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STRAIN, STATUS OR STEREOTYPE? THE NEXUS OF ECONOMIC DISTRESS AND FAMILY VIOLENCE

by

Rebecca Jane Grainger Stone

A THESIS

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

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ABSTRACT

STRAIN, STATUS OR STEREOTYPE? THE NEXUS OF ECONOMIC DISTRESS AND FAMILY VIOLENCE

by

Rebecca Jane Grainger Stone

The current study is an attempt to reproduce and extend upon prior research by Fox, Benson, DeMaris and Wyk (2002) examining the impact of economic distress on the odds of intimate partner violence. While there are many theoretical approaches to this topic, some in direct contradiction to each other, the results of the logistic regression analysis support an integrated theory of strain, informal social control, and gendered power-control theories. The results are relevant in light of the 2008-9 economic crisis and what might be expected as the nation experiences massive rates of home foreclosure and high unemployment rates. Finally, there is discussion of the difficulties of reproducing social science from the information published in scholarly journals and suggestions for future publications, given the importance of regularity of findings when making informed policy decisions.

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INTRODUCTION

Domestic violence advocates frequently claim that violence against intimates is a "classless" problem. They argue that assaults of "women and children occur in all social class, across occupation types, in all racial and ethnic groups in all types of neighborhoods, in cites, and rural areas" (Fagan, 1993: 209). A wealth of research published over the past forty years has measured domestic violence among families in every social class, supporting the anecdotal evidence provided by advocates for this claim (Gelles, 1993). For instance, analysts of both the 1985 and the 1995 National Family Violence Survey report finding violence in every social class (Straus et al. 1980; Fagan and Browne 1994). Nevertheless, a claim that the rate of family violence is independent of several socially constructed categories "runs counter to empirical evidence about the social epidemiology of violence between spouses and other intimates" (Fagan 1993: 209). Gelles (1993) argues that family violence is more likely found among the poor and unemployed or those holding low-prestige jobs (c.f., Finkelhor et al. 2005). This paper will seek to unravel the connections between income, employment, financial stress and family violence so that we may better understand the interaction between these variables and address them with more potency. I begin with an overview of the many theoretical approaches to linking economic concepts to domestic violence, then move to a description of a 2002 study that I seek to reproduce and the extensions I wish to make. I then detail the difficulties I encountered while attempting to reproduce the original analysis. The results of my re-analysis are followed by a comparison between my results and the original findings, and I close with a discussion of both the relevance of the findings to this field of study and the difficulty inherent in reproducing social science.

THEORETICAL LINKS

For the past forty years of systematic family violence research, researchers seeking to explain the epidemiology of family violence or the patterns of violence recidivism following interventions have included several forms of economic capital. Generally, the choice of which of these measures to model seems more often determined by their availability than by a theoretical suggestion or favoring of one over another.

Employment I will begin by assessing the question about the link between employment status and family violence. Of the many theoretical arguments available, the most simplistic links employment and domestic violence through a change in either or both family member's routine activities (Cohen and Felson 1979). Out-of-the-home employment of one or both spouses removes the presence of both perpetrator and target from each others' presence for at least some hours of the day. If both spouses are in the home throughout the day due to unemployment, frustration may build as each feels their space is invaded. During working hours, neighbors who normally serve as capable guardians (those who make noise complaints or are likely to alert police) may be at their own workplaces or alternatively addressing their own home foreclosure and therefore are unavailable to intervene or reduce the likeliness of violence disputes. This matter is of no small importance for preventing domestic violence prevention since about fifty percent of calls to police for domestic violence are made by neighbors. Similarly, children are at school during the day and not able to play the role of the "capable guardian." Thus, any connection between employment and violence may have nothing to do with most stresses, less resources, or symbolism, but purely opportunity: more employment equates

to less contact. On the flip-side of this theory, while working long hours reduces contact (and the opportunity for violence) and increases household income, it can also increase stress on the employee and his family such that when the partners are in contact, the likelihood of violence is increased (Fox et al. 2002). Thus, theories and polices linking more employment to less violence may find their antithesis in overworked individuals.

Previous scholars have also argued that an individual's "stake in conformity" may suppress battering behavior (Sherman 1992; Fagan 1993). While the "stakes in conformity" theory is not developed well enough to specifically identify which sorts of measures ought to be good or bad indicators of a person's stakes or even the exact nature of the interaction, most of the scholarship in the area of family violence connecting stakes to violence have relied on employment as the key proxy. Employment is consistently viewed as an overt measure of a person's stakes since it is generally accepted that individuals wish to avoid crime and formal punishment so as not to reduce their chances of establishing or retaining employment. More specifically under the social control theme, the conditional deterrence hypothesis asserts that formal sanctions can only deter offenders if they will also suffer social costs because of their bond to conventional commitments or norms. Employment as well as home ownership serves as one of several social bonds (Hirschi 1969), insuring a person's commitment and attachment to their family, neighborhood and community. In fact, more so than length of residence, homeownership is a critical determinant of one's bond or attachment to their neighborhood (Brisson & User 2007; Oh 2004). Thus, just like losing a job, losing a home should weaken a person's bond that may have deterred them from using violence.

In the context of formal social controls, the effectiveness of sanctions such as arrest or mandated treatment is believed to be influenced by the reinforcing stimuli of other informal controls. The hypothesis would therefore predict that the addition of a criminal sanction should have no deterrent effect among those that have no concurrent conventional "stakes", and only deter among those that do have some "stakes". Alternatively, the social control replacement hypothesis argues that criminal sanctions are only noticeably effective when other informal controls are missing. For those with social controls, the presence of a criminal sanction adds little to the overall cost already imposed by other social control mechanisms. In other words, those without informal controls can be deterred by the direct cost of the criminal sanction (e.g., a night in jail or a monetary fine), while others are deterred by other costs (e.g., lost of a job or breakup of a marriage) arising solely from informal social controls. Finally, the additive hypothesis claims that both informal and formal controls independently deter future deviance, and that more of either type of control results in failures. As such, those with the highest degree of social control should have less frequent offending, while those with the least control should have the highest level of failing.

The "stakes" hypothesis would therefore predict that family violence should go up as men transition from an employed to an unemployed status, even if the system applies more sanctions to compensate for the reduced quantity of inform social controls. In fact, Sherman (1992) suggest the application of more sanctions may make the situation worse or backfire, which may be particularly true if the men believe their lay-offs are due to the economic crisis rather than their employee performance. This process may damage a person's belief in a fair and just economy and lower their sense of procedural justice (i.e.,

anomie). Conversely, in times of economic hardship, when any employment is highly valued, many more men than usual may be unwilling to risk unemployment by engaging in violent behavior. Thus, any increases in violence among those with lower stakes because they lost their jobs, may in the aggregate, be offset by an increased fear felt among those still (but now marginally) employed.

Changes in employment status loss of a home status may also represent a 'turning point', as in and Laub and Sampson's (1993) life-course model. As individuals proceed along their life-course trajectory, life changes can alter the path of the trajectory and lead individuals in a different direction, including toward or away from a criminal lifestyle. A sudden home foreclosure caused by unemployment can be a negative turning-point, directing otherwise law-abiding individuals towards criminal behavior. When the subject's place of employment fosters frequency, duration and intensity of pro-social bonds, sudden unemployment may result in the severing of these bonds and the formation of new, less positive attachments (Sutherland 1947). If a person was previously mixing socially with other employed peers, he may have been discouraged from offending as it would threaten these social bonds. After a lay-off, the same individual may form bonds with other unemployed peers who may be pursuing illegitimate sources of income. This leads to the normalization of criminal behavior, allowing the individual to integrate antisocial norms into his cognitive schemata and rationalize behavior he would previously have rejected. Bowker (1984) suggested that these types of bonds (through reinforcement) that can lead to violence or make it more difficult to stop.

Another casual process that is often discussed in criminology to explain delinquency, though not discussed among family violence researchers, is Agnew's

revision of strain theory (1992). Of special importance to researchers is Agnew's notion of self-generated norms, as this may tie strain theory to theories of social learning and environment. In this context, Agnew suggests that economic capital such as employment is a source of positive stimulus and that its removal (unemployment) will trigger anger, frustration, and criminal behavior. This process would certainly also exist when someone loses their home to a foreclosure regardless of whether they lost employment as well. The resulting anger would surely arise when a home foreclosure is considered unfair and unrelated to an individual's ability to pay prior monthly balances but can no longer keep-up because of an adjustment of the interests, as is the case with many subprime loans.

Closely related to this theoretical tangent is the frustration-aggression hypothesis (Dollard et al. 1939). When applied to layoffs and violence, the frustration-aggression hypothesis predicts that men who are laid-off will have an increased risk for violence while men who fear lay-offs will have a reduced risk. A direct test of provocation/inhibition effects (and subsequent study replication) supported this approach (Catalano et al. 2002). Layoffs have been found to increase angry, irritable and insulting behaviors (Vinokur and Price 1996). One study found that men who were laid off between the first and second study interviews were six times more likely to report poor psychiatric condition versus subjects who had retained employment (Catalano and Dooley 1993). Interestingly, men who were employed in relatively unstable fields (for example, contract work as opposed to stable industries) were twenty percent less likely to engage in violent behavior. Both findings remained significant when controlling for age, gender, socioeconomic status, marital status, psychiatric and alcohol disorders. Thus, it appears that the effect of employment on violence may be illustrated by a mediated rather than a linear model. Men who fear unemployment may practice greater self-control, to which Gottfredson and Hirschi (1990) attribute most desistance from crime.

Employment may also serve as a status or resource indicator in the relationship between a working partner and a non-working spouse. Feminist theories of male dominance and traditional gender roles would suggest that unemployment strips the male of one method of dominance over his spouse, leaving him only force or its threat (Goode 1971). If the female partner maintains employment, the male may feel pressured to exert his dominance through using physical aggression (Macmillan & Gartner 1999). Financial stress and ambiguity of gender roles may damage a normally loving and supportive relationship, removing the otherwise positive effects of this bond. This tension could be exacerbated by women wanting their partners to work longer hours (presumably to increase household income) (Fox et al. 2002). Comparative resource theory suggests that the interaction effect of men's and women's employment is "as salient to violence as the independent effect of each alone" (Fox et al. 2002). This theory may effectively cover many types of family violence as we detect imbalances between parents and children, parents and their elders, and both same-sex and opposite-sex couples.

As an alternative to the causal mechanism suggested by strain theory or the mediating model proposed by the "stakes" proponents, employment may also viewed as simple a proxy for self-control. Punctuality, compliance, and overall work ethos may all symbolize an individual commitment and attachment to one's workplace and greater environment. Alternatively, these employee characteristics may simply provide evidence of Gottfredson and Hirschi's (1990) "self-control". As this example illustrates, the

relationships between microeconomic variables and intimate violence can be dangerously spurious. While not well studied within the context of family violence, some research implies that intimate or family violence, including violence directed at older family members, has more to do with personality characteristics like low self control than stress (Pillemer and Finkelhor 1989; Sellers 2006).

Certainly, some of these theoretical augments are more supported than others. Employment has been found to deter or prevent violence, functioning as a protective factor while unemployment is a risk factor (Bachman 2000; Bowlus & Seitz 2006; Mistry et al. 2008; O'Donnell et al. 2002). In a German study, researchers found that men who were unemployed or expected to be unemployed in the near future self-reported an increase in their violent behavior, though this relationship was reduced by the presence of greater "self-awareness" (Fischer et al. 2008), a possible connection to what Gottfredson and Hirschi (1990) label "self-control". Tauchen and Witte (2001) also found that employed men were less likely to be violent than those who were unemployed. When combined with the earlier findings of Catalano and colleagues (2002), this suggests that employment serve as a social bond that moderates aggressive behavior. When

There is also substantial evidence to support gendered theories of domestic violence. When comparing employment as a protective factor for men and women, it has been found that employment is a stronger deterrent for men than for women (Magdol et al. 1997). When considered alone, male and female unemployment did not produce significant changes in violence (Macmillan & Gartner 1999); this relationship was found to hinge upon marital equality rather than individual employment. Female employment

functioned as a protective factor only when her partner was also employed; if an employed woman was partnered with an unemployed spouse, her risk of violence increased. This certainly suggests, as feminist theories would claim, that male violence is a function of a masculine need for dominance in the relationship. This concept will be revisited in the further discussion of status incompatibility.

Theoretical connections between income and the perpetration of violence Income. are largely similar to those mentioned for employment, and the variables of income and employment are often used in place of each other when including demographics in a model. We can consider income an important financial variable for detecting more subtle differences than employment or unemployment. The greater the income, for example, the greater the prestige of the occupation, in reference to the afore-mentioned studies highlighting discrepancies in occupational prestige between spouses. The greater the income, the greater the stakes in conformity – a man of high status with a high-earning position has more to lose than a lower-class man if his abuse is publicized. However, income is often inextricably entangled with other socioeconomic factors and may serve as a proxy for age, race, education or gender. In a culture where men have a higher average income than women, we could argue that "batterers have higher incomes than their victims" and simply be detecting gender differences rather than income effects. Finally, income is the predominant factor in socioeconomic status, and a favorite predictor of violence in the cadre of "drunken bum" (Kantor and Straus 1987) theories, other than alcohol use.

Historically, income has been measured at the household level. Women of lowerincome households have been found to have a higher risk of abuse (Smith et al. 2002; Bachman 2000). While some may take this to mean that income is a proxy for general socioeconomic status, income has been found to have a significant negative relationship with risk of abuse when controlling for other socioeconomic variables (O'Donnell et al. 2002). Based upon data from the National Family Violence Survey and the National Crime Survey, Fagan (1993) argued that income's effects are confounded with race and urbanism. In central cities, spousal assault rates were highest for low-income groups. However, regardless of household location, spousal assault rates were consistently over thirty percent for the poorest of African American families. These rates do decline as income increases, but only in suburban and rural areas. Rates remain high in central cities, independent of income. For white couples, spouse-assault rates are inversely associated with income in central cities but not elsewhere. Low income is also associated with high rates of child abuse, though the strength of the association depends on the composition of the family (Berger 2005).

It may be important, however, to separate female and male income in order to better detect their relationship with risk of abuse. Exploration of female income as a protective or risk factor has produced mixed results. Research has found that marital dissatisfaction and wives' proportion of household income has a relationship resembling an inverted U-shape, with divorce rates being highest when wives contribute 40-50 percent of household income. When wives' incomes is measured in dollars, the relationship appears to be linear – the higher the wife's income, the higher the likelihood of divorce (Rogers 2004). Higher income and educational attainment appears to be a

protective factor against emotional abuse (Kaukinen 2004). However, in a meta-analysis of common risk factors for spousal abuse, Hotaling and Sugarman (1986) found only three studies measuring female income, none of which found a significant relationship with husband-to-wife violence. Of four studies measuring male income, three found a negative relationship between income and violence, and one found no significant relationship.

Income also appears to be closely tied to women's cycle of abuse. Researchers have identified that the consequences of abuse and the presence of dependent children impact a woman's ability to earn, often resulting in her dependence on welfare. Welfare reforms enacted in 1996 require that welfare beneficiaries work to receive support, a demand that can seem impossible to meet when there is a lack of court-ordered child support and few affordable childcare options (Riger & Staggs 2004). When evidence suggests that economic dependency significantly influences women to remain with an abusive partner (Barnett 2000; Scott et al. 2002), it seems unreasonable to enact welfare reforms that *increase* a woman's dependency on a breadwinning partner rather than *decrease* dependency by providing childcare and empowering women to find and maintain employment.

<u>Status Incompatibility</u>. Current evidence points to income discrepancy and status incompatibility being a more likely risk factor for domestic violence than employment or income alone. Women appear to be at a higher risk of abuse when they are employed and their partners are not, a relationship that is not significant when employment of either spouse is considered separately (Macmillan & Gartner 1999). Studies on status

relationships and marital satisfaction have found that a woman's greater status in relation to her husband is associated with the husband's marital dissatisfaction (Hornung and McCullough 1981). The cultural depiction of the husband as breadwinner has supported the greater rewards accorded to men in the workplace, legitimized male power within the family, and provided men with a resource for demonstrating their masculinity (Ferree 1990; Stark and Flitcraft 1996). When this resource is removed, men may resort to violence instead. Female employment functioned as a protective factor only when her partner was also employed; if an employed woman was partnered with an unemployed spouse, her risk of violence increased. This certainly suggests, as feminist theories would assert, that male violence is a function of a masculine need for dominance in the relationship. When economic dominance (through more prestigious employment) is no longer possible, men may resort to physical violence and assert their dominance through strength rather than employment status. Raphael (2001) argues that male dependency (a product of male unemployment and female employment, in this case) causes shame, which can then fuel violence. This argument has been supported with findings that women who can at least equalize their 'occupational prestige' with their husbands (no more, no less) may find a safe balance between being a threat to masculinity and being economically dependent (Lambert & Firestone 2000). Research shows that women making more money than their spouse are at a higher risk for abuse (Atkinson et al. 2005), and this risk increases as the portion of household income contributed by the woman increases (Fox et al. 2002). Anderson (1997) found that the odds of maleperpetrated domestic violence are approximately 40 percent lower when their female partners earn less than 31 percent of the couple's total income. When women earn slightly

more (between 55%-69%) of the couple's earnings, men have approximately 3.5 times greater odds of perpetrating violence than men with earnings similar to their female partners. This risk increases to over 5.5 times greater odds of male violence when women earn 70 percent or more of the couple's income.

In today's economic climate, where traditionally male-dominated manufacturing jobs are disappearing, we may see women retaining employment where men do not, increasing status incompatibility and ultimately heightening the risk of domestic violence. In light of the above evidence, however, it is interesting to note that Farmer and Tiefenthaler (1997) find that external and independent sources of income for women (child support, government assistance, lawsuit payouts, family money, etc.) reduce women's risk and that greater economic equality for women will lead to a decrease in violence. Perhaps female equality must strike a delicate balance between "not enough" and "too much" when considering the contribution to household income.

CURRENT RELEVANCE

The 2008-09 economic recession has caused, and is causing, profound consequences in the U.S. and beyond. Housing values have plummeted across most western societies, by nearly 30 percent in one year in some localities (National Home-Value 2009). Many global equities are now less than half their worth when compared to just one year ago (World Markets 2009), and the U.S. unemployment rate has increased nearly 45 percent in just two years, now exceeding the 1983 rate (United States Unemployment 2009). Aside from these quantitative measures, many scholars and others are now discussing how this recession is qualitatively different from recent dips and its

forthcoming contagious, harmful effects. Some of these contagious consequences have already appeared, while others may not materialize for years or even decades (Robb 2008) (e.g., Elder and Liker 1982). Arguments are appearing in the news and elsewhere contemplating that this recession is unlike any we have experienced since the "Great Depression", suggesting that this downturn will usher in structural changes in the global job market that will last for decades, if not longer (Goodman & Healy 2009). Others have argued that because this recession started with a decline in home values and an upswing in their foreclosures, the one notable consequence to watch for is the decline -- not just now, but for decades -- in the ability of inner-city communities and neighborhoods to foster collective efficacy (Foreclosure Help Needed 2009). The concentrated, mass foreclosures and the resulting systemic unoccupied housing has not only hit inner-city neighborhoods, many of which have not dealt well with decades of decline in manufacturing jobs, but also begun to negatively affect suburban and wealthy rural areas (Wilson & Paulsen 2008). These latter areas are now beginning to wrestle with the consequence of the rapid contraction of the white-collar job market (Hahn 2009). If these areas begin to demonstrate patterns of high unoccupied housing with broken windows, sidewalks, depleted streets and playgrounds, and an influx of new residents from disparate cultural backgrounds, these communities may too demonstrate a rise in the sale and use of controlled substance, incivilities, and violent crime that has long victimized inner-city neighborhoods across the United States (Tuthill 2008). These factors are in turn linked to increased risks for childhood depression, anxiety disorders, and aggression (Gorman and Tolan 1998).

As of March 2009, the Internet and other widespread media sources are replete with stores about the link between home foreclosures and the economic downturn and incidents of family violence. There are numerous heartbreaking stories documenting how the 2008-09 economic slump has not only caused families to lose their homes, but is also implicated as a cause of familiar violence and the breakup of families. For example, there is the 2008 suicide of an older husband and wife in Oregon that followed their home foreclosure (Armour 2008). In Los Angeles, California, an unemployed man who once worked for Pricewaterhouse and Sony Pictures murdered his wife, three sons and his mother-in-law before turning the gun on himself. He left a suicide note saying that he was in deep financial trouble and had considered killing only himself, but decided that it was more honorable to kill his entire family before committing suicide (Karthik Rajaram Kills 2008). Just recently, Michigan's I-696 highway experienced eight hours of stand-still traffic while police negotiated with a suicidal man who was reportedly devastated by job loss and family stress (Satyanarayana & Dinh 2009; Louwers 2009).

These anecdotes are likely not unique and may represent a pattern of increased violence among family members. Across the United States (from California to Florida and up to Massachusetts), family and mental health counselors are reporting substantial increases in complaints related to money and mortgages and the resulting family violence (Armour 2008). The Women Center in Stockton, California reported that during 2008 domestic violence reports increased 12 percent and "that the majority occurred in families that are losing their homes through foreclosures" (Banks 2008). "Foreclosure, or the threat of it, can destroy families, says the group's executive director, Joelle Gomez. 'The housing market is still bottoming out and we are really bracing to see far more clients

utilizing both our shelter services and our help lines and counseling, she says" (Jensen 2008). Similarly, the National Domestic Violence Hotline (NDVH) reported that calls were up 21 percent in September 2008 when compared to the September 2007 count. They also reported that between mid-November 2008 and the end of the year, among 7,868 callers who agreed to participate in their study, 54 percent said that there was change in their household's financial situation in the past year, and 64 percent also believed that "abusive behavior has increased in the past year" (Increased Financial Stress 2009). This increased demand for help extends beyond domestic violence hotlines, as reported by the Polk County, Florida crisis hotline in late September 2008. Their crisis phone line reported a 30 percent increase in calls, with many of their callers complaining that because of lost jobs they can no longer care for their children (Down Economy Means 2008). Likewise, the San Diego Police Chief claims that because of the bad economy, calls for domestic and alcohol-related crimes are increasing. He also reports that that there are more cases of "identity theft, mortgage fraud, senior abuse, too people taking advantage of seniors, trying to get to their money" (Sullivan 2008). One advocate has speculated that if the economic downturn is restricting once-functioning couples' ability to separate, we may now face a period of rising and often dangerous relationships that more frequently turn to abuse rather than uncoupling (Bad Economy Makes 2009; Scheerer 2009; At Risk of 2008).

In other locations, domestic violence shelters are feeling a surge in their housing requests. In Spring Hillsborough, Florida, the number of women seeking shelter increased by more than 100 percent, from 90-95 per month to 196 in October 2008 (Danielson 2009). Olvera Lighter, the Spring's president, believes that what is "driving

this [increases] is [the] increased stress over the economy," Lighter maintains that "because domestic battery is about power and control, when you're standing on a shrinking iceberg of what you can control, some people might tend to lash out" (Danielson 2009). This increased demand for use and stay at shelters hurts in two ways: while demand for their services is up, funding is down (Danielson 2009). This secondary stress may be reduced somewhat by the \$50 million added to the Federal Violence Against Women Act (VAWA) Transitional Housing program through the 2009 American *Recovery* and Reinvestment Act (i.e., President Obama's *Stimulus* plan) (VAWA Transitional Housing 2009).

WEAKNESS OF PRIOR RESEARCH

The first methodological weakness is that the vast majority of the studies linking economics to family violence use cross-sectional designs which ask about violence and income at the same time. It is possible that repeated violence may cause some respondents to report less income than they once could because the violence led to lower wages, fewer work hours and/or more physical or mental health problems. Another possibility, as indirectly suggested by Gottfredson and Hirshi (1990), is that the negative correlation between social capital and violence that is detected in the cross-sectional studies is more likely driven by a third variable, self-control. Accordingly, the more selfcontrol one possesses, the more likely he or she is to be employed or have higher income, less likely to take on a risky subprime home loan, and less prone to use violence to achieve his or her goals.

A second reason for delaying acceptance of the economic-violence casual process is that the few longitudinal studies that link variables such as employment to violence are weak because they rely on stagnant employment data (c.f., (Catalano and Dooley 1993; Fox et al. 2002). In the literature uncovered for this paper, just two studies have tested what happens in households or in the relationships when there is a change in one or both partners' employment statuses or incomes. If a man transitions from employment to unemployment, does this lead him to begin using violence or to use it more frequently than before? Alternatively, does an unemployed subject who becomes employed during the study report less frequent use of violence, or do they completely desist? This latter scenario is particularly important because some suggest that for women, an improvement in employment status should reduce the likelihood of violence (e.g., (Farmer & Tiefenthaler 2003). Some claim that as women gain resources through their employment, they should become less dependent on their male partners, who should in turn fear more that the women will leave them if they try to use violence to control the relationship. These latter two scenarios are also consistent with predictions arising out of the "stakes in conformity" and "the turning-point" models we reviewed earlier. Both theories suggest that the male's employment status is linked to legitimate or elicit bonds that in turn protect against or promote the use of violence.

When considering economic variables, it appears to be extremely important to measure not at the household or family level, but at the individual level, as status discrepancies between spouses may be more powerful predictors of violence than income or employment alone. We must also make a greater effort to control for other demographic variables that confound the effects of income and employment, such as

race, age, and education. Finally, the body of literature reviewed herein offers no evidence about the connection between economics and male intimate violence victimization; though there is substantial evidence to suggest this victimization often occurs.

Besides these methodological flaws and aforementioned sampling biases, today's employment environment may well represent something qualitatively different than it did in 2001 and is certainly different when compared to the years before the 1980s; there is a great likelihood of generating false positives by generalizing from past research to today. While it is difficult for us to set aside the painful stories noted earlier, there are several contemporary employment facts that make the risk of generalizing older studies quite clear: for the most part, women are participating in today's workforce more so than they ever did before, and less of them are unemployed when compared to men (Global Employment Trends 2008). This upward employment trend began in the early 1980s (Howe 1990), and by the end of 2008 women represented 49 percent of the entire workforce (Mulligan 2009). Today, nearly 20 percent of married women earn more than their husbands (Labor Force Participation 2008). Furthermore, it is expected that, in the near future, more women will work than men. This gap is the product of a shift in the US economy away from manufacturing jobs, traditionally filled by men, to a service economy in which women play a much larger role (Gavin 2008). In February 2009, the female unemployment rate had risen to 6.7 percent, but this rate is about 20 percent lower than the male unemployment rate (6.7% vs. 8.1%) (Kirchoff 2009). This is due to men accounting for 82 percent of job losses in the first 13 months of the recession, starting December 2007 (Rampell 2009).

This structural employment shift offers both positive opportunities for women and the potential for negative consequences. While women in 2009 generally produce and control more resources than ever before, they still do not make as much money as men, and therefore must continue to manage the burden that this gap places on them. For instance, women are now more likely than ever before to be the sole breadwinner in the family, yet their 'bread' is not as sizeable, nor does it come with as many fringe benefits as what their husband's jobs once provided (Warren 2006). Given both the symbolic meaning of this turn-of-events, and the practical problems caused by women continuing to contribute a disproportionate amount of household labor, this period could cause more stress and strain than previously experienced by families. At the same time, their experience in the labor force may also bring them a better understanding of their husbands' unemployment plight and help them to adjust to their new role, a process that is in stark contrast to what happened in families facing unemployment of the male partner as recently as the early 1990s (Nordheimer 1990). For example, a woman interviewed in 2009 by the New York Times, who started working after the her husband lost his job for the first time in the early 2000s, claims that "[t]hings are not happy in the house if I blame him all the time, so I don't do any of that anymore, I know he is doing his best" (Rampell 2009). At the same time, men are reporting that they are responsible for more household tasks. The combination of these two changes may lessen today's strains when compared to those once felt when women became the sole income producer.

DECISION TO REPRODUCE A PRIOR STUDY

The proposed study is a reproduction and up-to-date extension upon a previous study. In 2002, Fox, Benson, De Maris and van Wyk used data from the 1990 Census and Waves 1 and 2 of the National Survey of Families and Households to produce their article, "Economic distress and intimate violence: Testing family stress and resources theories". They, as I do now, sought to explore the relationship between measures of economic status and the incidence and frequency of family violence. This study is one of very few to measure the effect of financial strain on rates of violence, as opposed to simply using static measures of employment and income levels. The variable of financial strain is particularly important, as it is a result of the balance between resources and needs, which will vary within families and within socioeconomic classes. For example, while the breadwinner of a family may be employed, his earnings may not satisfy the needs of his family, producing stress within the family unit and heightening the likelihood of violence. Fox and colleagues attempted to explore this relationship by modeling not only income and employment variables, but also measures of job satisfaction and status incompatibility within the family (e.g. spouse's happiness with partner's work hours, job satisfaction, etc.). Given the rarity of longitudinal studies on this topic and the high relevance of the study to today's economic climate, I felt it worthwhile to attempt to reproduce and extend upon their results.

The Fox et al. (2002) analysis revealed that each spouse's employment alone had no significant impact on violence, nor was there an interaction effect, in contrast to prior studies (Macmillan & Gartner 1999; Kalmuss & Straus 1982). The researchers did find that female partners' desire for their husbands to work more hours increased their risk of man-to-woman violence by 133%; when males desire that their female partners work more hours, the risk of violence is almost doubled. The risk of violence was also higher for women whose work leaves them irritable and tired, who feel that not working is not a viable option, and who work in lower-level, blue-collar jobs. While the analysis found that this was also true of men, the researchers did not find any effect when considering each partner's contributed share of household resources. As mentioned in the preceding paragraph, measures of income-to-needs ratios showed that violence is decreased when the income-to-needs ratio is high (odds ratio = .929), debts are lower (odds ratio = 1.273), and when the male earns a larger share of household income (odds ratio = .670), as is supposedly common in higher-income families. Fox and colleagues report that for each unit increase in a woman's sense of financial well-being, her risk of violence falls 36 percent.

To extend upon the original analysis, I will add a second dependent variable measuring female-to-male violence. Studies measuring female violence attract much controversy from scholars who point out that the overwhelming majority of domestic violence victims (measured by their presence at clinics, shelters, and hospitals) are female (Berk et al. 1983; Dobash et al. 1992). Others cite evidence from nation-wide surveys that females are just as likely to engage in violence as their male partners (Gelles & Straus 1988; Steinmetz 1977-78; Straus et al. 1980). This debate has largely centered on the use of the Conflict Tactics Scale (CTS). Critics argue that the CTS does not provide information about the context in which violent acts occur (initiation, intention, history, or pattern of violence) and therefore risks misrepresenting the nature of intimate partner violence (Flood 1999).

In the National Survey of Families and Households, the questions about intimate partner violence resemble the CTS but are not nearly as thorough. There is no measure of psychological, verbal or emotional abuse. The questions are "How often in the past year did you and your partner end up hitting or throwing things at each other?" and "Sometimes arguments between partners become physical. During the past year has this happened in arguments between you and your partner?" The variables in this file allow for measurements of male reports of perpetration, male reports of victimization, female reports of perpetration, and female reports of victimization. For the dichotomous dependent variables, "male to female violence" is comprised of the maximum value of 0/1 responses from males admitting perpetration and females reporting victimization. "Female to male violence" is the inverse – the maximum value of 0/1 responses for females admitting perpetration and males reporting victimization.

I chose to include the direction of violence in my extension for two reasons. Firstly, I am interested in the presence of any violence at all. Whether female violence is retaliatory or not, its presence contributes to an atmosphere of violence within the home. Secondly, the theoretical perspectives I am exploring are not limited to the feminist perspective. While issues of gender roles and status incompatibility certainly invoke feminist theory, other economic and strain theories make no distinction between men and women, presuming that both sexes are vulnerable to the economic forces that may instigate or increase violence. Feminist and constructionist theorists may identify this lack of distinction as a fault of these theories, as employment, income and financial strain may have different implications for men and women. Unfortunately, the NSFH data does not allow for an analysis of these complex issues.

METHODOLOGY

The Fox and Benson study used data from the National Survey of Families and Households (NSFH). The following description of the methodology was provided by the University of Wisconsin-Madison Center for Demography and Ecology, whose website hosts the NSFH data.

The NSFH was first conducted during 1987-1988 and includes interviews with a probability sample of 13,017 respondents. The sample includes a main cross-sectional sample of 9,643 households plus a double sampling of blacks, Puerto Ricans, Mexican Americans, single-parent families and families with stepchildren, cohabiting couples and recently married persons. One adult per household was randomly selected as the primary respondent. Several portions of the main interview were self-administered to facilitate the collection of sensitive information and to ease the flow of the interview. The average interview lasted one hour and forty minutes. In addition, a shorter self-administered questionnaire was given to the spouse or cohabiting partner of the primary respondent. Individuals, rather than families or households, are the units of observation.

An introductory letter was sent to each sample address. The letter provided potential respondents with information about the survey and alerted the household that an interviewer would visit their home. The interviewer visited the home and completed a household screening form. Interviewers were instructed to conduct the screening interview with a knowledgeable adult member of the household. Self-enumerated questionnaires were provided to the respondents at some points throughout the interview, facilitating the collection of data on sensitive topics and the use of multi-item scales. A respondent payment of \$10 was instituted on July 29, 1987 (about halfway through the

interviewing). No payment was offered to secondary or tertiary respondents.

Coordinators could authorize interviewers to offer a payment of \$15 to respondents who had previously refused the interview. Interviewers were also given an incentive payment of \$10 for converting a refusal.

All data from the main interview were entered using the Direct Data Entry facility of the CASES program. This program utilized the skip patterns in the interview and numerous programmed checks to ensure that the data entry process properly captured all data. The self-administered questionnaires were entered directly from the respondents' answers.

The study was originally designed to be longitudinal, with hope for funding for a follow-up after five years. Wave II of the NSFH received funding and data was collected from 1992-1994. Technology at the second data collection period allowed for the use of Computer Assisted Personal Interviewing (CAPI) technology with laptop computers. This approach was combined with prior Computer Assisted Telephone Interviewing (CATI) technology.

The CAPI sample included main respondents, 1987-88 spouse/partners, and new spouses or partners of our main respondents. The main respondents were the 13,014 respondents who were interviewed in person during the original survey. Of the 1987-88 spouse/partners, 4,508 were still living with and/or married to the NSFH-I main respondents. Another 791 were ex-spouses or partners, and 390 were deceased.

In addition to the NSFH and NSFH-II data, Fox and colleagues incorporated tract-level data from the 1990 national census. The final sample consisted of Wave 1 couples (5,493), Wave 2 couples (4,538), and couples who were present at both waves

(3,680 of total). Domestic violence was operationalized by comparing responses by both males and females. Fox and colleagues recoded the NSFH results into a dichotomous measure where '0' indicated no violence and '1' indicated that either the man reported being physically violent with the woman, the woman reported that the man was physically violent with her, or both. In cases where partners' responses were contradictory, the authors assigned a code of 1 (violence present).

The independent variables in the Fox paper are grouped into concepts of employment experience, financial adequacy, and control variables. Employment includes a dichotomous measure of current employment (1 = currently employed), job ranking according to a 5-item census occupation classification scale (5 = executive/managerial, 1 = laborers/unskilled operatives), number of hours currently worked compared to the number of hours the corresponding spouse desires, and job strain (exhausted, tense and irritable after work). Financial well-being was measured by satisfaction with financial situation, frequency of worrying about meeting expenses with current finances, and personal debt (bank and personal loans, installment loans, credit card debt). The measure of debt did not include mortgages or car payments.

Control variables include measures of race, age, and household composition. Fox and colleagues also included measures of neighborhood concentrated disadvantage by matching census tract variables to each case. Concentrated disadvantage was measured with a scale including the percentage of single parents, percentage of non-white residents, percentage unemployed, percentage of families on public assistance, and percentage below poverty line. A correlation matrix of these variables can be found in Appendix A.

REPLICATION AND REPRODUCTION ISSUES

The original plan for this study was to extend upon the Fox & Benson (2000) effort by appending Wave III of the National Survey of Families and Households (NSFH) data to their combined Wave I and Wave II file. Upon beginning the necessary cleanup and coding, however, it became apparent that the Wave III data was not suitable for my purposes.

The Wave III data file is plagued with missing data, especially in response to questions necessary for my analysis. All interviews were conducted over the telephone using CATI (computer-assisted telephone interviewing) technology. The CATI system used by the Survey Center is CASES. In the CASES CATI system, the text of the survey appears question by question on a computer screen for the interviewer to read to the respondent. Routing through the interview is based on skip logic pre-programmed into the computer. While this method may be extremely useful, it is poorly translated into codebooks. For Wave III, there is no map or record layout file as was provided for Waves I and II. This forces users to make assumptions about the positioning of screening or gateway questions that limit the possible number of valid responses to each question. For example, a simple crosstab of the question "Have you and your partner had a physical argument in the past year?" reveals very few valid responses and a lot of missing data. To be asked this question, respondents had to first answer in the affirmative to a previous question about relationship status and then be divided into married vs. non-married. This is just one example; the data is rife with confusing jumps and presumed filter questions that leave the user full of doubt as to the reliability of the answer set.

For some questions, it is difficult to determine if there was a screening question or if the question was asked at all. The question "Are you currently employed?" seems straightforward and is vital to my analysis, and yet there are zero valid responses. Elsewhere in the data set one can find measures of income and variables pertaining to occupational status, retirement status, hours worked, and so on, but there is no information suitable for a dichotomous measure of current employment. To simply determine if a respondent is employed or not, a user would have to combine the dichotomous "Do you consider yourself retired?", the scale "Number of hours worked in the past week", the interval "Reason you were absent from work last week", the continuous "Amount earned from employment this year", and other vaguely operationalized concepts. Though I attempted to combine these measures into a single measure of employment, I felt neither confident nor comfortable that my final estimate was truly a reflection of the employment status of the respondents in the sample.

The flaws in the Wave III data set may be attributable to both the pitfalls of a longitudinal study design and to a lack of funding. The Wave III Field Report reveals that, due to "budgetary restrictions" only a subset of the original sample is included in the third wave of data. Only parents of young adult children and respondents in mid to late-life were included in Wave III. The mid-to-later life sample was comprised of main respondents who did not have eligible focal children but who were 45 years and older at time 3. The Wave III sample did not include new spouses or partners currently living with the main respondent if different from the time 1 spouse or partner. These facts have serious implications for my study. The exclusion of new cohabitating partners prevents me from tracking a respondent's violence over the life course as influenced by changing

economic factors. The advanced age of the sample decreases the prevalence of violence, further reducing the number of valid cases available for analysis. Given these issues with the data, I have made the decision to omit it from this study.

CURRENT STUDY

The data for this replication is available in two locations. The sections of data used in the prior study are available on the Inter-university Consortium for Political and Social Research (ICPSR). From the NSFH, the researchers abstracted data on conflict and violence among couples, as well as data on their economic resources and well-being, the composition of the household in which the couple lived, and a large number of sociodemographic characteristics of the sample respondents. From the 1990 Census, the original researchers abstracted tract-level data on the characteristics of the census tracts in which the NSFH respondents lived. Demographic information contains each respondent's race, sex, age, education, income, relationship status at Wave 1, marital status at Wave 1, cohabitation status, and number of children under 18. Using variables abstracted from both Wave 1 and Wave 2 of the NSFH and the 1990 Census, the researchers constructed new variables, including degree of financial worry and satisfaction for males and females, number of job strains, number of debts, changes in debts between Wave 1 and Wave 2, changes in income between Wave 1 and Wave 2, if there were drinking and drug problems in the household, if the female was injured, number of times the female was victimized, the seriousness of the violence, if the respondent at Wave 2 was still at the Wave 1 address, and levels of community disadvantage.

Upon downloading the data set and beginning my initial overview of the information, it became apparent that the file available from ICPSR did not contain key variables necessary for a reproduction of the associated paper. The file I downloaded, ICPSR #3410, did not contain a dichotomous measure of employment or the age of each partner. The file did contain several measure for other variables and it was not indicated which of these had been used in the statistical models. For example, the "Concentrated Disadvantage" measure occurred in continuous, trichotomous and dichotomous forms. Swapping these different measures of the same concept in and out of the model produced different odds ratios for victimization. I was able to contact Dr. Fox to ask about the missing variables, and she was kind enough to send me a working data file that she had saved during the original analysis. While the file did contain some of the variables I needed, saving me from building them from the NSFH file, this new file had cryptic variable names, no codebook, and no information on how these measures had been created. In most cases, it was not clear which variables from the file had been included in each model; often, there were multiple variables for one concept and no variables for another. The results reported below reflect my trial-and-error experimentation to find the variables that produced the most similar findings.

Finally, there was some confusion about the sample size, as I could not seem to capture the same N used in the original models. For example, consider the variable of "Male age" used in the Fox models. The file I downloaded did not have such a variable, only "Age of Respondent". As mentioned in the methodology section, the main respondent for each household was a randomly selected adult, and could thus be male or female. To construct a variable measuring male age, I returned to the original NSFH data

and captured the measures of respondent age, respondent sex, partner age, and partner sex. I then created several "if-then statements" to convert the ages of respondent and partner to the ages of males and females. The 'Age of Respondent' variable from the Fox file has 3,682 cases aged 65 and under. My constructed measure of male age has 3,344 cases aged 65 and under. Already, there is a discrepancy of more than 300 cases. This kind of discrepancy would continue to be a problem throughout the analysis, resulting in sample sizes that often differ by several hundred cases. The implications of this difference are discussed in the conclusion of this paper.

Results of Univariate Analysis as Reported in Fox et al., 2002					
	Wave 1	Wave 2			
	<i>N</i> = 5,493	N = 4,538			
Age (Male)	36.2	43.7			
Age (Female)	34.3	41.2			
Years of Education (Male)	13.4	13.2			
Years of Education (Female)	13.2	13.0			
% employed (Male)	90	90			
% employed (Female)	64	71			
% Black	12	12			
% Hispanic	6.6	6.6			
Income-to-Needs Ratio	4.45	4.69			
	(SD 4.72)	(SD 4.52)			
% Male-to-Female Violence	9.1	6.2			

MULTIVARIATE DIAGNOSTICS

Collinearity statistics were assessed for all multivariate models to search for potentially confounding interrelationships among the independent variables. No problematic variance inflation factors (VIFs) were present in any model, as they ranged between 1.00 and 1.77. The original article states only that multicollinearity diagnostics were performed and that the results were not problematic.

RESULTS

The following tables display my reproduced findings alongside the original findings by Fox and colleagues. The secondary tables (marked by an 'a', e.g. 2a) show the results of the analysis when considering female-to-male violence as the dependent variable. The original and secondary tables are displayed together to facilitate comparison of the similarities and differences in the correlates of intimate partner violence when controlling for direction of violence.

Table 1: Logis	tic Regressi	on of Male to	Female Vi	olence onto Ei	mployment	Status Prec	lictors, Wa	aves 1 and 2
	117	Fox et a	1. 2002		1 117	Curren	it Study	
	W	ave I	<u> </u>	/ave 2	Wa	vel	<u></u>	ave 2
L	Model I	Model 2	Model I	Model 2	Model I	Model 2	Model 1	Model 2
Her work	0.97	1.14	1.23	1.70	2.06	0.74	1.71	1.59
status								
His work	0.81	1.81	0.7	0.93	1.56	0.84	1.73	1.79
status								
Her work	1.56	-	0.95	-	0.34*	-	0.79	- /
status x his								
work status								
Her	-	2.33***	-	1.91***	-	1.17	-	1.76
preference								
that he work								
more								
His preference	-	1.33*	-	1.95***	-	0.79	-	1.21
that she work								
more								
Her work	-	0.78	-	0.74	-	1.49	-	1.08
status x his								
preference								
that she work								
more								
His work	-	0.60	-	1.34	-	1.19	-	1.45
status x her				-				
preference								
that he work								
more								}
-2 <i>LL</i>	3067.99	2712.32	1665.54	1528.84	1450.8	1217.86	1109.87	1095.49
Model X2	5.40	45.88***	4.02	33.52***	0.073	5.36	7.34	21.73***
Block X2	5.40	45.88**	4.02	33.52***	0.073	5.36	7.34	21.73***
N	4940	4377	3801	3557	3423	3423	3180	3180
* p ≤ .05, ** p	≤.01, *** p	$0 \le .001$						

Table 1a. Logistic Regression of Female to Male Violence onto Employment					
Status Predictors, Wave 1 Only	-	•			
	Wave	e 1			
	Model 1	Model 2			
Her work status	1.06	.98			
His work status	1.09	1.07			
Her work status x his work status	.91	-			
Her preference that he work more	-	1.25			
His preference that she work more	-	1.26			
Her work status x his preference that she work more	-	1.17			
His work status x her preference that he work more	-	.85			
-2LL	1450.80	1437.98			
Model X2	.07	4.38			
Block X2	.07	4.38			
Ν	3423	3398			
* $p \le .05$, ** $p \le .01$, *** $p \le .001$					

Employment (See Tables 1 and 1a)

I failed to find the same levels of significance as reported in the Fox & Benson study. In my reproduction, only the interaction effect of female work status and male work status was significant in Wave 1. My Wave 1 model odds ratios vary vastly from the original study. This suggests that perhaps the variables labeled in the data file as measures of employment status were not the ones used in the original analysis. I also failed to reproduce the original sample size, which I attribute to missing data. In the original article, the authors do not address their treatment of missing data, which is a major issue when using the NSFH. I chose to drop cases with missing answers, resulting in smaller sample sizes in most cases. This model was the most difficult to reproduce.

When observing the effects for the same variables when measuring female violence, there were no significant associations. It was only possible to analyze Wave 1 for this model, as there were apparently no cases with valid responses for both the measure of female employment status and perpetration of violence. This would prove to be a common problem throughout my extension.

Table 2. Male to Femal	e Violence, W	ave 2					
		Fox et al (2002)			Current Study		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	
Her job strain	1.22 ***	-	1.21	1.16**	•	1.13*	
She agrees both must work	1.23 **	-	1.19	1.20*	-	1.14	
Her share of couple earnings	1.43	-	-	0.66	-	-	
Her job ranking	0.87*	-	0.92	0.87 *	-	0.84 **	
His job strain	-	1.21 ***	1.25	-	1.15**	1.15*	
He agrees both must work	-	1.13*	0.93	-	1.11	0.99	
His share of couple earnings	-	0.74	-	-	0.54	-	
His job ranking	-	0.87 ***	0.92	-	0.85 **	na	
-2LL	772.64	1598.98	603.67	878.51	1066.82	778.28	
Model X2	31.98 ***	48.82 ***	34.90 **	24.81 ***	30.91 ***	27.75 ***	
Block X2	31.98 ***	48.82 ***	34.90 **	24.81 ***	30.91 ***	27.75 ***	
N	1519	3666	1300	2153	2722	1896	

	Model 1	Model 2	Model 3
Her job strain	1.66*	-	1.53
She agrees both must work	0.90	-	1.19
Her share of couple earnings	0.91	-	-
Her job ranking	0.81	-	0.57*
His job strain	-	1.11	0.92
He agrees both must work	-	0.75	0.64
His share of couple earnings	-	0.18	-
His job ranking	-	0.64*	na
-2LL	108.14	113.74	81.11
Model X2	8.42	7.05	11.29*
Block X2	8.42	7.05	11.29*
N	2153	2722	1896

Job Strain (See Tables 2 and 2a)

The odds ratios reproduced here were much closer to those in the original

analysis, with only a minor decrease in significance. In this set of models, my closest

approximation of sample size was occasionally larger for Models 1 and 3, but smaller than the 2002 study for Model 2. As discussed above, trial-and-error manipulation of the sample did not remedy this problem.

The effects of male and female job strain remain significant in the final model for both male and female violence, with higher strain associated with greater prevalence of violence. Job ranking is also a significant predictor of violence, with less violence occurring when male and female job rankings are high. Percentage of household income contributed was not significant.

For female-to-male violence, only female job ranking remained significant in the final model. As female job ranking increases, the prevalence of female-perpetrated violence decreases. This is true for both male- and female-perpetrated violence.

		Fox et al. 20	002		Current Stud	ly
	Wave 1	W	ave 2	Wave 1	Wa	ave 2
		Model 1	Model 2		Model 1	Model 2
Income/Needs Ratio	0.93***	0.87***	0.93*	1.00*	0.89***	0.95
Debts	1.27***	1.15**	1.06	1.04	1.19**	1.14
His share of couple earnings	0.67*	0.60*	0.69	0.96	0.71	0.76
Her financial well- being	-	-	0.64***	-	-	0.71**
His financial well- being	-	-	0.81*	-	-	0.81
-2LL	2686.09	1849.12	1802.67	1230.7	1255.81	1167.96
Model X2	58.07***	48.7***	95.15***	4.57	26.34***	27.67***
Block X2	58.07***	48.7***	46.45**	4.57	26.34***	27.67***
N	4467	3885	3885	3464	3199	2987

	Wave 1	Wave 2	
		Model 1	Model 2
Income/Needs Ratio	1.00	0.72*	0.81
Debts	1.38***	1.25	1.13
His share of couple earnings	0.90	0.43	0.54
Her financial well-being	-	-	0.82
His financial well-being	-	-	0.54
-2LL	1446.35	148.50	144.18
Model X2	26.23***	7.87*	4.32
Block X2	26.23***	7.87*	4.32
N	3464	2987	2987

While the odds ratio for the Income/Needs Ratio measure is greater in my Wave 2

Household Financial Status (See Tables 3 and 3a)

full model than in the original analysis, it fails to retain significance. While the same measure is significant in Wave 1, it has an odds ratio of 1.00, indicating absolutely no increase or decrease in violence as a couple's income/needs ratio changes. The number of debts measure also loses significance in the Wave 2 full model. The odds ratios are very close to those in the original study. While the male's share of household earnings was significant in the original study and not in my reproduction, my odds ratios for this measure are actually larger. I attribute this loss of significance to the difference in sample size. Female financial wellbeing was a significant predictor in both the original and reproduced models, with greater scores on this measure leading to lower prevalence of violence. Male financial wellbeing was significant only in the original study, despite having exactly the same odds ratio in my reproduction. Again, this may be attributable to the difference in sample size. My sample size is smaller across all models.

Wave 1 female-to-male violence was significantly more prevalent in couples with more debt, though this relationship was not found in the Wave 2 models. The full model for Wave 2 did not reveal any significant relationships.

	Fox et al. 2	2002	Current Study	
	Model 1	Model 2	Model 1	Model 2
Wave 1 Violence (1 = yes)	11.54 ***	11.87 ***	2.17 **	2.13 **
His share of couple earnings is smaller in	-	1.31*	-	1.15
Wave 2				
His job spells between waves	-	1.48 ***	-	1.44 ***
Her job spells between waves	-	0.90	-	1.02
Increase in debt load at Wave 2	-	1.02	-	1.12
Income/needs ratio smaller at Wave 2	-	0.68 *	-	0.67 *
-2LL	1136.19	1007.67	1314.74	1293.33
Model X2	148.07 ***	176.59 ***	5.87*	27.28
Block X2	148.07 ***	28.52 ***	5.87*	21.42
N	3006	3006	3491	3464

 Table 4a. Logistic Regression of Female-to-Male Violence onto Change in

 Household Economic Status Predictors for Continuing Couples

	Curren	nt Study
	Model 1	Model 2
Wave 1 Violence (1 = yes)	6.23***	9.85***
His share of couple earnings is smaller in Wave 2	-	0.47
His job spells between waves	-	1.75**
Her job spells between waves	-	0.82
Increase in debt load at Wave 2	-	1.34
Income/needs ratio smaller at Wave 2	-	0.65
-2LL	287.39	178.11
Model X2	12.06***	25.90***
Block X2	12.06***	25.90***
N	3682	3464
* $p \le .05$, ** $p \le .01$, *** $p \le .001$		

Change in Household Status (See Tables 4 and 4a)

These results are the most relevant to the current economic crisis and the shift in

status I seek to explore. As expected, Wave 1 violence is the best predictor of Wave 2

violence, though my reproduced model shows a vastly lowered odds ratio (11.87 vs.

2.13). The number of male job spells (periods of unemployment greater than six months)

between Waves 1 and 2 was a very significant predictor of violence. Counter-intuitively,

both the original study and my reproduction found that a smaller income-to-needs ratio

(indicative of a tighter budget) *decreased* the odds of violence. The odds ratios for this measure differed by only 0.01 when reproduced.

Female-to-male violence in Wave 2 was again predicted by Wave 1 violence, with an odds ratio much more similar to that in the original analysis of male-to-female violence. Chronic job spells also significantly increased the odds of female-to-male violence (odds ratio = 1.75).

Final Model (Table 5, next page)

Only in the final models did Fox and colleagues include the traditional control variables of race and class (using education as a proxy for social class). The final model shows that neighborhood disadvantage, multiple children in the household, low male age, his preference that she work more, and female financial well-being retain significance when controlling for individual, household and dynamic predictors. Neither the final model nor the foreclosure model (next section) could be conducted with male victimization as the dependent variable, as the number of male victims was far too small for any meaningful analysis. In the reproduction of the final model, only neighborhood socioeconomic disadvantage, male age, and the number of children in the household remained significant. Curiously, none of these variables were mentioned directly in the theoretical overview of either this paper or the original study.

		Fox et	al. 2002 (N =)	3262)			Current	Study (N = 2	2774)	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Black	2.44 ***	1.55	1.51	1.39	1.21	1.83 *	1.15	1.26	1.19	1.07
Hispanic	1.39	0.92	0.67	0.61	0.60	1.13	0.77	0.56	0.55	0.57
Neighborhood Socioeconomic Disadvantage		2.27 ***	2.20 ***	2.10 ***	2.05 ***		2.09 ***	1.87 **	1.79 **	1.74 *
Her education			1.05	1.04	1.04			1.00	0.10	1.00
His education			** 06'0	0.92 *	0.94			0.93	0.94	0.94
Number of children in household			1.16 *	1.19 ***	1.18 ***			1.19 *	1.22 **	1.25 **
His age			0.93 ***	0.93 ***	0.93 ***			0.93 ***	0.92 ***	0.93 ***
Her work status				1.95 ***	1.75 *				1.64	1.30
His work status				0.42	0.49				0.30	0.35
Her preference that he work more				1.63	1.53 *				0.54	0.48
His preference that she work more				2.06 **	1.95 ***				1.70	1.56
Her work status x his preference she work more				0.77	0.85				0.94	1.05
His work status x her preference he work more				2.15	2.36				3.43	3.75
Income/needs ratio					1.02					1.06
Debts					0.98					1.03
His share of couple earnings					0.75					09.0
Her financial well-being					0.69 ***					0.79
His financial well-being					0.83					0.89
-211	1448.56	1433.36	1354.30	1316.89	1292.11	1015.30	1004.03	936.94	921.14	910.95
Model X2	17.17 ***	32.37 ***	111.43 ***	148.84 ***	173.61 ***	3.92	15.18 **	82.27 ***	98.07 ***	108.26 ***
Block X2	17.17 ***	15.20 ***	70.06 ***	37.41 ***	24.77 ***	3.92	11.27 ***	67.10 ***	15.80 **	10.19
* $p \le .05$, ** $p \le .01$, *** $p \le .001$										

Tables 6 and 6a: Foreclosure-Specific Models

In light of the 2008-9 economic crisis and the rising foreclosure rate, I have

developed a model using variables specifically related to current events in hopes of better

	Model 1	Model 2	Model 3
Wave 1 Violence	2.06*	2.02*	1.92*
(S.E)	.32	.32	.32
Change in Residence		1.48*	1.36
(S.E)		.17	.17
Increased Neighborhood Disadv.		1.35**	1.20
S.E)		.10	.10
More Debts		1.21	1.06
(S.E)		.18	.18
Smaller Income/Needs Ratio		0.70	0.66*
(S.E)		.20	.20
His financial stress			0.80*
S.E)			.12
His job spells			1.30**
(S.E)			.09
Her financial stress			0.67***
S.E)			.12
Her job spells			0.98
S.E)			.11
2LL	1212.9	1191.91	1147.76
Block X2	4.44*	20.99***	44.15***
Model X2	4.44*	25.43***	69.58***

understanding the future consequences of the mounting financial strain.

The results of the foreclosure model are far more relevant to the current economic crisis than those in the final model. Here, while changes in residence and neighborhood disadvantage (consistent with moving into a new area after home foreclosure) are significant in Model 2, these variables lost significance upon the introduction of individual-level measures of job spells and subjective financial stress. Counterintuitively, more stress predicted less violence. As in previous models, Wave 1 violence remained the best predictor of Wave 2 violence.

DISCUSSION

While this study was originally intended to reproduce the analysis of Fox and colleagues, it has become equal parts a reproduction and a study of scientific reproduction itself. As these are both important and currently relevant issues, I will first discuss the findings of the reproduction and then continue on to discuss the difficulties of reproducing a study from the information published in a scholarly journal article.

As mentioned in the overview of results, very few variables relating to employment status and job strain were found to significantly impact the likelihood of violence. Instead, the majority of significant variables were related to household and neighborhood measures of economic distress and disadvantage. Unlike the original final model, the reproduced final model (Table 5) shows only neighborhood disadvantage, household composition, and male age to be significant violence predictors. None of the correlates of male-to-female domestic violence were significantly different from those of female-to-male violence, suggesting that the characteristics of violent households are the same regardless of who perpetrates the violence. These results suggest that interventions should target low-income homes in disadvantaged neighborhoods by helping to alleviate worries about meeting necessary financial burdens. For example, public assistance for food stamps, education and children's material needs could reduce parental stress over meeting their families' needs with an insufficient income. This is especially necessary for young families with multiple children, as higher numbers of children and lower male age were both significantly related to increased risk of violence. When considering the effects of change in economic status on the likelihood of domestic violence, it appears that high individual subjective strain can act as a protective factor, perhaps encouraging couples to cling together and suppress violence to procure or retain financial benefits. This finding is counter-intuitive to many theoretical approaches that would predict that strain and tension would increase partner violence. Finally, chronic male unemployment was a significant predictor of violence in both the Fox study and my reproduction, including my foreclosure-specific model. Unfortunately, this is difficult to address through public policy, as lobbyists and advocates may be reluctant to offer jobs (perceived as a reward) to batterers. In the current economic crisis, many jobs are not available at all, even to highly qualified candidates. It is difficult to imagine a solution to the ups and downs of the capitalist economy, despite their apparent influence on family violence.

The variables available for this reproduction allowed for only partial tests of the many theoretical approaches reviewed in the first chapter of this paper. Rather than address each theory by name, I will group them into themes for this discussion: 'stakes' theories, 'strain' theories, and 'power/gendered' theories. With the small amount of information available, it appears that an integration of these three themes would be the best approach to studying the effects of economic distress on family violence. The imbalance in power (usually assigned by traditional gender roles) and financial strain increase the likelihood of violence, while higher stakes in conformity reduce the risk. Employment alone did not account for significant increases in violence, though this may be explained by confounding effects of the frustration-aggression hypothesis. Employed individuals may restrain themselves from violence out of fear of unemployment, or they

may be experiencing job strain that increases their violence perpetration. This argument is partially supported in Table 2, where job strain increases the odds of violence and higher occupational prestige acts as a protector. While we may associate higher occupational prestige with longer hours worked and increased pressure on the job, there is likely a tipping point somewhere on the scale where higher occupational prestige equates to less strain, less pressure, and less need for long hours. Finally, an unfavorable change in household indicators (as we expect to see in an economic crisis) supported the strain hypothesis, with some contradictory findings. While increased job spells and moving to a poorer neighborhood increased the odds of violence, a smaller income-toneeds ratio (indicating less income to cover basic costs) reduced the odds of violence. The significance of this finding alone should prompt further research on the intricate relationship between strain and violence: Are there some forms of strain that encourage couples to 'make it work' and stay together? This finding would certainly suggest so. Overall, the evidence certainly supports strain theories, with stakes in conformity acting as modifiers of behavior, and some gendered effects on economic variables that prevent scholars from making blanket statements about the effects of income and employment on all parties. These variables must be studied separately for each partner, and then as an interaction.

Of some concern is the consistent significance of neighborhood measures of disadvantage. Fox and colleagues utilized logistic regression as their method of analysis, while I argue that a hierarchical approach would be better suited to this study. The final model mixes individual (financial well-being, job strain, age), household (debts, number of children, income-to-needs ratio) and neighborhood (concentrated disadvantage) into a

single regression equation. It would be preferable to perform a nested analysis of individuals within homes within census tracts in order to better understand and untangle the co-morbid effects of living in economically distressed areas. It is difficult, then, to make inferences about the true effect of neighborhood disadvantage, as the current regression models do not appropriately treat the different units of analysis. However, in many cases hierarchical modeling is not feasible. It would be a worthwhile effort to attempt such an analysis of this data set.

Future inquiries would benefit from a more specific, sensitive methodology. While national surveys are invaluable for their breadth and representativeness, their very size and cost means that they must be of use to researchers studying many different topics. In the interest of keeping the survey manageable and timely, there is a focus on breadth rather than depth. Using the NSFH to answer questions about economics and domestic violence forces the researcher to depend on very few measures of these concepts, and there is some concern that the presentation of these concepts is too simplistic and may conceal valuable information. Consider, for example, the concept of employment. Dichotomous measures of employment (employed/unemployed) are valuable if a theory supposes that the very state of being unemployed increases one's aggressive tendencies. This measure conceals the subject's true feelings about their job status: is the individual unhappily unemployed? Is this an individual who feels it is important and socially desirable to be employed? The effect of employment may be greater than we have seen in prior studies, because those who *desire* to be employed are included in the 'unemployed' category alongside those who do not place much emphasis on employment or conformity. Is it possible that a subject's desires and notions of what

should be are more important than his current situation? Only a more sensitive survey instrument can tell. A survey designed to specifically test the theories presented in this paper would likely be far smaller in size than the NSFH (due to time and budget constraints), but could better detect the subtle nuances of status and social norms.

If we measure the success of a reproduction by obtaining similar odds ratios and consistent directionality, then this reproduction has been only partially successful. For many models, the odds ratios reported by Fox and colleagues were reproducible. When not exactly reproducible, the findings at least tend to be in the same direction (either increasing or decreasing odds of violence). However, there have been some troublesome results, especially in the first set of models. The variables measuring the respondent's preference that his/her spouse work more hours had vastly different effects in my reproduction. For example, in Table 1, Model 2 for waves 1 and 2 (and again in the final model, Table 5), Fox and colleagues found that one partner's desire for the other to work more hours significantly increased the odds of violence. My reproduction, in contrast, found that at Wave 1, his preference that she works more actually decreased the odds of violence, though this finding (as with others related to this set of variables) was not significant. In other places, I found higher odds ratios that were not significant where Fox and colleagues found lower ratios with very high significance.

It seems that the answer to these discrepancies lies in the sample size of each model. As mentioned above, reproducing the sample size proved to be one of the most difficult aspects of this analysis, often leading me to trial-and-error fishing expeditions using the very scant information provided in the journal article. Too often, we place great emphasis on results that test significant at the .05, .01 or .001 levels. These are the results

that we look for, remember, and hold on to as we add to the body of knowledge. When the result is not significant, researchers conclude that there is no difference between groups. When the results are significant at some level, we consider the research question answered and then proceed to use this significance to argue for the superiority of one theory over another. In the social sciences, this threshold is set at .05, regardless of sample size. As Royall (1986) illustrates, interpretation of statistical significance is not so simple. He cites Peto et al. (1976), who argue that a given P-value in a large trial is stronger evidence of true difference than the same P-value in a smaller trial, and Lindley & Scott (1984), who argue the opposite: the P-value is "more indicative of the falsity of the null hypothesis with a small sample than with a large one" (p. 3). Royall concludes that both statements can be true. Often, significance test results are presented simply as superscript symbols relating to values <.05, <.01, and <.001. Royall finds that the assertion by Peto et al. is only true when considering the P value as a "zero-one variable that simply shows whether P < .05 or not", just as we do when reviewing tables of results in journal articles. Otherwise, the Lindley & Scott argument that the P-value is indicative of stronger evidence of difference when using a smaller sample. In the reproduction of social science, it would be preferable to supplement the significance test with attention to the regularity of findings in support of a given theory.

In this study, differences in sample size may be attributed to the treatment of missing data. Fox and colleagues make no mention of missing data in their journal article, and yet missing data was another difficult part of this reproduction. In a survey as large as the NSFH, missing data is inevitable, and its treatment can have a significant impact on the analysis results. In many models, I believe that my sample size is smaller because I

conducted complete-case analysis, discarding cases with missing values for variables of interest. While this approach has been criticized as an unnecessary waste of information, complete-case analysis is preferable to methods that use incomplete cases improperly (Little & Schenker, 1994). If Fox and colleagues replaced missing values with unconditional sample means, the result would be an inflated sample size. Inferences based on unconditional mean replacement are "seriously distorted" (Little & Schenker, 1994: 45) by bias and overstate precision. In this case, I prefer complete-case analysis to unconditional mean replacement. The initial NSFH sample is sufficiently large to allow for some 'wastage' by discarding incomplete cases, leaving a complete sample of several thousand cases contributing to less-distorted inferences.

In conclusion, we must exercise immense caution when making inference and advising policy from the results of quantitative analysis such as is presented here. As demonstrated, seemingly minor adjustments can cause major changes in significance levels and odds ratios. Before using published analyses as guidance for policy decisions, efforts should be made to reproduce and replicate the relevant results. Using representative samples of varying sizes, one would expect to find at least similar odds ratios and directionality. Here, however, there were several instances where ratios and direction could not be reproduced. This should cast serious doubt on the utility of these findings and encourage further research on this topic before we consider the question of economic distress and family violence to be satisfactorily answered. I advise using hierarchical modeling techniques to study the effects of individual, household and neighborhood factors and greater theoretical attention to the importance of gender and social norms, occupational prestige (e.g. perhaps lower-ranking jobs have higher

turnover, leading to more job spells), and interaction between high strain and stakes in conformity.

	-	MALE	AGE		-0.01		-0.09		0.01	3673		-0.01	3673		-0.01	3639		0.01	3673		0.00	3673		-0.32	3673		0.11	3673		-0.17	3673		-0.08	3190	0.15	0.10
		ц	EMPL		-0.02		0.00		0.04	3280		-0.07	3280		0.05	3261		-0.04	3280		-0.01	3280		0.04	3280		0.10	3280		0.17	3280		-0.50	3012		97.7- 6
	1	Σ	EMP		0.00		0.04		-0.01	3273		-0.03	3273		-0.10	3256		-0.03	3273		0.02	3273		0.30	3273		0.11	3273		0.17	3273		0.35	3009		
	MALE	FIN.	STRN		-0.03		-0.10		-0.10	3344		-0.07	3344		-0.15	3312		-0.02	3344		0.00	3344		-0.17	3344		0.31	3344		-0.26	3344		0.04	3075	230	10.0
	FEM.	FIN.	STRN		-0.01		-0.12		-0.12	3364		-0.05	3364		-0.16	3332		-0.04	3364		0.01	3364		-0.19	3364		0.31	3364		-0.31	3364		0.05	3088	-	N.I
		MAN'S	SHARE		-0.01		-0.02		-0.12	3199		0.02	3199		-0.08	3169		0.02	3199		0.00	3199		0.19	3199		-0.01	3199		-0.03	3199		1.00	3199		
			DEBTS		0.01		0.07		0.07	3682		0.03	3682		0.05	3647		-0.02	3682		0.01	3682		0.16	3682		-0.11	3682		1.00	3682					
	INCOME/	NEEDS	RATIO		0.00		-0.05		-0.09	3682		-0.11	3682		-0.20	3647		-0.02	3682		0.00	3682		-0.27	3682		1.00	3682								
		VUM KIDS	UNDER 18		-0.01		0.06		0.01	3682		0.11	3682		0.04	3647		-0.01	3682		0.02	3682		1.00	3682											
		MALE	EDUC. 1		-0.01		-0.01		0.01	3682		0.00	3682		0.01	3647		-0.01	3682		1.00	3682														
		FEMALE	EDUC.		-0.01		-0.01		0.02	3682		0.04	3682		0.04	3647		1.00	3682																	
VIVIV	CONC	DISAD.	VAVE 2		0.01		0.08		0.38	3647		0.24	3647		1.00	3647																				
TAT NT			HISP V		-0.01		0.01		-0.08	3682		1.00	3682																							
			LACK		0.01		0.04		1.00	3682																										
NULT			B	Pearson	Corr.	Pearson	Corr.	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	Corr.	Z	Pearson	COH.
NI FUNTY A. UL				WAVE 1	VIOLENCE	WAVE 2	VIOLENCE	BLACK			HISP.			CONC DISAD	WAVE 2		FEMALE EDUC.			MALE EDUC.			NUM CHILDREN	UNDER 18		INCOME/NEEDS	RATIO W2		# DEBTS WAVE 2			MAN'S SHARE			FEM. FIN. STN.	

APPENDIX A: CORRELATION MATRIX

1.00 3344
1.00 3344
3344

.

	Z	Min	Мах	Mean	St. Dev.
Female: Desires more work hours for partner	3,491	0.00	1.00	0.18	0.38
Male: Desires more work hours for partner	3,491	0.00	1.00	0.25	0.43
Female: Both have to work	2,175	0.00	1.00	0.63	0.48
Male: Both have to work	2,758	0.00	1.00	0.47	0.50
Wave 1 Violence	3,491	0.00	1.00	0.04	0.20
Wave 2 Violence	3,491	0.00	1.00	0.05	0.21
Change between waves of # children in household	3,469	-5.00	5.00	0.05	1.11
Female job spells	3,491	0	ŝ	0.41	0.79
Male job spells	3,682	0	5	0.31	0.71
Female Job Strain	2 0 2 2		10.00	1 20	7 2 4
(0 'No strain' to 10 'Highest strain')	ccn,c	0.0	0.01	4C.4	40.7
Male Job Strain	272 0	ſ	6	223	
(0 'No strain' to 10 'Highest strain')	c0/,2	4	10	10.0	1.02
Female Financial Stress	1260		1 55		L0 0
(-2 'More stress' to 2 'Less stress')	+0C,C	10.2-	cc.I	-0.02	0.01
Male Financial Stress	1166	с С	1 60		90 U
(-2 'More stress' to 2 'Less stress')	++C,C	-2.12	1.00	-0.02	0.00

APPENDIX B: Descriptive Statistics of Dependent and Independent Variables

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