sample, the data lack sufficient statistical power to model specific types of violence (such as aggravated assault) across all 40 MSAs. Simple assaults, aggravated assaults, sexual assaults, and robberies comprised 53 percent, 17 percent, 9 percent, and 21 percent of the stranger violence, respectively. The corresponding percentages were 69, 15, 10, and 15 for known nonintimate violence, and 71, 16, 6, and 8 for intimate partner violence. The pattern of results in table 2 did not change when robberies were removed from the dependent variables.
victim–offender relationship (40 MSAs × 5 time periods). The pooled rates were transformed to logarithms to reduce skewness prior to modeling.

The NCVS has been criticized for underestimating the rates of violence against women compared with other national surveys. Rand and Rennison (2005) investigated the possible sources of these rate differences and found that the apparent differences between NCVS estimates and those obtained from the National Violence Against Women Survey (NVAWS) were notably reduced when counting rules used in the NVAWS were applied to the NCVS data. In addition, NVAWS estimates of violence against women were not significantly higher than the recalibrated NCVS estimates once sampling error was taken into account, thus showing that the NCVS estimates have reasonable external validity compared with the NVAWS. Although the NCVS may underestimate violence against women, our models are designed to assess changes in women’s victimization over time. If the degree of underestimation is similar across years and MSAs, then the effects of any underestimation on our parameter estimates will become negligible when the differences are calculated, and the estimated effects for the hypothesized factors will be unbiased.5

As a result of survey redesign, however, analysis of victimization rates over time must take into account methodological changes to the NCVS in 1992 that have been found to have significant effects on victimization rates (Kindermann, Lynch, and Cantor, 1997; Rand, Lynch, and Cantor, 2005).

5. Suppose that in an MSA, the underestimation is a fixed percentage (θ) of the true victimization rate, Y, and that the estimated victimization rates are Y1 in period 1 and Y2 in period 2. Then the true victimization rates can be calculated using the following equations: Y1 = y1 / (1 – θ) and Y2 = y2 / (1 – θ). If we calculate the difference between the log-transformed true rates, we get:

\[
\log_e (Y_2) - \log_e(Y_1) = \log_e [y_2 / (1 - \theta)] - \log_e [y_1 / (1 - \theta)]
\]

This equation shows that the difference between the log-transformed true rates is the same as the difference between the log-transformed estimated rates. Thus, the bias of underestimation is removed by differencing the data. If the degree of underestimation is not the same over time, but θ1 in period 1 and θ2 in period 2, then the difference between the log-transformed true rates will be:

\[
\log_e (Y_2) - \log_e(Y_1) = \log_e [y_2 / (1 - \theta_2)] - \log_e [y_1 / (1 - \theta_1)]
\]

This suggests that when θ1 and θ2 are similar, the bias will be small or negligible because [\log_e (1 - \theta_1) - \log_e (1 - \theta_2)] will be close to zero.
1997). Fortunately the effects of the NCVS redesign on self-reports can be, and have been, evaluated, which allows researchers to develop weighting strategies for dealing with the redesign. In this study, data prior to 1992 were weighted by crime type to take into account the methodological improvements introduced in the NCVS redesign. Specifically, because the redesign significantly increased the reporting of victimization and the magnitude of the increase varied by crime type (Lynch and Cantor, 1996), the weighting reflects such changes. The reporting of rape increased the most and thus has the highest weight (2.57), followed by simple assault (1.75), and aggravated assault (1.23). The reporting of robbery was not significantly affected by the redesign, and thus, it has a weight of 1.00. These weights are the same crime-specific ratios developed by Kindermann, Lynch, and Cantor (1997) and used by the Bureau of Justice Statistics (Lynch and Cantor, 1996; Rand, Lynch, and Cantor, 1997). The online supporting material describes in detail the justification for our rate weighting procedure, including tests for alternative adjustments according to victim–offender relationship, as well as the procedures used to handle series victimizations and the coding of victim–offender relationship when multiple offenders were involved in an incident.6

The Status of Women

The key independent variables for these analyses were time-varying measures of women’s economic and political statuses in the 40 MSAs during the study period. With the exception of voter turnout data, all data were derived from decennial censuses and linearly interpolated between census years.7 We collected women’s status measures from the U.S. Census Bureau’s American Factfinder Web site (http://factfinder.census.gov), the GeoLytics Census CD 1980 (GeoLytics, 1999), and printed Census volumes for comparable MSAs (U.S. Bureau of the Census, 1982, 1992).

6. In our study, we assume that variation over time in estimated victimization rates reflects mostly actual changes in crime. Some studies (e.g., Gove, Hughes, and Geerken, 1985; Schwartz, Steffensmeier, Zhong, and Ackerman, 2009) suggested that victim reporting may change gradually over time. We are unaware of any data that could be used to assess how much of the change in self-reported victimization rates from 1980 to 2004 is associated with respondent willingness to disclose such incidents, and we assume that actual changes are the most important source of change. This is a limitation of all self-report data, and future research should investigate the issue of the willingness of victims to report if the necessary data become available.

7. The interpolated values assume linear change. Although the interpolation may introduce some measurement error, this procedure is commonly used in social science for creating estimates of covariates in noncensus years. In a set of sensitivity analyses, we reestimated our models using geometric interpolation in which the rate of change is assumed to be a constant percentage of the base value. The model produced the same results.
Women’s absolute economic status was measured using two variables: 1) the percentage of females 16 years and older who participated in the labor force, and 2) an index of female income-educational attainment, which was measured as the average of standard scores (multiplied by ten) on two items: female median income in inflation-adjusted dollars and the percentage of females aged 25 years and older who completed 4 or more years of college.\(^8\) We defined female voter turnout—our measure of political participation—as the percentage of voting-age females (extracted from the Current Population Survey) who voted in the November presidential and congressional elections (see Institute for Women’s Policy Research, 2004).

Corresponding to these measures, the relative status of women was captured using three variables: 1) the rate of female labor force participation minus the rate of male labor force participation, 2) the level of female income-educational attainment minus the level of male income-educational attainment, and 3) the rate of female voter turnout minus the rate of male voter turnout.\(^9\) To match the panel structure of the dependent variables (i.e., violent victimization rates), the independent variables (as well as the control variables listed) were measured at the beginning of the corresponding 5-year periods (i.e., 1980, 1985, 1990, 1995, and 2000).\(^10\)

**Control Variables**

To control for possible confounding factors and to allow for a more complete understanding of the factors affecting variation in the rates of female victimization, we also included other time-varying characteristics of the MSAs that prior research suggests are potentially important predictors of victimization rates. Consistent with previous macrolevel research (Land, McCall, and Cohen, 1990), a measure of area socioeconomic disadvantage was calculated for each MSA across time as the mean of standard scores (multiplied by ten) for average income per capita in inflation-adjusted dollars, the percentage of persons aged 25 years and older who graduated

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8. The income-education index was constructed because female median income and the percentage college educated were highly correlated \((r > .80)\) across all three census periods. We did not consider women’s occupations because the revision of the Census 2000 occupational codes made it difficult to compare 1980 with 2000 occupation estimates (http://www.census.gov/hhes/www/eeoindex/faqs.html).

9. In additional sensitivity analyses, we reestimated our models using female-to-male ratios and percent differences (i.e., the difference between female and male status as a percentage of male status) to measure the relative status of women. Models using these alternative measures of gender inequality produced the same substantive conclusions.

10. Because the November elections were held in even-numbered years, the voting data in 1984 and 1994 were used to represent women’s political engagement in 1985 and 1995, respectively.
from high school, the percentage of the civilian labor force unemployed, the percentage of persons living in poverty, the percentage of female-headed households with children, the percentage of households with public assistance income, and the percentage of Blacks in the population (α = .85). Principal axis factoring analysis indicated that these variables consistently loaded on a single factor across all census periods, and the construction of the disadvantage index was useful in solving the multicollinearity problem that would otherwise be present had the variables been included in the models separately. Additionally, to control for the effects of population composition and family structure (see Gartner, 1990), we included measures of the logarithm of population size, the percentage of the population between the ages of 15 and 29 years, and the percentage of females aged 15 years and older who were divorced or separated.

**METHOD OF ANALYSIS**

Our analysis is focused on the importance of change in women’s status for explaining change in female victimization rates within MSAs. By restricting the analysis to within-MSA change or variability, we control for the potentially large number of unmeasured time-stable differences between MSAs, thereby reducing a potential source of omitted variable bias (Allison, 1994). Specifically, we consider a basic model of the form:

\[ Y_{it} = \alpha_i + \sum_{k=1}^{K} \beta_k X_{k,it} + \varepsilon_{it} \tag{1} \]

where the \( i \) subscript refers to different MSAs, \( t \) refers to different time periods at which the variables are measured, \( X_{k,it} \) represents a vector of time-varying explanatory variables, \( \varepsilon_{it} \) is the independent and identically distributed error term, and \( \alpha_i \) is a place-specific term that represents the

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11. Inspection of the correlation matrix and the variance inflation factors (VIFs) yielded no evidence of multicollinearity for our analysis. Female labor force participation and female income-educational attainment were moderately correlated (\( r = .68 \) in the pooled data), whereas the correlations between other explanatory variables were less than .60. The average VIF was 3.76, and the highest VIF was 4.79, much less than the threshold of 10 (Myers, 1986). For each model considered, a series of auxiliary analyses was conducted where each indicator of women’s absolute and relative status was added separately to the model. These sensitivity analyses also produced no evidence that multicollinearity affects the findings reported here.

12. In the data, the MSA total population size was almost perfectly correlated with the female population size and the number of females aged 12 years and older (all correlation coefficients were approximately .99). As a result, the models implicitly controlled for the population at risk—females aged 12 years and older.
combined effect of time-invariant characteristics of an MSA, regardless of whether they are included in the model.

From equation 1, an MSA’s mean outcome score across all time periods is:

\[ Y_i = \alpha_i + \sum_{k=1}^{K} \beta_k X_{k,i} + \varepsilon_i \]  

(2)

where \( \overline{X}_{k,i} \) represents the mean values of specified MSA characteristics for each MSA across time. Subtracting equation 2 from equation 1 gives:

\[ Y_{it} - Y_i = \sum_{k=1}^{K} \beta_k (X_{k,it} - \overline{X}_{k,i}) + (\varepsilon_{it} - \varepsilon_i) \]

(3)

where an MSA’s outcome score at time \( t \) is expressed as a deviation from its mean score across all time periods. Thus, equation 3 removes MSA-specific, time-invariant variables represented by \( \alpha_i \), provided that their effects do not change over time. Because these fixed effects may be correlated with the time-varying explanatory variables, this transformation (also known as the fixed-effects or within estimator) has an important advantage: It provides a means of estimating \( \beta_k \), the coefficient of interest, in a way that takes into account a source of confounding without having to measure the time-stable variables. Although this approach does not control for all sources of confounding (e.g., it does not control for unmeasured time-varying variables or time-stable variables whose effects vary over time), it constitutes a substantial advance over cross-sectional analyses in which one could adjust for only observed confounding variables.

We also add dichotomous indicators for different time periods to control for fixed, unmeasured effects associated with time. For example, the state of the national economy at time \( t \) or an event such as the passage of the Violence Against Women Act may influence the victimization rates of all MSAs in a similar way. Likewise, if a change in survey design has a similar impact on all MSAs, the effect can be controlled by fixed effects for time periods.

RESULTS

Table 1 presents the descriptive statistics for the variables included in the analysis. These statistics are reported separately for each time period, so that trends in the variables can be observed. To illustrate trends in violence against women, figure 1 shows changes over time in the mean values of female victimization rates across MSAs for each category of victim–offender relationship (rates are shown in the figure in the original values,
Table 1. Descriptive Statistics for Study Variables

<table>
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<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Min.</td>
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<td></td>
<td></td>
<td></td>
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<td>2.04 (.60)</td>
<td>2.17 (.72)</td>
<td>1.83 (.57)</td>
<td>1.24 (.61)</td>
<td>−.52</td>
</tr>
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<td>Known/nonintimate violence</td>
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<td>2.59 (.55)</td>
<td>2.86 (.46)</td>
<td>2.54 (.53)</td>
<td>2.03 (.62)</td>
<td>.68</td>
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<td>Stranger violence</td>
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<td>2.89 (.32)</td>
<td>2.99 (.29)</td>
<td>2.65 (.33)</td>
<td>1.99 (.42)</td>
<td>.86</td>
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<tr>
<td>Original rates</td>
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<tr>
<td>Intimate partner violence</td>
<td>8.29 (4.88)</td>
<td>8.62 (4.33)</td>
<td>10.68 (5.84)</td>
<td>7.21 (3.74)</td>
<td>3.89 (2.48)</td>
<td>.59</td>
</tr>
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<td>Known/nonintimate violence</td>
<td>14.19 (6.05)</td>
<td>15.38 (8.19)</td>
<td>19.27 (9.25)</td>
<td>14.16 (6.22)</td>
<td>8.95 (4.74)</td>
<td>1.98</td>
</tr>
<tr>
<td>Stranger violence</td>
<td>24.94 (8.56)</td>
<td>18.93 (6.01)</td>
<td>20.77 (6.16)</td>
<td>14.92 (5.05)</td>
<td>7.87 (2.88)</td>
<td>2.36</td>
</tr>
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<td>Independent Variables</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>Female labor force participation</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute status</td>
<td>52.49 (4.97)</td>
<td>55.96 (4.72)</td>
<td>59.43 (4.61)</td>
<td>59.22 (4.33)</td>
<td>59.00 (4.34)</td>
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<td>−20.91 (2.38)</td>
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<td>−15.66 (1.78)</td>
<td>−13.84 (1.71)</td>
<td>−30.52</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute status</td>
<td>−9.56 (5.73)</td>
<td>−4.58 (6.59)</td>
<td>.14 (7.52)</td>
<td>4.78 (7.72)</td>
<td>9.22 (8.15)</td>
<td>−18.21</td>
</tr>
<tr>
<td>Female-male differential</td>
<td>−6.32 (4.68)</td>
<td>−2.86 (3.98)</td>
<td>.39 (3.49)</td>
<td>3.11 (3.21)</td>
<td>5.67 (3.07)</td>
<td>−13.88</td>
</tr>
<tr>
<td>Female voter turnout</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute status</td>
<td>54.09 (8.52)</td>
<td>51.44 (7.39)</td>
<td>52.67 (8.13)</td>
<td>53.97 (9.65)</td>
<td>52.10 (7.43)</td>
<td>34.39</td>
</tr>
<tr>
<td>Female-male differential</td>
<td>−.25 (2.86)</td>
<td>−.55 (3.91)</td>
<td>.27 (3.79)</td>
<td>.58 (3.37)</td>
<td>.13 (3.48)</td>
<td>−12.10</td>
</tr>
<tr>
<td>Control Variables</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic disadvantage</td>
<td>3.16 (6.90)</td>
<td>1.83 (6.70)</td>
<td>.50 (6.98)</td>
<td>−1.66 (6.84)</td>
<td>−3.83 (6.98)</td>
<td>−17.55</td>
</tr>
<tr>
<td>Ln (population size)</td>
<td>14.39 (.63)</td>
<td>14.48 (.59)</td>
<td>14.55 (.57)</td>
<td>14.63 (.56)</td>
<td>14.70 (.55)</td>
<td>13.27</td>
</tr>
<tr>
<td>Percent population aged 15–29 years</td>
<td>27.41 (2.37)</td>
<td>25.38 (2.15)</td>
<td>23.63 (2.18)</td>
<td>22.04 (1.94)</td>
<td>20.66 (1.90)</td>
<td>15.35</td>
</tr>
<tr>
<td>Percent females divorced/separated</td>
<td>11.30 (1.67)</td>
<td>12.29 (1.62)</td>
<td>13.28 (1.68)</td>
<td>13.61 (1.57)</td>
<td>13.94 (1.59)</td>
<td>6.50</td>
</tr>
</tbody>
</table>

NOTES: N = 40 MSAs in each time period; N = 200 MSA-period-specific observations in the pooled data.

ABBREVIATIONS: MSA = 40 largest U.S. metropolitan areas; SD = standard deviation.
As figure 1 shows, stranger violence against women in the MSAs occurred at higher rates than known nonintimate and intimate partner violence from 1980 through the 1990s. The rates of stranger violence in the early 1980s were at a peak value of 24.9 per 1,000 females aged 12 years and older. These rates fell to 18.9 during the second half of 1980s, but then climbed 10 percent to the rate of 20.8 in the early 1990s. During this time, violence by both known nonintimates and intimate partners also grew and reached their peak. After the early 1990s, all three types of violence declined steadily. Because stranger violence declined more than the other two types of violence (also see Rennison and Planty, 2006), the gap between stranger violence and other types of violence grew smaller over time. In the period of 2000–2004, the average rate of known nonintimate violence exceeded that of stranger violence. Overall, the aggregated MSA-level trends in violence against women are similar in distribution to the national-level trends (see Lauritsen and Heimer, 2008).

Table 1 also shows important changes in women’s status over time in the MSAs (see figure 2). From 1980 to the early 1990s (periods 1 to 3), the average rate of female labor force participation rose from 52.5 percent to 59.4 percent, where it remained relatively stable through 2004. Unlike the case of females, the overall male labor force participation rate (not reported in the table) remained relatively stable until the early 1990s, after which it declined slightly, causing the female–male gap in labor force participation
to decline steadily (although at a decelerating pace over time). Meanwhile, as indicated by the upward trend in female income-educational attainment scores in both absolute and relative terms, the income and educational status of women in the MSAs, on average, increased from 1980 through 2004. In contrast, no discernable trend occurred in the average rates of female voter turnout for the MSAs, and the differences between female and male voter turnout were small across all time periods (less than 1 percent). The small differences in the mean levels of female and male voter turnout, however, did not necessarily indicate that females and males voted equally across all MSAs. Indeed, at each time period, there was considerable geographic variation among MSAs in the gender gap in voting as indicated by the relatively large standard deviation.

Our ability to test the effects of explanatory variables is largely dependent on variation within MSAs. Thus, we decompose the overall variation in each variable into between- and within-MSA components using one-way analysis of variance (ANOVA), and we report the results in the last two

Figure 2. Mean Levels of Women’s Status in the NCS-NCVS MSAs: 1980–2004

a. Labor force participation

b. Income-educational attainment

c. Voter turnout

- Absolute Status
- Female–Male Differential
columns of table 1. We find that within-MSA variability is greater than between-MSA variability for all types of violence against women. In other words, rates of violence against women exhibit greater change over time than variation across place, thus reinforcing the importance of longitudinal analysis. All explanatory variables, with the exception of the logarithm of population size, also exhibit considerable within-MSA variation.13

Table 2 presents the results of the fixed-effects models examining the hypotheses outlined earlier.14 The main coefficients of interest are those pertaining to the association between women’s absolute and relative status and female victimization rates in each category of victim–offender relationship. The results are described in two parts, the first considering women’s absolute status, and the second discussing the relative status of women, or gender inequality. We discuss women’s absolute status first because it played a larger role in explaining violence against women.

THE ABSOLUTE STATUS OF WOMEN

For intimate partner violence (model 1), the coefficients for the three absolute-status measures (of labor force participation, income-educational attainment, and female voter turnout) are all negative and statistically significant. The magnitude of these effects can be illustrated by using the average rates of change in the predictor variables observed in the sample. Net of the effects of other factors, a 1.0 percentage point rise in female labor force participation is associated with a 14 percent reduction in the intimate partner victimization rate. This means that in an area with an average rate of intimate partner victimization (7.7 per 1,000 females aged 12 years and older according to the pooled data), a 1.6 percentage point increase in women’s labor force participation (the mean rate of increase for the MSAs) would be associated with a decline in the rate of intimate partner victimization to 6.2 for that area. We also found that an increase of

13. Because change in the size of population within MSAs was relatively small compared with the MSA-to-MSA differences in population size, the effect of the variable, Ln(population size), may be difficult to estimate. Excluding this variable from the fixed-effects models had little impact on our results.

14. For all models, the Hausman test favored fixed-effects models over random-effects models, and the Wooldridge test for autocorrelation indicated that there was no significant first-order serial correlation in the residuals (Wooldridge, 2002; results available upon request). To detect possible heteroscedasticity, we used a modified Wald statistic for groupwise heteroscedasticity in the residuals as proposed by Greene (2000; results available upon request). The test rejected the null hypothesis of homoscedasticity. Thus, we applied the Huber–White sandwich variance estimator to produce standard errors that are robust to heteroscedasticity problems; these estimates are reported in table 2. The skewness–kurtosis test indicated that the residuals from the fixed effects models were normally distributed.
Table 2. Results from Fixed-Effects Models of the Logarithm of Violent Victimization Rates for Women in the NCS-NCVS MSAs, 1980–2004

<table>
<thead>
<tr>
<th>Variables</th>
<th>(Model 1) Intimate Partner</th>
<th>(Model 2) Known Nonintimate</th>
<th>(Model 3) Stranger</th>
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</thead>
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<tr>
<td>The Status of Women</td>
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<tr>
<td>Female labor force participation</td>
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</tr>
<tr>
<td>Absolute status</td>
<td>-.14**</td>
<td>.08**</td>
<td>.07**</td>
</tr>
<tr>
<td></td>
<td>(.05)</td>
<td>(.03)</td>
<td>(.02)</td>
</tr>
<tr>
<td>Female–male differential</td>
<td>.12**</td>
<td>.01</td>
<td>-.05</td>
</tr>
<tr>
<td></td>
<td>(.05)</td>
<td>(.02)</td>
<td>(.03)</td>
</tr>
<tr>
<td>Female income-educational attainment</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Absolute status</td>
<td>-.09***</td>
<td>-.00</td>
<td>-.02</td>
</tr>
<tr>
<td></td>
<td>(.02)</td>
<td>(.03)</td>
<td>(.02)</td>
</tr>
<tr>
<td>Female–male differential</td>
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<td>.04</td>
<td>-.04</td>
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<tr>
<td></td>
<td>(.04)</td>
<td>(.04)</td>
<td>(.03)</td>
</tr>
<tr>
<td>Female voter turnout</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Absolute status</td>
<td>-.02**</td>
<td>-.02***</td>
<td>-.01***</td>
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<td>Socioeconomic disadvantage</td>
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<td>.01</td>
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<td>(.02)</td>
<td>(.01)</td>
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<td>Log population size</td>
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<td>(.59)</td>
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<td>(.32)</td>
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<tr>
<td>Percent population aged 15—29 years</td>
<td>.20**</td>
<td>-.01</td>
<td>.08</td>
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<tr>
<td></td>
<td>(.06)</td>
<td>(.05)</td>
<td>(.03)</td>
</tr>
<tr>
<td>Percent females divorced/separated</td>
<td>.42**</td>
<td>.12</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>(.10)</td>
<td>(.08)</td>
<td>(.05)</td>
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<td>Year 1985</td>
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<td>(.59)</td>
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<tr>
<td>$R^2$</td>
<td>.42</td>
<td>.24</td>
<td>.49</td>
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</table>

NOTES: N = 200 in each model (MSAs × 5 time periods); numbers in parentheses are robust standard errors (see footnote 14). The models control for unobserved heterogeneity between MSAs (see equation 3).

ABBREVIATION: MSA = 40 largest U.S. metropolitan areas.

*p < .05; **p < .01; ***p < .001 (two-tailed tests).

one tenth of a standard deviation in female income-educational attainment is associated with a 9 percent reduction in the intimate partner victimization rate. Thus, in an area with the average victimization rate (7.7), a mean increase in female income and education (an increase of one-half standard deviations for the MSAs) would result in a decrease in the victimization rate to 4.9. The results also show that a 1.0 percentage point increase in
female voter turnout predicts a 2 percent reduction in the rate, meaning that in the average area, a mean increase of 2.0 percentage points in voter turnout would result in a decrease in the intimate partner violence rate to 7.4. Thus, these statistically significant findings support the prediction of the protective hypothesis—advances in the absolute status of women are associated with decreases in the rate of intimate partner violence for women living in these MSAs.

In contrast to the results for intimate partner violence, models 2 and 3 (for known nonintimate and stranger violence, respectively) reveal a positive relationship between female labor force participation and these forms of victimization. A 1.0 percentage point increase in female labor force participation is associated with 8 and 7 percent increases in women’s victimization by known nonintimates and strangers, respectively. Thus, in areas with average rates of known nonintimate violence (14.4) and stranger violence (17.5), a mean increase of 1.6 percentage points in female labor force participation would result in increases in these victimization rates to 16.4 and 19.6. The differences across equations in the effects of labor force participation on women’s risk of victimization are statistically significant ($\chi^2$ between models 1 and 2 = 5.28, $p < .05$; $\chi^2$ between models 1 and 3 = 11.14, $p < .001$; there is no significant difference between the two coefficients in models 2 and 3). Thus, these findings about stranger and known (nonintimate) violence support the routine activities hypothesis: Although women are less vulnerable to intimate partner violence as their labor force participation grows, their risks of violence by strangers or other known offenders increase significantly with increased labor force participation.

The results from models 2 and 3 show that although increases in the absolute level of female income and education are significantly linked to a lower risk of intimate partner violence for women, this relationship is not statistically significant for violence by strangers or other known offenders. (The differences in the coefficients are statistically significant: $\chi^2$ between models 1 and 2 = 9.89, $p < .01$; $\chi^2$ between models 1 and 3 = 10.66, $p < .01$.) Thus, although greater female income and education seem to protect women somewhat from intimate partner violence, increases in these

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15. To test the differences in the estimated coefficients between models formally, we first reestimated our models using seemingly unrelated regression methods because the models were fitted on the same set of MSAs and the residual terms for the models may be correlated (the estimates were derived using “suest” command in Stata 10; see StataCorp, 2007: 347–64; the results were similar in both magnitude and direction to those reported in table 2). Then, the Wald $\chi^2$ statistics were used to test the equality of the regression coefficients between models, which are reported in the text.
socioeconomic factors are less effective in shielding women from known nonintimate and stranger violence. From the routine activities perspective, these differential effects may be related to the ways women change their activity patterns as their income and education improve. Increases in women’s income and education may lead to a reduction in women’s time spent on domestic work and offer them more opportunities for social interactions outside the home. Thus, more exposure to victimization by strangers and other known offenders could offset whatever protective effects accrued from greater income and education, thereby producing the null effect of our female income-educational attainment variable in models 2 and 3.

Levels of female voting also exhibit a consistent effect on victimization rates. For this measure, however, the coefficients for known offender and stranger violence parallel that for intimate partner violence in both direction and magnitude. Thus, increases in female voter turnout are significantly associated with lower rates of violent victimization for women across all types of victim–offender relationships. These findings are consistent with the argument that greater levels of political engagement may be associated with both safer streets and homes (Rosenfeld, Messner, and Baumer, 2001). A better understanding of these relationships, however, will require additional research that delves beyond voter turnout, which is an issue we return to in the Discussion section.

THE RELATIVE STATUS OF WOMEN

Regarding the relative-status measures, our results find only one statistically significant relationship. In model 1, we find a significant and positive association between the female–male differential in labor force participation and the rates of intimate partner violence, which is a finding that is consistent with the backlash hypothesis. We further investigated whether this backlash effect changed over time during the study period by examining interaction terms between this relative-status variable and the time-period dichotomous variables (results not shown but available upon request). None of the interaction terms made a significant contribution to the model, which indicates that in our sample, no evidence exists that gender differentials in labor force participation produce significantly different effects on victimization across the time periods examined by our study.

Nevertheless, the evidence in our data supporting the backlash hypothesis is somewhat limited in scope and to a single measure of women’s status. First, the gender differential in labor force participation is statistically significant only in the model for intimate partner violence, which suggests that
threats to male status seem to be most pronounced in intimate relationships where social comparisons may be most salient. Second, in all three models, changes in the female–male gaps in income, education, and voter turnout are not related to changes in the rates of female victimization, regardless of the victim–offender relationship. In supplementary analysis not shown here, we also find no indication that a significant change over time occurs in the effects of the relative-status variables, and a separate analysis of the two components of female income-educational attainment (median income and the percentage college educated) produced similar results. Thus, when the absolute status of women is taken into account, changes in relative status or gender inequality have a more limited role in explaining trends in violence against women in our data. Importantly, however, that role is in the form of a backlash effect that is associated with increases in intimate partner violence against women.16

OTHER COVARIATES

In addition to the status of women, the results for the control variables are of theoretical interest in understanding women’s victimization from

16. In addition to the regression analyses, we also explored patterns of change in individual MSAs, comparing their changes in female victimization rates and interpreting the changes in terms of women’s status. For example, we compared the Cleveland and Cincinnati MSAs as they shared somewhat similar characteristics in terms of the overall economic condition, population size, age structure, and female divorce rate as measured by the control variables. The two MSAs displayed a different pattern of change in 1990 when Cleveland recorded a 2.5-percentage-point increase in female labor force participation, whereas Cincinnati’s increase was significantly higher (4.4 percentage points). In the period that followed (1990–1994), the two MSAs both reported increases in their rates of stranger and known nonintimate violence, but the increases were smaller in Cleveland than in Cincinnati (e.g., the increase in stranger violence was from 18.3 to 19.7 in Cleveland and from 12.9 to 24.8 in Cincinnati; and the increase in known nonintimate violence was from 13.7 to 18.5 in Cleveland and from 9.2 to 19.4 in Cincinnati). Their changes in intimate partner violence rates were potentially more complex given that this type of violence is, based on our regression models, influenced by both women’s own labor force experience and the gender gap between men and women. The data showed that in 1990, a greater reduction in men’s labor force participation occurred in Cleveland than in Cincinnati (1.9 vs. .6 percentage points), making Cleveland a higher risk for a backlash effect, which may cancel some of the reduction in intimate partner violence caused by women’s more active role in the labor market. From 1990 to 1994, Cleveland reported a reduction in intimate partner violence from 12.3 to 9.4, which is a smaller change than that observed in Cincinnati (11.5 to 8.1). Although these changes cannot be fully explained by women’s status (other variables such as changes in female divorce rates are important as well), these patterns are largely consistent with the effects of women’s status in our regression models.
a broader perspective. As shown in table 2, women are at a higher risk for violence by intimate partners and other known offenders when the MSAs they live in are facing increases in socioeconomic disadvantage or economic hardships. For stranger violence, the coefficient also is positive, but the relationship is not statistically significant once other variables are taken into account. In a test of the equality of the coefficients, we find a significant difference between the effects of socioeconomic disadvantage on intimate partner violence (model 1) and stranger violence (model 3), but the other paired comparisons are not statistically significant. This pattern of coefficients suggests that the effects of MSA-level socioeconomic disadvantage vary somewhat by victim–offender relationship; however, this research cannot determine why such differences might exist. It is possible, for example, that changes in MSA-level disadvantage create more opportunities for intimate partner violence than for stranger violence because women are more likely to reduce their out-of-home leisure activities in times of economic hardship. Alternatively, in areas where disadvantage is increasing, male partners might be more likely to become unemployed and households might be more likely to be experiencing financial strain. Such changes in household characteristics have been shown in individual-level research to be positively associated with intimate partner violence, even when prior intimate partner violence levels are included in the model (Benson et al., 2003). Additional data and analyses are needed to examine these and other alternative interpretations of the role of area-wide socioeconomic disadvantage on different forms of violence against women.

Additionally, the significant positive relationship between violence against women and the percentage of the population aged 15–29 years found in models 1 and 3 is consistent with the theoretical expectation about the relationship between age structure and crime rates (Cohen and Land, 1987), although why this relationship is different for violence by known nonintimates is not clear. The percentage of females divorced or separated is significantly and positively associated with intimate partner violence, which is a pattern that is consistent with individual-level findings showing that women’s risk for intimate partner violence is increased during periods of separation (e.g., Bachman and Saltzman, 1995; Crawford and Gartner, 1992; Sev’er, 1997; Wilson and Daly, 1993). Divorce rates are associated with higher risk of victimization because the dissolution of relationships, particularly when initiated by women, may constitute a threat to men’s power within the family, which motivates them to use violence as a means of coercive control (Sev’er, 1997). Alternatively, Dugan, Nagin, and Rosenfeld (1999) suggested that rising divorce rates may lead to increases in nonmarital intimate relationships that are less stable and more violent. Indeed, Dawson and Gartner (1998), among others, found higher risks of violence in cohabiting or dating relationships compared with marital relationships.
These explanations suggest that a better understanding the link between divorce rates and intimate partner violence will require consideration of the larger story of gender inequality as well as changes in family structures and routine activities that accompany shifts in traditional patterns of marriage. In contrast to intimate partner violence, we find that divorce rates play no significant role in explaining over-time variation in rates of violence by strangers and other known offenders. Overall, these results suggest that separate analyses by victim–offender relationship are useful not only for clarifying the role of women’s status in violence against women but also for evaluating how the rates of violence may change as other conditions of social life change over time.

**SUMMARY**

In sum, drawing on feminist and routine activities theories, we find that hypotheses from each perspective are useful for explaining changes in women’s victimization over time, and that the extent of support each hypothesis receives is contingent on the specific victim–offender relationship. For intimate partner violence, the evidence favors the protective hypothesis and suggests that women’s absolute gains in economic and political status may reduce women’s vulnerability to violence by intimate partners. However, we also find some support for a backlash effect, in that the closing of the gender gap in labor force participation is associated with increased rates of intimate partner victimization. However, the protective influence of increases in absolute levels of female labor force participation is at least as large or larger than the negative consequences associated with the backlash effect. In contrast to intimate partner violence, the data for stranger and known nonintimate violence support the routine activities hypothesis by showing that increases in female labor force participation are associated with increases in these violence rates. The only hypothesis that is not supported is the ameliorative hypothesis: Increases in women’s relative status compared with men are not associated with decreases in rates of female victimization, even though increases in their absolute status are related.

**DISCUSSION**

Our analysis of the NCS-NCVS data for the 40 largest metropolitan areas shows large variations over time in the rates of female victimization, which allows us to examine the link between women’s status and victimization from 1980 to 2004. Nonlethal violence occurs with substantially higher frequency than homicide; yet quantitative research on nonlethal violence against women has lagged behind research on lethal violence. In this study,
we assess explanations of female victimization derived from several theoretical perspectives. Perhaps the foremost conclusion from this research is that it is important to examine violence by intimate partners, strangers, and known nonintimates separately because the mechanisms linking women’s status to violence seem to vary across these subtypes of victimization. Similar suggestions were made by Bailey and Peterson (1995) and by Vieraitis, Kovandzic, and Britto (2008) in their cross-sectional studies of female homicide victimization using police records. Our analyses extend this line of work by examining women’s experiences with nonlethal violence, by using longitudinal rather than cross-sectional data, and by uncovering new patterns, which we summarize here.

An important finding from our research, a finding that previously has not been reported, concerns the importance of the distinction between absolute and relative status for understanding nonlethal violence. In the MSAs studied here, the three forms of female victimization rates examined are more closely associated with women’s absolute status than with women’s relative status (as compared with men’s) during the study period. Consistent with the protective hypothesis, we find that women’s improved absolute status in economic and political arenas reduces women’s vulnerability to violence by intimate partners. And, in the case of violence involving strangers and other known offenders, we find that increases in women’s participation in the labor force have an unintended outcome of increased victimization, as predicted by the routine activities hypothesis.

By comparison, the relative status of women (or gender inequality) plays a smaller role in explaining changes in victimization rates in these MSAs during this period, except in the case of intimate partner violence. Our analyses indicate that increases in women’s labor force participation relative to men’s are associated with increases in intimate partner violence, rather than with any decline in violence against women. This pattern is consistent with the backlash hypothesis that, all else being equal, increased gender parity in labor force participation may threaten the patriarchal notion of male economic dominance and portend an increase in intimate partner violence. The fact that we find an increase in intimate partner violence but not in other types of violence may reflect the tendency for status comparisons to be more salient in private and family life. Yet we interpret this finding cautiously because relative labor force participation captures male as well as female employment and, thus, can be driven more by changes in male than in female rates at times. For example, gender equality in labor force participation may increase when male employment rates decline more dramatically than female rates. In this case, it is possible that intimate partner violence may occur in part because of male responses to their own unemployment.
We caution against interpreting our pattern of findings as evidence that gender inequality is not an issue for violence by strangers or other known offenders. Theories of rape and sexual assault, for example, suggest that gender inequality may create a hostile social climate toward women where assaults on women by strangers and other offenders thrive (Baron and Straus, 1987; Whaley, 2001). Because data limitations preclude modeling specific crime types (such as rape, robbery, and assault) within each category of victim–offender relationship, our analyses do not justify rejecting the potential importance of gender inequality for rape, sexual assault, or other specific types of violence.

Also, to explore further the link between gender inequality and violence against women, it will be necessary for future research to study geographic areas outside of the sampled MSAs. Some studies suggest that the effects of gender inequality on victimization may differ in the South as compared with other regions, possibly because of differences between areas in cultural orientations to gender roles (Gauthier and Bankston, 1997; Whaley and Messner, 2002). Furthermore, some evidence shows that the economic profile of an area may moderate the relationship between gender inequality and victimization rates (Gauthier and Bankston, 1997; also see Gartner, Barker, and Pampel, 1990). For instance, to the extent that places with different economic profiles differ in material status or goals, people’s attitudes toward gender inequality may vary, causing the effect of gender inequality to vary as well. In our study, we tested but did not find in our data significant differences between Southern and non-Southern MSAs in the effects of gender inequality, nor did we find that the overall level of socioeconomic disadvantage in an MSA is a significant moderator of the inequality–violence relationship. Nevertheless, our results are restricted to our sample of 40 MSAs. It will be useful for future research to investigate whether our findings can be replicated when more localities (both MSA and non-MSA locations) are included in the analysis.

Our models also can inform research on macrolevel data at other units of analysis, such as cities and counties. This study focuses on MSAs partly because this is a good choice for studying women’s labor market experiences and partly because the area-identified NCS-NCVS data currently are available only at the MSA level. As with any choice of unit of analysis, however, focusing on the MSA level has some limitations. Variation in socioeconomic characteristics and victimization rates within MSAs at each point in time is not examined by our study, of course. Women’s social statuses and their engagement in political and civic life, for example, may vary across political boundaries among cities, townships, and counties, and this cannot be detected by an analysis of MSA-level data. A complete understanding of the etiology of violence against women will require research at varying levels of geography. Indeed, it may be that some discrepancies in findings
in this literature, which we reviewed here, can be traced to differences in units of analysis. Comparative research across geographical units therefore is important for illuminating the complete story of macrolevel processes leading to violence against women.

Finally, our study underscores the need for additional research in the area of women’s political participation and its link to violence against women. Our models show a consistent negative association between female voter turnout and victimization, regardless of victim–offender relationship. For strangers, intimate partners, and other known individuals, women’s political participation as voters is associated with decreased victimization, independently of their labor market participation, income, and education. A full understanding of this relationship will require further empirical investigation, which goes beyond an assessment of female voting behavior to address other dimensions of women’s political participation, including women’s representation in political office and women-focused institutional resources, such as state commissions for women, legislative caucuses, and other women’s organizations (Institute for Women’s Policy Research, 2004). The criminological literature, furthermore, suggests that voting is an important indicator for civic engagement that may help women to build social networks and provide them with avenues to improve safety (Lee, 2008; Lee and Bartkowski, 2004; Rosenfeld, Messner, and Baumer, 2001). These studies suggest that multiple mechanisms might be captured by the effect of voter participation on women’s risk for victimization, which is an important topic for future research.

In conclusion, our study extends previous research by assessing multiple hypotheses about violence against women, with an eye to exploring how the underlying mechanisms may vary across types of victim–offender relationships. Our results, in part, echo the observations of Gartner (1990) and of Cohen and Felson (1979) that as the nation is making progress toward improving women’s status, positive social developments may have both desirable as well as undesirable outcomes. These findings underscore the need for future research that compares the predictions of the various theoretical perspectives to identify the most effective social policies for addressing violence against women.

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