Contextual Explanations for Variation in Domestic Violence Across Rural Uttar Pradesh, India

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DRAFT VERSION – NOT FOR CITATION

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Introduction

Many women in South Asia experience extreme gender-based violence. They are targets of violence throughout their life-span. In parts of India, violence against women starts even before a girl is born, with sex-selective abortions stemming from a cultural preference for boys. In childhood, girls may be neglected nutritionally, relative to boys, resulting in higher female mortality rates, and girls receive far less education than their brothers (Heise 1989). Male preference in South Asia is partly a result of the financial liability that daughters represent through dowry expenses, bridewealth, and the fact that they are usually not a source of financial security to elderly parents. Escalating dowries over the past 20 years have made girls an increasing financial burden for parents, particularly for higher caste families, who place more importance on dowry traditions than lower caste groups (Bloch & Rao 2002). Young brides take severe abuse if promised money or goods don't materialize for their newlywed husbands. This can end in suicide or murder (often disguised as a kitchen burning accident), called "dowry deaths" or "bride burning." Dowries were made illegal in India in 1961 and in Bangladesh in 1981, but their practice is actually increasing, in part because laws aren't enforced (Heise 1989). Although violence against women takes many forms, the most endemic is wife abuse. Hence, it has become the focal point of much of the research on violence against women. Patriarchy is at the root of most abuse against women. In patriarchal societies, men are taught that it is their right to control a woman. Stress, alcohol abuse, poverty, and other factors may increase the likelihood of violence, but they do not cause it – rather it seems to occur because "the perpetrators feel, and their environment encourages them to feel, that this is an acceptable exercise of male prerogative" (Heise 1986:5).

A growing, multidisciplinary body of researchers is working to better understand the dynamics of attitudes towards women and the treatment of women in South Asia. The common approach to the study of gender processes is the notion of women's "empowerment" or "status." Domestic violence is often used as a measure of a woman's *lack* of empowerment – it is among the more extreme instances of her *dis*empowerment. A study of violence against women is therefore necessarily a study of women's status.

However, the relationship between status and domestic violence is complicated. While some research measures violence against women as one among several dimensions of women's status, other research measures the impact of levels of status on the potential outcome of violence. Thus, violence is at once a constituent element of status and a possible outcome of the lack of status. To further complicate matters, the effect of status on violence is irregular. It may seem intuitive that higher status women, i.e. more empowered women, should experience less violence, but studies have found that the relationship varies. In some settings, higher status is protective against the risk of violence, but in others it actually appears to put women at greater risk. For example, Koenig and colleagues (2003) find that autonomous women in more culturally conservative areas of Bangladesh experience significantly elevated risks of violence, compared to autonomous women in less culturally conservative areas, where they find that status is unrelated to the risk of violence**.** Education, women's employment, mobility and control over resources are all common measures of women's status. But whether they shield a woman from or expose her to the threat of marital violence depends on the social context within which they operate.

Most of the studies that have found strong regional variation in the relationship between women's status and domestic abuse compare regions that stand at social and cultural extremes. For example, Jejeebhoy wrote a series of papers in which she investigated the contextual dependency of status and violence in two Indian states: Tamil Nadu and Uttar Pradesh (Jejeebhoy 2000, 2002; Jejeebhoy and Cook 1997; Jejeebhoy and Sathar 2001). Although both states are poor, Tamil Nadu has much higher levels of social development than Uttar Pradesh. Literacy rates in Tamil Nadu are 63 percent, compared to 42 percent in Uttar Pradesh. The Tamil Nadu infant mortality rate is 58 deaths per 1000 live births, compared with 98 deaths in Uttar Pradesh. And the total fertility rate in Tamil Nadu is 2.2 births per woman, while it is 5.1

in Uttar Pradesh (Jejeebhoy 2002). In these studies, Jejeebohoy suggests that the effect of status varies because of differences in the context – on a societal level, patriarchal places may be environments in which men punish their wives for autonomy or see autonomy as a threat to their "deserved" social position. In her study "Convergence and Divergence in Spouses' Perspectives on Women's Autonomy in Rural India" (2002), Jejeebhoy found that contextual factors condition the impact of autonomy on measures of reproductive behavior in India: i.e. husband's perceptions of women's autonomy were more important in shaping contraceptive use outcomes than women's own perceptions. And in her study on dimensions of autonomy in India (2000), Jejeebhoy concludes that social institutions of gender shape the effects of individual level factors on autonomy; patriarchal versus egalitarian contexts are important determinants.

Likewise, the two regions studied by Koenig and colleagues (2003) in Bangladesh are socio-cultural opposites. In these studies, the authors usually attribute the variation in the effect of women's status on domestic violence to varying levels of patriarchy in the two divergent regions. For example, Koenig and colleagues suggest that higher status women in highly patriarchal settings are at greater risk of being beaten than women in less patriarchal settings, because status threatens the broader social norm of women's subjugation.

In this study, I extend these observations from the societal to the community level. Using the finding that the effects of women's status are situationally dependent, I attempt to identify specific community-level characteristics that formulate different social environments. Unlike many past studies of domestic violence that contrast two very distinct locales, my study is geographically situated in a single region: Uttar Pradesh[1]. Uttar Pradesh is considered a highly patriarchal state, deeply entrenched in oppressive gender roles. By focusing on this state alone, I am effectively controlling for social variations in patriarchy that have been well documented in previous literature. What I want to emphasize, rather, is that Uttar Pradesh is not a socially homogenous region – while it may be patriarchal in general, there is substantial variation both in the prevalence of violence against women and in measures of women's status. Within the broader effect of regional-level patriarchy, I analyze the impact of community characteristics, such as social disorganization, social capital, and community norms of tolerance towards violence against women.

Using the National Family Health Survey (NFHS-II) / DHS, administered in 1999, I build a multi-level empirical model for the relationship between women's status and violence, in part by conceiving of violence as an outcome that women may become empowered to combat, given the community and individual resources to do so. The model uses attributes of villages as measures of contextual effects and attributes of households, couples, and women as individual effects. My overarching hypothesis is that villages can be thought of as entities that represent both structural opportunities and constraints for women, over and above an individual woman's particular set of characteristics. Using quantitative multi-level modeling techniques, I address four main questions: (1) Does having higher status protect a woman living in a patriarchal setting from experiencing marital violence? (2) Controlling for individual level determinants of domestic abuse, is there variation in women's experiences of marital violence across rural Uttar Pradesh? (3) If so, what contextual conditions put women at greater risk of abuse, over and above individual and household level determinants? (4) And lastly, are there community contexts that help to

[1] With 167 million inhabitants (based on the 1990 Indian census), Uttar Pradesh is not only the most populated state in India, it is the most populated sub-national region in the world. (In fact, only five *countries* have a population greater than the state of Uttar Pradesh.) It is among the poorest states in India, and it has the lowest literacy rate: 70 percent of males and 43 percent of females. 20.8 percent of Uttar Pradesh inhabitants live in urban areas. The sex ratio is 898 females to 1000 males.

describe variation in the relationship between an individual women's status and her vulnerability for abuse?

My general findings are that having higher status sometimes protects and other times puts women at greater risk for domestic abuse in the patriarchal setting of Uttar Pradesh. Variations in the effect of individual women's status have more to do with the dimension of status being measured than with the context in which a woman exercises her status. Based on these results, individual-level women's status can be divided conceptually into two types: "domestic status," or status that operates mainly within the household, which is protective against violence, and "public" status, or status that operates in the community, which is a risk factor for domestic violence. Community context is found to significantly increase the likelihood that a woman will be beaten, over and above her personal risk factors and status. The village context can both attenuate and accentuate a woman's individual risk of marital violence. Women who live in villages with higher average female mobility experience significantly lower levels of individual violence, regardless of their own level of mobility. However, women who live in villages with higher levels of community tolerance of marital violence are at increased risk if their village has a women's group or a high proportion of women working or exposed to media. These venues may provide efficient means to diffuse social attitudes of acceptance for abuse and thereby put all women at greater risk.

This is not the first study that has identified community level determinants of domestic abuse in Uttar Pradesh, India. Koenig and colleagues' study "Individual and contextual determinants of domestic violence in North India" (2006) also explores several community level factors in a hierarchal model. They find that community wealth, electricity, education, and gender norms are not statistically significant determinants of domestic violence, while community wife beating norms and the district level murder rate are. Inspired by Koenig's use of social disorganization theory to understand violence against women in India, the current paper makes further contributions to understanding how contextual factors condition individual level determinants of violence against women.

Theoretical perspectives of domestic violence

In this study, I apply an ecological framework for domestic violence elucidated by Lori Heise (1998). In addition, I draw upon the work of Koenig and colleagues, who model social disorganization theory in South Asia (2003, 2006) and on the work of Browning (2002), who extended social disorganization theory to intimate partner violence in his Chicago-based research. The following paragraphs summarize these perspectives.

Heise's Ecological Framework

Despite the lack of a strong theoretical tradition in domestic violence research in developing countries, most studies draw to some extent on the general framework of domestic violence developed by Lori Heise (Heise 1998). Heise's framework consists of four levels of analysis of domestic abuse. The first is referred to as "personal history," identifying the risk markers of a potentially abusing husband. Based on past research, Heise suggests that the strongest predictors of future violent behavior in men are (a) witnessing marital violence as a child, (b) being abused during childhood, and (c) having an absent or rejecting father. The second level is the "microsystem," which refers to household level interactions. The predictors at this level are (1) male dominance in the family, (b) male control of wealth in the family, (c) alcohol abuse, and (d) inter-spousal conflict. This is followed by what Heise refers to as "ecosystem" factors, including (a) household unemployment and low SES, (b) isolation of the woman and the family, and (c) delinquent peer associations. The final level is the "macrosystem," with these determinants: (a) male entitlement/ownership of women, (b) masculinity linked to aggression and dominance, (c) rigid gender roles, (d) social acceptance of interpersonal violence, and (e) social acceptance of physical chastisement. Her model is helpful insofar as it is exhaustive – she effectively consolidates findings from

the available body of international research into a single framework (1998:266-282). I use this framework to identify potential determinants of domestic violence in Uttar Pradesh, although not all of the determinants are available in the DHS dataset.

Social Disorganization Theory Applied to Domestic Violence in South Asia

Koenig and colleagues construct a multi-level model that views domestic violence as the function of the interrelated effects of contextual-community level factors, household-individual level factors, and women's status (2003). In their study of domestic violence in Bangladesh, the authors draw from U.S based crime research, including the work of Sampson (Sampson et al. 1997). Sampson applies notions of social disorganization and collective efficacy to describe patterns of violent crime in Chicago. Social disorganization theory is based on the hypothesis that "disorganized" communities lack the social and physical resources to mobilize against crime. The theory traditionally focuses on three neighborhood effects that have emerged as the best indirect measures of community disorganization: poverty, racial heterogeneity, and residential instability. They are interrelated factors - poverty contributes to residential instability and racial heterogeneity, both of which inhibit the formation of durable relationships, community attachment, and shared goals. However, while these ecological effects describe potential associations between communities and crime, they do not describe the mechanism through which communities may augment or diminish individual level crime. Sampson's research (1997) suggests the actual process that links neighborhood structure to crime, positing that social capital, based on social cohesion, informal social control, and participation in community-based organizations, contributes to a neighborhood's capacity to monitor and manage crime.

Drawing from Sampson's work, I hypothesize that village levels of social organization and social capital will help to explain both the overall variation of domestic violence across villages in Uttar Pradesh and variation in the effect of women's status on levels of domestic violence. Women's groups, community groups, and other organizations may create environments in which women can exercise their autonomy and status in a non-threatening way. Furthermore, communities may provide social, emotional, and physical support that could transcend oppressive conditions women experience in their households[2].

However, domestic violence differs from other forms of violent crime in two important ways: it often happens in private and it is often considered a socially acceptable behavior. In a Chicago-based study, Browning extended social disorganization theory to intimate partner violence, hypothesizing that community-level interventions will only occur if domestic violence is rejected by the community (Browning 2002). If it is accepted or if it is considered a hands-off private matter, then norms of social nonintervention may operate, inhibiting social control. Browning hypothesizes that the effect of social capital on domestic violence will vary according to the extent to which individual communities agree that it is socially unacceptable. Thus, the benefits of a cohesive community may depend on the normative environment in which those groups exist. If wife abuse is widely tolerated in a community, women may not find refuge, regardless of their personal views on the matter. I test Browning's theory in my study, hypothesizing that social capital effects on violence are likely to be modified by community norms of acceptance towards violence.

One difficulty in the measurement of community effects on individual outcomes is untangling the direction of causality. It is surely the case that individual people in a village are not passive recipients of the services available to them, but that they also contribute to the formation of those services. It may be that villages with a greater percentage of highly motivated and empowered community members are more likely to have women's groups, credit cooperatives, and other facilities. Longitudinal data could help sort

[2] Examples of informal support include personal advice, shelter, and social pressure against the offenders; examples of formal support include police intervention, formal shelters, health services, social service agencies, and women's groups.

out the direction of causality, but in the case of my study such data are not available. This limitation to my cross-sectional data affects how I can interpret my results. The most my study will provide is tests of associations between various predictors and domestic violence.

Hypotheses

The study hypotheses relate to each of the main study questions as follows:

1. *Does being more empowered protect a woman living in a patriarchal setting from experiencing marital violence?*

H1: I hypothesize that women's status will have a varying effect on levels of domestic violence. Some past research suggests that women in very traditional settings, like Uttar Pradesh, are at greater risk of abuse because of their higher status (Koenig 2003, 2006; Jejeebhoy 2002). But other research suggests that women in diverse settings benefit from their level of status (Jejeebhoy & Cook 1997, Schuler et al. 1996).

2. *Controlling for individual level determinants of domestic abuse, is there village-level variation in women's experiences of marital violence across rural Uttar Pradesh?*

H2: My hypothesis is that there will be statistically significant variation in individual levels of domestic violence across villages.

3. *What contextual conditions, if any, protect women from or put women at greater risk of abuse, over and above individual and household level determinants?*

I will test three sets of hypotheses to answer this question, namely:

H3: Social disorganization hypotheses
a: Village level poverty and underdevelopment will be associated with increased levels of village level domestic violence.

b: Religious and caste-based heterogeneity will inhibit the formation of durable bonds, weakening community social control, and will be associated with higher levels of domestic violence.

c: Residential stability, measured by a higher average number of years women have lived in the village, encourages the formation of durable community relationships, which will be associated with lower levels of domestic violence.

H4: Social Capital hypotheses
a: Village-level average women's status will be associated with lower levels of domestic violence. In a patriarchal setting, individual women's status is sometimes a risk factor for domestic violence. However, I hypothesize that at the village level, high status may serve as a protective haven for all women living there. In effect, I hypothesize that higher overall status transforms a particular village into a less patriarchal setting, one in which women's status may not considered a threat.

b: Higher levels of community cohesion, measured by the presence of a village community group and women's group, will be related to lower levels of domestic violence. Community organizations may create protective environments within which women can exercise their status in a non-threatening

way, even within a generally patriarchal setting. Women living in villages with women's groups are likely to find refuge in the group.

H5: Browning's hypothesis regarding community tolerance of domestic violence
a: Community tolerance of domestic violence, measured by village average women's tolerance of violence, will be associated with higher levels of domestic violence.

b: The effects of village-level women's status on domestic violence (measured in H4a) will vary according to the extent to which individual villages agree that domestic violence is socially unacceptable. In villages with greater tolerance of violence, potential benefits of social capital will be attenuated and/or risks will be accentuated.

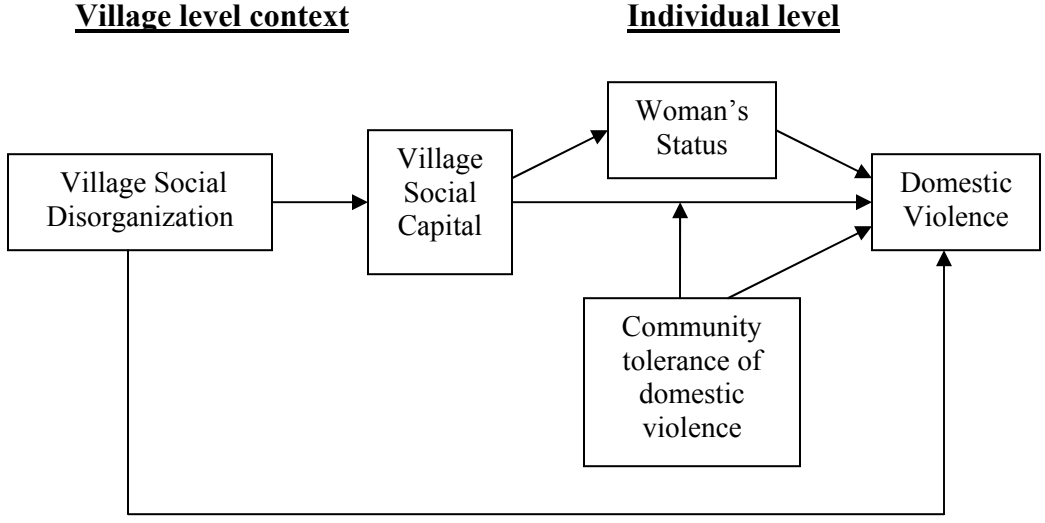
c: The effects of community cohesion on domestic violence (measured in H4b) will vary according to the village level of tolerance of domestic violence. High tolerance of violence may be reinforced in community settings, such as women's groups.

4. *And lastly, are there community contexts that mediate the relationship between individual women's status and her vulnerability for abuse?*

H6: The relationship between women's status measures and domestic violence will vary according to levels of village social capital (measured in terms of village women's status and / or community groups) and village tolerance for domestic violence.

Figure one displays the hypothesized relationship of the theoretically relevant determinants of domestic violence that are analyzed in this study.

Figure 1: Conceptual model for village- and individual- level determinants of domestic violence



Data and Indicators

The data for this study is the 1998-1999 India National Family Health Survey –II, otherwise known as the 1999 India Demographic and Health Survey. The Demographic and Health Surveys project is a

worldwide research project that was initiated in 1984. Its objective is to provide data and analysis on population, health, nutrition, and other issues about individuals and communities (primarily women and children) in developing countries. The predecessors to the DHS are the World Fertility Survey (which was conducted from 1972 to 1984) and the Current Population Survey (conducted from 1977 to 1985). DHS surveys have been administered in 70 countries, and many countries have performed multiple rounds of the survey, allowing for longitudinal research. Because of the overall quality and uniformity of data across countries, the DHS has developed a reputation for providing some of the most reliable demographic and health data in developing countries. In 1994, the DHS team administered their first module of questions regarding women's status and violence against women in their Egypt survey. Eventually, the DHS team will have longitudinal data on domestic violence, but this has yet to occur.

II. DHS Sample and Design

In 1998/99, the DHS survey was administered to all 26 states in India, with target sample sizes specified according to the aggregate level at which separate estimates were needed. The target sample size for Uttar Pradesh (population 167 million in 2000) was 10,000 completed interviews of eligible women, and the final number was 9292.

Within each state, samples were drawn separately for urban and rural areas, and insofar as possible, samples were allocated proportionally to the size of the state's urban and rural populations. Rural samples were made in two stages: first, Primary Sampling Units (villages) were selected with probability proportional to size at the first stage, followed by random sampling of households within each PSU in the second stage. The list of villages used as the sampling frame was based on the 1991 Indian Census. Then villages were stratified along different variables. Villages with 5-49 households were linked to an adjoining village so that the minimum PSU size is 50 households. Actual households to be interviewed were selected with equal probability from the household list. Averages of 30 households were selected from each PSU, with a minimum and maximum number set at 15 and 60. No replacement households were made if a selected household was unavailable, but replacement PSUs were made according to the same sampling methodology when a PSU was unavailable. In my study, I use the village, not the PSU, as the contextual unit of analysis.

III. DHS Questionnaires

DHS-India conducted three separate questionnaires: the village, household, and individual.

Village questionnaire

The village questionnaire was administered to the village head. It collected information on the availability of services and facilities in the village, including the distance to the nearest health and education posts, whether the village has electricity and telephone services, and the types of shops available. It also indicates whether the village has a woman's group, credit cooperatives, or community groups.

Household questionnaire

The household questionnaire lists all of the usual residents of each household, including anyone who slept in the house the night before the interview. For each individual listed, information on his/her age, sex, marital status, occupation, education, and relationship to the household head was collected. Data on the religion and caste of the household head was obtained. Finally, household economic status can be assessed based on questions concerning amenities, including the main source of water, type of toilet, source of lighting, type of fuel used, ownership of home, agricultural land, and livestock, etc. Eligible women for the Women's questionnaire were selected at this stage.

Individual women's questionnaire

The Women's questionnaire is the backbone of the DHS survey. It is a questionnaire of ever-married women aged 15-49 that primarily focuses on maternal and child health and contraceptive practices.

Questions are also asked concerning women's background characteristics, including extensive demographic information, and related to women's status, gender roles, the justification of domestic violence, and the treatment of women in the household, including the use of violence against women. These are the sections I will focus on in my study.

Merged village, household, & women's dataset
The DHS questionnaires are designed to be merged. The dataset I use for this study merges the village, household, and women's level questionnaires. The village questionnaire was administered to villages only, and excludes all urban areas. This reduces the sample size of women in Uttar Pradesh from 9292 women to 7479, or by 20 percent.

Villages as the contextual unit
A major concern in contextual analysis is defining the appropriate context (see Teachman and Crowder for a discussion of conceptual issues in modeling community contexts, 2002:282). A condition for conducting contextual analysis at the village level is accepting that individual women in Uttar Pradesh may be influenced by characteristics of their village. I contend the village can be considered an entity that represents both structural constraints and opportunities that may relate to women's social status and levels of domestic violence. For example, women who live in a village with a women's group may benefit from the resources offered by the group, and this may impact a woman's ability to respond to the potentially abusive situations in her household. This would represent an opportunity structure. On the other hand, a village's level of economic development may represent constraints. Lack of opportunities for men to access the cash economy may increase individual men's levels of stress, which may in turn impact on their likelihood to resort to violence against their wives. Teachman and Crowder suggest that "the boundaries and characteristics of contextual units should be defined in such a way that all individuals sharing the context are subject to the same contextual conditions (2002:282)." In general, I think it is reasonable to assume that, apart from individual circumstances that may limit their ability to access services, individuals in villages share the same contextual advantages and disadvantages. The DHS team surveyed 323 villages in Uttar Pradesh, and 317 of them have valid responses for individual women. The number of women interviewed in each village ranges from 1 to 108. Three percent of the women interviewed live in villages that have sample sizes under 30 women.

Study Indicators

In the DHS / NFHS-II women were asked three questions related to their experience of violence, namely:

1. "Since you completed 15 years of age, have you been beaten or mistreated physically by any person?"
2. "Who has beaten you or mistreated you physically? Anyone else?"
3. "How often have you been beaten or mistreated physically in the last 12 months: once, a few times, many times, or not at all?"

Dependent variable: *Respondent beaten by Husband or Ex-husband since age 15*
For my dependent variable, I selected from those women who have been beaten since age 15 only those who responded that they were hit by their husband or former husband, with a dichotomous response of yes or no. 1770 of the 7432 rural women sampled, or 23.8 percent of the women, reported that they had been beaten since age 15. 1660 of these women, or 22.3 percent of the total sample, were beaten by their husband or ex-husband.

Independent variables
My predictors of domestic violence include women's and husband's characteristics, family structure and household indicators, and village characteristics. I have divided my presentation of indicators into these groups.

Individual-level control variables[3]*:*
Women's characteristics:

- Religion[4] (dummy variables: Hindu, Muslim, or Other)
- Caste (dummy variables: "Scheduled tribe/caste," "Other Backwards Caste," "Other caste," or Ethnicity Missing)
- Age (dummy variables: 15-24, 25-34, 35-49)
- Marital Duration (continuous variable)
- Education (dummy variables: none, primary, or secondary school)

Husband's characteristics:

- Husband's Age (dummy variables: 15-24, 25-34, 35-49, 50+)
- Husband's Education (dummy variables: none, primary, or secondary school)

Household characteristics:

- DHS Wealth Index: The DHS research team has made available to researchers a wealth index based on household asset data, including the ownership of a number of items, such as a radio, television, motorcycle, and dwelling characteristics, such as water and sanitation facilities, roofing, and type of household floor. They use principal component analysis to assign a standardized factor score to each asset and then sum them into a household wealth index (Kishor and Johnson 2004). This is the index I use in my analysis.
- Family structure (Nuclear or extended family structure)

Individual-level theoretical variables of focus:
I am measuring four dimensions of individual level women's status[5]:

- Woman's work status (dummy variable: currently working, yes or no)
- Woman's media exposure – a dummy variable coded 1 (yes) if the woman responded yes to any one or more of the following items and coded 0 (no) if she answered no to all four questions:
    - Reads newspaper at least once a week
    - Listens to the radio at least once a week
    - Watches TV at least once a week
    - Goes to a movie at least once a month.
- Woman's decision making autonomy – factor score[6] with higher values for women who make their own decisions on the following matters: Obtaining health care; purchasing jewelry, and staying with family.
- Woman's mobility – factor score with higher values for women who do not need permission to go to the market or visit friends and relatives.

Woman's tolerance of domestic violence. This is a factor score based on five dichotomous questions outlining circumstances in which a woman says that her husband is justified in beating her: 1) if she

[3] I tested several theoretically relevant determinants of domestic violence that are not listed here, such as age and education gap between husband and wife, total number of children, having more sons than daughters, and husband's work status. Because they were not significant predictors I have not included them as control variables.
[4] Religion and caste were not asked of individual women but were asked of heads of households. I am making the assumption that the women share the same religion and caste as the household head. This is the convention in the analysis of DHS data.
[5] Please refer to Appendix 1 for descriptive statistics on all of the variables included in the final women's status measures and tolerance of domestic violence. Appendix 2 provides factor loadings, Eigenvalues, and Cornbach's alpha coefficients for each of the variables included in factor analysis.
[6] I used principal components factor analysis to identify latent constructs of women's status and tolerance of violence.

doesn't cook properly, 2) if she neglects the HH or kids, 3) if she goes out without telling him, 4) if she shows disrespect, and 5) if she is unfaithful.

Village level variables:
I am conceptually dividing the village level measures into categories: measures of social disorganization, social capital, and village level tolerance of violence. Many of the village level variables are calculated by aggregating mean levels of values from the individual women's questionnaire, while others are based on information from the village questionnaire. Thus, for example, the measure for women's comes from the village questionnaire and simply indicates that there is a woman's group in the village, not whether a particular woman is a member of the group.

The variables are as follows:

Social Disorganization determinants:

- Poverty: I measure poverty by two variables: first, village-level socioeconomic wealth, which is an aggregate of the household level wealth factor scores. Second, village level of electrification, which is coded as follows: a) not electrified, b) electrified, but very irregular supply, c) electrified and very regular supply.

- Religious and ethnic heterogeneity: I have created indices of religious and ethnic heterogeneity, based on the equation: [(proportion group one squared) + (proportion group two squared) and so on for each group]. This measure is intended to account for both the relative size and number of groups in the population, with a score of zero reflecting minimum heterogeneity, and higher numbers representing extreme heterogeneity (i.e. all residents equally divided into N categories).

- Residential stability: I use a measure of the average length of time (in years) individual women have lived in their current household.

Social Capital determinants:
I have selected two community groups to represent "collective efficacy:"

- the presence or absence of a women's group in the village,
- and the presence or absence of a village community center. [7]

Additionally, I have aggregated the individual-level women's status indicators into village averages to serve as measures of *village social capital*, namely:

- mean mobility factor score
- mean decision making factor score
- proportion of women with exposure to media
- proportion of women working.

Finally, to measure community norms of acceptance of abuse, I aggregate the individual women's tolerance of violence factor score to the village mean. In addition to modeling the main effects of this level-two determinant, I test interaction terms between community level tolerance of violence and each of the community level social capital measures.

[7] These measures do not indicate whether a given village has more than one woman's or community group, nor do they say anything about the size, membership, or activities of the group. They are simply binary variables indicating that there is a woman's group or a community center in the village.

Analysis Plan

The data used in this study have a two-level structure, with individual women clustered in villages. By applying a hierarchal linear model (HLM), I can simultaneously estimate the effects of both individual and village level influences on violence against women. Because my outcome variable is binary (Respondent has been hit by husband or ex-husband since age 15, yes or no), I apply a special case of HLM that uses a binomial sampling model and a logit link. The Bernoulli distribution is applied, which is a binomial distribution for binary outcome variables. The following equation describes a two level model that has both a fixed effect and a random effect. For simplicity, it has a single individual-level explanatory variable and a single village-level explanatory variable.

$$\text{Logit}\,(Y_{ij}) = \log\,(\,f_{ij} / 1 - f_{ij}) = \gamma_{00} + \gamma_{10} X_{1ij} + \gamma_{01} Z_{1j} + \gamma_{11} Z_{1j} X_{1ij} + \mathbf{d_{1j} X_{1ij}} + \mathbf{d_{0j}} + \mathbf{e_{ij}}.$$

In this equation, Y_{ij} is the log of the probability of being hit for the i^{th} individual in the j^{th} village, Z_{1j} is a village level determinant and X_{1ij} is an individual level determinant. The intercept and slope coefficients are fixed effects and the error terms are random effects (random effects are bolded in the model above). More specifically, γ_{00} is the term for the overall mean, γ_{10} is the coefficient for the individual-level covariate X_{1ij}, γ_{01} is the coefficient for the village-level variable Z_{1j}, and γ_{11} is the coefficient for a cross-level interaction between the individual level variable and the village level characteristic. The variance of the error term e_{ij} (the standard regression error, s^2) corresponds to the within-village variation in the log odds of being hit that is not explained by the individual predictors in the model, and the variance of the error term d_{0j} (T_0^2) indicates between-context variation in the log odds of being hit that is not explained by the contextual covariates. Finally, the variance of the cross-level interaction, d_{1j}, (T_1^2) indicates between-context variation in the effects of the individual-level covariate on the dependent variable that is not explained by the contextual covariates. In my analysis, I model village-level characteristics to predict both variation in the intercept (d_{0j}) and variation in the slopes of cross-level interactions that measure how the effects of individual-level covariates on domestic violence change depending on the village context (d_{1j}). I use the statistical program HLM 6.0 to conduct these analyses.

Results

Descriptive statistics

Table 1 displays frequencies and percentages for the individual-level measures included in this analysis, and Table 2 displays the village level measures. The sample consists of 7432 ever-married women living in 319 villages across rural Uttar Pradesh. Among them, 1660, or 22 percent, report that they have been beaten by their husband or ex-husband since age 15. The women are aged 15 to 49 years and fall evenly within three age categories: 34 percent of the women are between 15 and 24 years old, 35 percent are 25 to 34 years old, and 31 percent are between 35 and 49. The majority of the women were married between ages 5 to 19 (63 percent). 32 percent were married before age 15, and only six percent were married between 20 to 24 years old (the remaining 0.03 percent were married after age 25). At the time of interview, 45 percent of the women had been married for over 15 years (3310 women). The rest of the women are divided into three categories shorter time categories: zero to four years (19 percent), five to nine years (19 percent) and 10 to 14 years (18 percent). The women have generally low levels of formal education: two-thirds of them have no schooling, 12 percent have attended primary school, and only 13 percent of the women (about 950) have a secondary or higher education. Nearly 75 percent of husbands are older than 25 years (47 percent are over 35 and 35 percent between 25 and 24 years old). Husbands are also more educated than their wives, although their education level is among the lowest for men in India: 32 percent have no schooling, 15 percent have a primary education, 36 percent a secondary school education, and 17 percent have attended higher than secondary school.

<Table 1 about here.>

Uttar Pradesh has a strong Hindu majority. 88 percent of households across rural UP are Hindu, 10 percent are Muslim, and 2 percent belong to another religion (Jain, Buddhist, Christian). The index of religious heterogeneity (shown in Table 2), which measures the degree of religious heterogeneity in a village, ranges from a minimum of zero (representing no heterogeneity) a maximum of 0.57, and has a mean of 0.11. 60 percent of the sample of villages (191 out of 319) are 100 percent Hindu and therefore have a heterogeneity value of zero. There are three levels of caste measured in the DHS: "scheduled tribe/caste," "other backward caste," and "other caste." The "scheduled" and "other backward caste" categories represent minority groups that have been traditionally oppressed. Thus, the remaining group of people, "other caste," refers to the higher caste people who are not eligible for affirmative action type benefits (called reservations). There is more ethnic heterogeneity than religious heterogeneity in Uttar Pradesh. An average of 24 percent of women belong to a scheduled caste or tribe, 30 percent to an "other backward caste" (OBC), and 42 percent to a higher caste. The minimum ethnic heterogeneity score in the sample is zero, the maximum 0.89, and the mean is 0.51 (table 2). 77 percent of the women surveyed live in an extended family and the remaining 23 percent live in a nuclear family. 63 percent of the women live in households that fall in the bottom two wealth quintiles. 20 percent are in the middle quintile, and 17 percent are in the highest quintiles (4^{th} and 5^{th}). In the logistic regression analysis below, I use individual women's wealth indices (a continuous factor score).

My individual-level measures of primary interest are four women's status predictors and a measure of women's tolerance of domestic abuse. With the exception of the variable "currently working," these variables are constructed from several different survey questions, the descriptive statistics of which are listed in Appendix 1. In the sample, 23 percent of women are currently working and 37 percent report that they are regularly exposed to media (which includes a yes response to any one or more of the following: watching TV, listening to the radio, or reading the newspaper every week, or going to the cinema once a month). The remaining two status variables, women's decision making autonomy and mobility, are factor scores. Decision making autonomy has a minimum value of -1.39, a maximum of 3.32, and a mean of zero (because the factor score is standardized with a mean of zero and standard deviation of one). The total range of this measure is 4.71. Women's mobility has a minimum of -3.41, a maximum of 2.75, and a range of 6.16. Higher individual values of decision making autonomy or mobility represent greater status. Finally, the women's tolerance of violence factor score has a minimum of -0.98, a maximum of 1.56, and a range of 2.54. Note the range is not large, suggesting that a "standard deviation" increase or decrease in "tolerance of violence" is sizable. Women with higher scores on this measure are more tolerant of domestic violence as a husband's prerogative.

<Table 2 about here.>

Table 2 displays village characteristics. Over half of the villages have a population ranging from 100 to 1500 residents. 23 percent have a population of 1501 to 3000 residents, and the remaining 23 percent have a population larger than 3000. Recall that Uttar Pradesh is very densely populated, and the number of people in a village is not necessarily indicative of its level of economic prosperity[8]. For example, one-third of the villages in this sample have no electricity, and another 47 percent have a very irregular supply, leaving 21 percent with a reliable supply. Several of the village level characteristics displayed in Table 2 are measures calculated by taking the individual women's measures and determining a village average score. The average village wealth is an aggregate of individual women's wealth factor scores, with a minimum of -1.30, a maximum of 1.08 and a mean of -0.66. I measure "residential stability" by the

[8] Village population size is not included in the regression analyses reported here because it is not a statistically significant variable in any of the models.

average number of years women have lived in the village. The village average is 13.24 years, with a standard deviation of 2.93 years. Village social capital is represented by village-averages of the individual-level women's status scores and the presence of community groups. 10 percent of the villages have a community center (31 out of 319) and 9 percent have a woman's group (27 out of 319). Finally, the village average tolerance of violence score is based on the factor scores described earlier. The village levels of aggregated factor scores are not readily interpretable as descriptive statistics. Their effect will be evident in the hierarchal analysis, particularly in Model 5 when contextual variation is predicted by village characteristics.

Multivariate determinants of domestic violence

Fixed effects model

Table 3 displays the results of the likelihood that an individual woman has been beaten by her husband or ex-husband since age 15. Model 1 addresses my first hypothesis: does being more empowered protect a woman living in a patriarchal setting from experiencing marital violence? I test this using a standard fixed-effects model in which it is assumed that observations are independent and that all residual variation in domestic violence occurs within, and none between, villages. The theoretically important indicators in Model 1 measure dimensions of a woman's status (four variables) and her tolerance of marital abuse. Controlling for relevant individual-level covariates, three of the four status measures are statistically significant at $p < 0.05$, as is tolerance for abuse.

<Table 3 about here.>

Based on the Model 1 parameter estimates, women's status operates in both positive and negative directions on the likelihood of domestic abuse. On the one hand, women who work and have greater exposure to media have a greater probability of being abused by their husbands (the coefficient is positive). In contrast, women with higher levels of decision making power in household matters and those with greater mobility (that is, freedom to visit friends or relatives and go to the market) have a lower likelihood of being beaten (the coefficient is negative), although decision making autonomy is only a marginally significant predictor ($p = 0.08$). Finally, women who report greater tolerance of domestic violence are at significantly higher risk for abuse[9]. Among the control variables included in Model 1, statistically significant risk factors for domestic abuse are longer duration of marriage, Muslim religion, and having a husband aged over 24 years (with increasing risk as the husband's age increases)[10].

[9]Although tolerance of marital abuse is typically considered an important measure of women's status, I allow it to stand apart in this study for two reasons. First, my main theoretic interest is in social norms of tolerance of abuse at the village level, where I test Browning's hypothesis that social capital effects will be modified by norms of tolerance of abuse. However, since this village-level measure is constructed by aggregating to the mean from the individual-level women's tolerance score, I add the individual level tolerance measure to assure that any village level effects I find are not simply unmeasured individual effects. Hence, individual-level tolerance acts as a control variable in this analysis. Secondly, in these data individual women's tolerance of abuse is found to be highly predictive of her experience of abuse: women who tolerate violence are much more likely to have experienced it. While this is interesting information, its interpretation is limited by the inability to disentangle causality using cross-sectional data. Specifically, it is not possible to rule out whether women justify domestic abuse because they are abused. Causal direction is particularly ambiguous between these two variables because a woman's experience of domestic violence could have occurred anytime since age 15, while the tolerance of violence variable refers to a woman's tolerance at the time of interview. Indeed, inferring causality between all measures of women's status and domestic violence is complicated by this fact, and this is a limitation of the entire analysis. However, in the case of the other status measures, I argue that it is less likely that a woman's response may be directly influenced by whether she has been beaten.

[10] In addition to the age of both the respondent and her husband, another important determinant of domestic violence is the age difference between husband and wife. Namely, the greater the age-gap between partners, the greater the probability of wife-abuse. The same relationship holds for the education gap between partners. I tested both the age-

Conversely, statistically significant control variables that hold a negative association with the probability of abuse are household wealth, living in an extended family, and the respondent having an education level greater than primary school. These relationships are what can be expected, based on past literature.

Estimating random intercept

Model 2 is specified to test the hypothesis that there will be significant variation across villages in the probability of domestic violence, controlling for relevant individual level characteristics (i.e. all of the determinants in Model 1). I relax the constraint that variation across villages in the probability of abuse equals zero by allowing the model intercept to vary randomly across villages. The residual variance between villages is estimated as τ_0^2 and is displayed in the lower portion of Table 3, in the section labeled "Random Effects." τ_0^2 for Model 2 is statistically significant, indicating that the village context affects an individual woman's probability of being abused by her husband. Note that several of the parameter estimates change slightly between Model 1 and Model 2, and some estimates lose statistical significance. Because Model 2 is a completely different specification, allowing for random variation in the intercept across villages, the differences between the parameter estimates in Models 1 and 2 can not be meaningfully interpreted. Rather, the important finding in Model 2 is that there exist village-level factors (unidentified in Model 2) that significantly influence a woman's probability of marital violence, over and above that woman's individual risk factors. I will attempt to identify some of these village characteristics in Model 5.

Estimating random slopes

In Model 3, I elaborate on Model 2 by allowing the estimates of the log odds of the women's status measures to vary across villages. That is, I relax the constraint that the effect of these determinants on the dependent variable is equal from one village to the next. By estimating variation in these determinants, I can test whether the village context will explain some of the variation in the effect of woman's status on her probability of being abused. The regression coefficients for these variables (γ_{10}, γ_{20}, γ_{30}, γ_{40}) indicate the average effect on the probability of domestic violence of individual women's status across villages and the variance components (τ_{10}^2, τ_{20}^2, τ_{30}^2, τ_{40}^2) indicate the total amount of variation in these effects across villages.

Two of the five Model 3 variance components (displayed in the "Random Effects" portion of Table 3) are statistically different from zero – the intercept and mobility. The significant random slope indicates that the impact of individual women's mobility on domestic violence varies significantly across villages. Specifically, while women are generally protected from abuse by having greater freedom of movement (as indicated by the negative sign of the coefficient of mobility), the magnitude of this effect varies significantly across geographic locations. For the remaining three dimensions of women's status – whether she works, her media exposure, and her decision making autonomy – I am not able to reject the hypothesis that the value of τ_p^2 associated with each of these slopes is equal to zero. In other words, the risk of women's employment on increasing her likelihood of being beaten is constant regardless of the characteristics of the village in which she lives. Likewise, having higher levels of decision making autonomy is beneficial to a woman regardless of where she lives[11]. These slopes can therefore be treated as fixed, as I do hereafter.

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and education-gap, but as neither of them is significant in this sample, I have not included them as control variables in these models.

[11] As was the case in interpreting changes in regression parameters from Model 1 to 2, caution is suggested in interpreting changes in coefficients and significance levels between Model 2 and Model 3. Unlike a typical regression model in which changes in parameter estimates can be interpreted as additional determinants are added, variation in parameter estimates between Models 2 and 3 is based on changing model specification (no new variables are added, but model assumptions are altered). So, for example, it is not meaningful to explain the change in significance level of a woman's media exposure between Model 1 (where p = 0.02) to Model 2 (where p = 0.10)

Model 4 is the parsimonious 'random slopes and intercept' model that I use as a base to estimate specific village contexts that may explain variation in domestic violence across villages and variation in the effect of individual women's mobility across villages. In this model, one of the four individual-level women's status measures has significant fixed effects at the 0.05 level: whether the woman is working ($p = 0.00$). The other three woman's status measures, decision making autonomy ($p = 0.10$), mobility ($p = 0.13$), and media exposure ($p = 0.07$), have lost their significance at $p < 0.05$ in this model. This change from Model 1, the fixed effects model, suggests that once the probability of domestic abuse is permitted to vary randomly across villages, the average log likelihood of abuse is not as strongly associated with average levels of these status measures[12]. However, despite this small attenuation in their effects, it is noteworthy that the coefficients of the individual-level women's status measures change very little between Models 1 and 4.

Recall that the slope of mobility is permitted to vary randomly across villages, so while the fixed effect of mean levels of women's mobility on the probability of domestic violence is not significant, the relationship between mobility and domestic violence varies significantly across villages. In other words, the context in which a woman has the freedom to leave her household influences whether that freedom protects her from being abused – freedom of movement is more protective against abuse in some villages than in others. At the sample mean level of mobility (the point estimate for the regression coefficient), it is not statistically significant.

Estimating the effects of village level covariates

I estimate models with several village-level predictors to answer the final study questions: What specific community characteristics increase a woman's risk of marital abuse and what characteristics protect her, over and above individual level determinants? And what characteristics of communities can explain why the effect of women's mobility is more protective in some villages than in others? To answer the first question, I model variation in the probability that a woman has been hit (that is, variation in the level-one intercept) as a function of social disorganization and social capital indicators, testing hypothesis three and four. Then using village level interaction terms, I allow village social capital to be modified by community norms of acceptance of domestic abuse, testing hypothesis five parts b and c.[13] To answer the second question, I use cross-level interaction terms to estimate variation in the slope of individual mobility across villages by determinants of village-level social capital, testing hypothesis six. Since many of the hypotheses tests produce statistically non-significant results, it would be cumbersome to include all of them here. Appendix 3 outlines the village-level covariates I modeled to test the hypotheses in five sets of hierarchal analysis.

None of the social disorganization theory determinants are statistically significant. That is, measures of average village wealth and socio-economic development, racial and ethnic heterogeneity, and residential stability do not explain why some villages have a higher proportion of domestic violence than others, controlling for individual level covariates.[14] Rather, all of the significant village-level predictors of

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to Model 3 (where $p = 0.05$). Rather, I will interpret significance levels of determinants in my final, parsimonious random intercept and slope model (Model 4).

[12] It may be the case that the three non-significant status variables could have a significant effect on the likelihood of domestic abuse at levels other than the mean, and I plan to explore these relationships further by analyzing predicted probabilities.

[13] If the fixed effects of these level-two predictors are significant, they eliminate some portion of the random variation captured in the variance component for the intercept, τ_0^2. In a model that perfectly explained the variation in domestic violence across villages, τ_0^2 would no longer be significant.

[14] In the social disorganization models, as in all of the models tested in the study, household wealth is a significant negative determinant of domestic abuse. This suggests that wealth is an important determinant of violence in rural

domestic violence are measures of social capital, and most of the significant findings relate to how social capital interacts with village norms of tolerance of violence. This implies that social disorganization affects domestic violence only indirectly, through social capital and women's status.

In Model 5 (Table 4) I summarize the statistically significant findings of this endeavor. Model 5 is equivalent to Model 4 with village-level covariates added to predict variation in the intercept (γ_{01}, γ_{02}, γ_{03}, γ_{04}, γ_{05}, γ_{06}). Note that the level-one coefficients and standard errors change little from Models 4 to 5. This is to be expected, because the level-one coefficients in Model 4 account for all variation in both the individual-level intercept and the slopes. Model 5 uses contextual factors to attempt to identify the source of the variation. The village level determinants identified here are: village average women's mobility, presence of a women's group in the village, proportion of women working, and interactions with village average tolerance of domestic violence. Interestingly, with the exception of village average women's mobility, the indicators are not statistically significant as main effects; however, when they are permitted to vary according to levels of village tolerance of domestic violence (level-two interaction effects) they become highly significant predictors of variation in domestic violence across villages.

<Table 4 about here.>

Village-level women's mobility
Village-level women's mobility is a measure constructed by aggregating a village average from the individual women's mobility scores, differentiating this indicator from the individual-level mobility variable, which is also included in this model. The regression coefficient of village average mobility is statistically significant and negative, indicating that villages with higher average mobility are associated with a lower probability of domestic violence. Regardless of an individual woman's mobility level, if she lives in a village where average levels of women's freedom of movement are higher, she is less likely to be beaten by her husband. Unlike the other statistically influential village level determinants of domestic violence, the interaction term between village average mobility and village average tolerance of violence is not significant. This indicates that a woman living in a village with overall greater women's freedom of movement is herself less likely to be abused, irrespective of her village's norms of tolerance for abuse and irrespective of her own freedom to leave the household.

Village-level norms of tolerance
Contrary to my hypothesis, village-level tolerance of domestic violence does not emerge as a statistically significant determinant ($p = 0.80$). However, individual-level women's tolerance of violence remains a highly significant positive determinant of the probability that a woman is abused. It appears that tolerance of abuse operates at the individual level. Thus villages with higher average levels of tolerance of violence will be associated with a greater probability that a woman is abused, but this relation is not an effect of a high village average, but rather a result of a given village having more individual women who are themselves at greater risk in their own household. While the village average tolerance of violence does not explain variation in domestic abuse, it is an influential contextual determinant through its interaction with village women's groups and the village percentage of working women.

Interaction between village women's group and village average tolerance of violence
I find support for the hypothesis that living in a village with a woman's group will be associated with domestic violence, particularly in relation to that village's norms of tolerance of violence. (The other collective efficacy measure I tested – community group – is not statistically significant in these analyses.) The coefficient of women's group is positively associated with the likelihood of domestic violence, with a significance of $p = 0.11$. At mean levels of all other covariates, women who live in the 29 villages with a

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Uttar Pradesh, but that it operates at a household level, directly impacting the relationship between particular couples.

woman's group are less likely to be beaten by their husbands, although this relation is not statistically significant. However, the effect changes depending on the village norms of tolerance for abuse. The coefficient of the interaction between village-level tolerance and women's group is positive and highly significant (p = 0.00), meaning that as village tolerance increases, the effect of living in a village with a women's group changes direction and the presence of a woman's group becomes a risk factor.

Interaction between village percentage working women and village average tolerance of violence
The final statistically significant village-level determinant of domestic violence is the interaction between the proportion of women working per village and village average tolerance. The regression coefficient is positive (p = 0.03), indicating that in villages with high tolerance of violence, having more working women puts all women at greater risk of domestic violence. Note that, as in the previous model, the Model 5 coefficient of *individual-level* work status is positive and significant, meaning that working women have a higher probability of being abused by their husbands, under controls for significant covariates. The interaction between the *village* proportion of women working and village average tolerance of abuse contributes an additional risk associated with women's employment, although its effect depends on the norms of acceptance of violence[15].

Contextual variation in the effect of individual-level women's mobility on domestic violence
Women's mobility emerges as an important determinant of the probability of domestic violence in this study, at both individual and village levels. As described above, the effect of an individual woman's mobility on her likelihood of abuse varies significantly across villages (based on statistically significant random variation in the slope of mobility). I tested the hypothesis that women who live in villages with higher average levels of social capital experience greater protection from their mobility status than women who live in villages with lower levels of social capital. (This is tested by modeling variation in the slope with determinants of village-level social capital.) None of the social capital variables reached statistical significance, and I was not able to find any other explanation for variation in the effect of mobility on domestic violence.

Model 5 Variance Components
By comparing the variance component of the intercept from Model 4 to Model 5, one can estimate the amount of variation in domestic violence that has been explained by the contextual variables discussed here. The variance, τ_0^2, drops from 0.25 to 0.22, suggesting that village-level social capital is able to explain about twelve percent of the between-village intercepts. The remaining variation has yet to be explained.

Discussion
In this section, I highlight and discuss the primary study findings of the empirical results.

At the individual level, "domestic" dimensions of women's status are protective against marital abuse, but "public" dimensions of status are a risk factor.

Based on the individual level model results, women who are employed and who have exposure to media (newspapers, movies, TV) are more likely to experience domestic abuse, while women with higher decision-making autonomy and greater freedom to visit friends and relatives are less likely to experience abuse. One explanation for this could be that the positive or negative effect of a particular woman's status on her risk of domestic violence depends upon the social realm in which her status operates. Media exposure and having a job can be conceived as operating in a non-domestic sphere associated with the

[15] The coefficient of the proportion of women working per village, which also appears in Model 5, is not significant (0=0.80). As in the case of village average tolerance of violence, it is likely that the effects of village-levels of employment operate through the individual covariate.

outside world, while decision making autonomy and mobility operate within a domestic sphere. Working women are likely to confront a variety of empowering social messages about women's roles; many of them earn money and may have greater status in their community – realities which may threaten a man's sense of his role in society or his power over his wife. Likewise, women with greater media exposure may be introduced to any number of gender-related perspectives that could threaten a husband's patriarchal position. On the other hand, a husband is likely to be directly related to the level of power his wife has in household decision making and in her freedom to travel outside the home. Women with more power in these domains may pose a lesser threat to a husband's overall authority, particularly because he may be instrumental in conferring his wife's status in the domestic sphere. According to this differentiation, individual-level women's status can be divided conceptually into two types: "domestic status," or status that operates mainly within the household, which is protective at the individual level; and "public" status, or status that operates in the non-domestic sphere, which is a risk factor for abuse at the individual level.

The likelihood that a woman will be beaten depends partially on her community context, over and above her personal risk factors.

Controlling for individual-level covariates of domestic abuse, I found significant variation in domestic violence across villages in rural Uttar Pradesh. This is relevant because it demonstrates that even in a region that is often labeled socially homogenous (that is, highly conservative or patriarchal) important community level heterogeneity plays a role in determining a woman's likelihood of abuse.[16]

Community acceptance of domestic abuse partially determines whether village social capital will be a risk factor for or a protection against domestic violence. As village tolerance of abuse increases, village level "public" women's status becomes riskier.

I find strong support for Browning's hypothesis that the effects of village social capital on domestic violence are modified by community norms of acceptance of abuse. Interestingly, as village average tolerance of abuse increases, "public" measures of women's status (village proportion of working women, proportion of women exposed to media, and the presence of a women's group) become risk factors for individual abuse.[17] Perhaps these community-based public spaces (the workplace, the woman's group, and media outlets) serve as venues where women reinforce and spread norms of tolerance (or intolerance) of domestic abuse. For example, the effect of living in a village with a woman's group, controlling for community tolerance of marital abuse, is negative, meaning that women's groups can be protective against the risk of domestic violence. However, whether the presence of a woman's group in a village is protective or risky *depends on the level of tolerance of violence* in that village. In villages with high tolerance and a woman's group, the probability of domestic violence is even higher than it would have been if the village had no women's group. Village level tolerance also conditions the impact of the proportion of women working on the likelihood of violence. Namely, in villages with high tolerance of violence, having more working women puts all women at greater risk of abuse.

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[16] Koenig and colleagues also find contextual variation in domestic violence across Uttar Pradesh, although they use different data and sampling units. Koenig's study sampled five districts out of 70 in Uttar Pradesh, while the DHS is based on villages across all districts in rural Uttar Pradesh. The contextual unit of analysis in Koenig's study is the primary sampling unit (PSU) while the current study uses villages as the community unit. Although the contextual effects captured by these two units overlap, the village is arguably a more meaningful measure of community context than the PSU. Finally, Koenig's dataset is based on a men's questionnaire in which men self-report their abusive behavior, while I use a women's questionnaire. It is reassuring that analyses using different data and responses by both men and women result in some of the same broad patterns of violence, suggesting that the findings are reliable.

[17] In the case of the proportion of women working, which is already a risk factor for domestic abuse, the relation becomes more severe. In the case of women's group, which has a negative (protective) association with domestic abuse at mean levels of tolerance, the association changes direction and it becomes a risk factor.

Hence the positive or negative social impact of community-level women's status (or social capital) may be a reflection of the underlying gender norms of a particular village. The workplace, media outlet, or woman's group may provide a social space for information exchange that can be either beneficial or harmful to women. The social networks associated with these places could be a vehicle for the diffusion of pre-existing normative beliefs that are empowering or disempowering. This notion may help to explain part of the mixed effects of women's groups on women's health and status outcomes in the literature.

Women's mobility has a particularly important relationship with domestic violence. It is the only form of women's status analyzed in this study that appears to be beneficial at both individual and community levels.

In this analysis, women's mobility is a highly significant, negative predictor of domestic abuse at both individual and village levels. First, at the individual level, women with more freedom of movement experience less violence. Second, women who live in villages with higher average female mobility experience significantly lower levels of individual violence, regardless of their personal mobility status. And finally, unlike the other village level social status measures which vary in their impact according to levels of village tolerance of abuse, the impact of village women's mobility on domestic violence is not affected by norms of tolerance. Women's mobility is always protective. Logically, increased individual-level mobility may be protective against domestic abuse because women who have freedom to leave their homes can physically remove themselves from a dangerous situation. Leaving the house to seek refuge with friends or family, or simply getting out of the house to go to the market may diffuse a potentially volatile domestic situation. Women who are permitted to visit relatives may also leave home for extended periods of time.[18] It is interesting that the overall effect of community level women's mobility is beneficial even to women who themselves have low mobility status. Women's freedom of movement appears to create a social environment that is generally more empowering for all women.

This study does not find strong support contextual variation in the impact of women's status on domestic violence.

Based on previous literature, it is well understood that the effects of women's status on various outcomes are contextually dependent. However, in this study the impact of women's status on domestic violence is constant across villages in all but one dimension of status – i.e. mobility. I was unable to identify contextual determinants of this variation. These results lead me to the conclusion that in these data, variation in the relationship between women's status and domestic violence has more to do with the *dimension* of status being described than with the *context* in which a woman exercises her status.

Conclusion

While Uttar Pradesh is a patriarchal region in general, community gender norms vary geographically and are significantly associated with the risk of domestic abuse. Village norms of acceptance of abuse are part of what determines whether village social capital is beneficial or harmful to women. In essence, analysis of community tolerance for violence provides a way to measure the impact of "patriarchy within patriarchy," or more localized social norms.

The findings presented here have important policy implications. Programs or community groups that are often considered "empowering" for women may become risk factors for increased violence when women hold strong beliefs that abuse is socially acceptable. To effectively reduce violence against women, efforts to reduce norms of tolerance of abuse should always be structured into any program intended to increase

[18] There is a literature on Indian women's help-seek behavior that I plan to explore in my interpretation of these findings. Researchers have found that abused women seek help from a multitude of informal sources such as social networks (friends and family) and women's groups (Panchanadeswaran 2005).

women's status, such as the formation of women's groups, credit cooperatives, or employment opportunities. In terms of encouraging husbands to give their wives greater status, focus first on women's freedom of movement – it is the dimension of status that is most strongly associated with reducing the risk of violence. Since husbands are likely to take an active part in granting their wives permission to visit family, friends, or go to the market, they may not feel threatened by it and may therefore be convinced to support women's mobility as socially acceptable.

The most serious limitation of this study is that the data are cross-sectional, so the causal assumption that status and social capital precede domestic violence can only be inferred. The statistically significant associations described in this study are associations only. As a result, my interpretation of the findings should be held as conjecture and ponderings, and not as empirical fact.

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Table 1: Individual-level study variables and frequencies, Ever Married Women age 15-49, Rural Uttar Pradesh, India, 1999

N=7432 women

Dependent Variable		
	Freq	**%**
Respondent Beaten by Husband or Ex-husband since Age 15		
Yes	1660.3	22.3
No	5771.9	77.7
Total	7432.2	100.0

Independent Control Variables		
	Freq	**%**
Age		
15-24	2503.5	33.7
25-34	2603.6	35.0
35-49	2325.1	31.3
Total	7432.2	100.0
Marital duration		
0-4 yrs	1406.4	18.9
5-9 yrs	1406.7	18.9
10-14 yrs	1308.4	17.6
15+ yrs	3310.8	44.5
Total	7432.2	100.0
Religion		
Hindu	6445.5	86.7
Muslim	920.4	12.4
Other	52.3	0.7
Total	7418.3	100.0
Ethnicity		
"Scheduled caste"	1581.3	21.3
"Scheduled tribe"	171.4	2.3
"Other backward caste"	2270.2	30.5
None of them (hi-caste)	3043.6	41.0
Total	7066.5	95.1
(Missing	366.0	4.9)
Education		
None	5588.0	75.2
Primary	883.0	11.9
Secondary	746.2	10.0
More than secondary	212.2	2.9 `
Total	7429.3	100.0
Husband's education		
None	2356.8	31.7
Primary	1098.2	14.8
Secondary	2673.3	36.0
More than secondary	1273.5	17.1
Total	7401.8	99.6
Husband's age		
15-24	991.7	13.3
25-34	2561.0	34.5
35-49	2776.5	37.4
50 +	737.3	10.0
Missing	365.7	4.9
Total	7432.2	100.1

Independent Control Variables, continued		
	Freq	**%**
Household wealth quintiles		
Lowest quintile	2249.4	30.3
Second quintile	2434.7	32.8
Middle quintile	1467.4	19.7
Fourth quintile	950.6	12.8
Highest quintile	330.1	4.4
Total	7432.2	100.0
Family structure		
Nuclear family	1694.5	22.8
Extended family	5737.7	77.2

Determinants of Women's Status		
Respondent currently works		
Yes	1718.2	23.1
No	5709.5	76.8
Total	7427.7	99.9
Regularly exposed to media		
Yes	2721.7	36.6
No	4710.5	63.4
Total	7432.2	100.0

Women's status factor scores	***Min***	***Max***	***Mean***	***S.D.***
"Decision making autonomy"	-1.39	3.32	0.00	1
"Mobility"	-3.41	2.75	0.00	1

Women's tolerance of violence factor score				
"Tolerance of violence"	-0.98	1.56	0.00	1

Data source: India National Family Health Survey-II / DHS 1998-1999

Table 2: Village-leve study variables and frequencies, Rural Uttar Pradesh, India, 1999

N=319 villages

	N	Min.	Max.	Mean	s.d.
Social disorganization theory determinants					
Village-level development					
Village Electrification	317	1.00	3.00	1.89	0.72
Mean village wealth*	319	-1.30	1.08	-0.66	0.35
Tot num of shops in village	315	0.00	6.00	1.74	1.43
Religious-caste Heterogeniety					
Index of religious heterogeniety*	319	0.00	0.57	0.11	0.17
Index of ethnic heterogeniety*	319	0.00	0.89	0.51	0.20
Residential stability					
Ave num years women lived in village*	319	1.00	31.00	13.24	2.93
Social capital determinants					
Village-average of women's status and education					
Years of education*	319	0.00	12.00	1.88	1.66
Proportion currently working*	319	0.00	1.00	0.25	0.19
Decision making autonomy*	319	-0.89	2.32	0.05	0.38
Mobility*	319	-2.92	2.08	0.03	0.42
Proportion with regular exposure to media *	319	0.00	1.00	0.36	0.20
Community groups					
Proportion of villages with a women's group	317	0.00	1.00	0.09	0.28
Community ctr in village	316	0.00	1.00	0.10	0.30
Village-level tolerance of Violence					
Women's tolerance of domestic abuse*	319	-0.98	1.56	-0.06	0.55

Frequencies of categorical variables	*Pop size*	*N of villages*	*%*
Village Population, Categorical	100-1500	173	54.26
	1501-3000	72	22.53
	3001-4500	37	11.53
	> 4501	34	10.70
	Total	316	99.01

	Category	*N of villages*	*%*
Village Electrification	None	101	31.76
	Irregular supply	149	46.68
	Regular supply	67	20.88
		317	99.31

Data source: India National Family Health Survey-II / DHS 1998-1999

* = Variable created by aggregating individual level data to the village mean

Table 3: Two-level bernoulli models predicting log-odds of individual-level domestic violence in rural Uttar Pradesh, India 1999

		Model 1 - fixed effects			Model 2 - random intercept only			Model 3 - random intercept & random slopes for status variables			Model 4 - random intercept and random "mobility" slope		
Fixed Effects		β	s.e.	p	β	s.e.	p	β	s.e.	p	β	s.e.	p
Intercept	γ_{00}	-2.25	0.26	0.00	-2.25	0.25	0.00	-2.30	0.24	0.00	-2.29	0.24	0.00
Women's status indicators													
R currently works (reference = not working)	γ_{10}	0.43	0.09	0.00	0.42	0.09	0.00	0.42	0.09	0.00	0.42	0.09	0.00
Decision making autonomy	γ_{20}	-0.06	0.04	0.08	-0.06	0.04	0.11	-0.06	0.04	0.12	-0.06	0.04	0.10
Mobility	γ_{30}	-0.10	0.05	0.04	-0.08	0.05	0.09	-0.07	0.05	0.12	-0.07	0.05	0.13
Media exposure	γ_{40}	0.21	0.09	0.02	0.16	0.10	0.10	0.19	0.09	0.05	0.17	0.10	0.07
Woman's tolerance of violence	γ_{50}	0.42	0.05	0.00	0.43	0.06	0.00	0.44	0.06	0.00	0.43	0.06	0.00
Control variables													
Age (reference = 15 thru 24)													
25-34	γ_{60}	-0.02	0.16	0.89	0.00	0.16	0.99	0.00	0.16	1.00	0.00	0.16	0.98
35-49	γ_{70}	-0.28	0.22	0.20	-0.24	0.22	0.28	-0.26	0.23	0.25	-0.24	0.22	0.28
Marital Duration	γ_{80}	0.20	0.08	0.01	0.21	0.08	0.01	0.22	0.08	0.01	0.22	0.08	0.01
Religion (reference = Hindu)													
Muslim	γ_{90}	0.54	0.17	0.00	0.54	0.16	0.00	0.55	0.16	0.00	0.54	0.16	0.00
Other Rel	γ_{100}	-0.86	0.75	0.26	-0.71	0.69	0.30	-0.65	0.71	0.36	-0.66	0.70	0.34
Ethnicity (reference = "non-oppressed" caste)													
Scheduled tribe/caste	γ_{110}	0.12	0.11	0.27	0.12	0.12	0.31	0.11	0.12	0.36	0.12	0.12	0.32
Other Backwards Caste	γ_{120}	-0.03	0.11	0.76	-0.07	0.11	0.53	-0.07	0.11	0.52	-0.06	0.11	0.57
Ethnicity missing	γ_{130}	-0.10	0.30	0.74	-0.10	0.26	0.71	-0.10	0.27	0.72	-0.08	0.26	0.76
Education (reference = no school)													
Primary School	γ_{140}	0.06	0.10	0.57	0.06	0.11	0.56	0.06	0.11	0.60	0.06	0.11	0.61
Secondary School	γ_{150}	-0.35	0.17	0.04	-0.36	0.16	0.03	-0.36	0.16	0.03	-0.36	0.17	0.03
Husband's Education (reference = no school)													
Primary School	γ_{160}	0.09	0.12	0.46	0.08	0.12	0.51	0.10	0.12	0.41	0.09	0.12	0.47
Secondary School	γ_{170}	-0.12	0.13	0.34	-0.11	0.12	0.34	-0.10	0.11	0.38	-0.10	0.12	0.39
Husband's Age (reference = 15 thru 24)													
25-34	γ_{180}	0.29	0.13	0.03	0.26	0.13	0.06	0.26	0.14	0.05	0.26	0.14	0.06
35-49	γ_{190}	0.38	0.17	0.03	0.32	0.17	0.07	0.32	0.18	0.07	0.32	0.18	0.07
50+	γ_{200}	0.50	0.20	0.01	0.42	0.20	0.03	0.42	0.20	0.04	0.41	0.20	0.04
Missing H Age	γ_{210}	0.32	0.28	0.25	0.24	0.27	0.36	0.26	0.27	0.33	0.25	0.27	0.36
HH Wealth Factor Score	γ_{220}	-0.31	0.12	0.01	-0.30	0.11	0.01	-0.33	0.11	0.00	-0.32	0.11	0.01
Family Structure (reference = nuclear)													
Extended Family	γ_{230}	-0.36	0.09	0.00	-0.35	0.09	0.00	-0.35	0.09	0.00	-0.35	0.09	0.00
Individual-level df		7091			7091			7091			7091		
Village-level df		na			311			311			311		

Random Effects for Multi-level Models 2 thru 4

		Model 2, intercept only				Model 3, intercept + status slopes				Model 4, significant variances			
Variance Components		τ^2	s.d.	Chi-2	p	τ^2	s.d.	Chi-2	p	τ^2	s.d.	Chi-2	p
Intercept	τ_0^2	0.25	0.5	523.13	0.00	0.23	0.48	318.15	0.01	0.25	0.50	510.35	0.00
Work status	τ_{21}^2					0.22	0.46	260.53	>.500				
Decision making autonomy	τ_{22}^2					0.02	0.14	275.95	0.25				
Mobility	τ_{23}^2					0.06	0.24	329.60	0.00	0.05	0.22	368.99	0.01
Media Exposure	τ_{24}^2					0.06	0.25	193.64	>.500				
Model df		311				261				303			

Notes:

1. Robust Standard Errors
2. Analysis done in HLM.6
3. Village level weighted by village weight, Individual level weighted by women's weight
4. Data source: India National Family Health Survey-II / DHS 1998-1999
5. The chi-square statistics are based on the number of units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

Table 4: Village level determinants of variation in individual levels of domestic violence in rural Uttar Pradesh, India 1999

		Model 5: Village-level estimates of variation in DV		
Fixed Effects		β	s.e.	p
Village-level determinants of the intercept				
Intercept	γ_{00}	-2.31	0.24	0.00
Village-level Mobility [1]	γ_{01}	-0.43	0.13	0.00
Village-level Tolerance of DV [1]	γ_{07}	-0.03	0.13	0.80
Women's Group in village	γ_{05}	-0.32	0.20	0.11
*Tolerance*Women's Group* [1]	γ_{04}	1.00	0.31	0.00
Proportion women working [1]	γ_{08}	-0.09	0.33	0.80
*Tolerance*Working* [1]	γ_{03}	1.20	0.55	0.03
Average exposure to media [1]	γ_{06}	0.41	0.31	0.20
*Tolerance*Ave exp to media* [1]	γ_{02}	0.94	0.56	0.10
Individual-level determinants				
Women's status indicators				
R currently works (reference = not working)	γ_{10}	0.40	0.10	0.00
Decision making autonomy	γ_{20}	-0.05	0.04	0.18
Mobility (random slope)	γ_{30}	-0.03	0.05	0.59
Media exposure	γ_{40}	0.12	0.10	0.22
Woman's tolerance of violence	γ_{50}	0.41	0.06	0.00
Control variables				
Age (reference = 15 thru 24)				
25-34	γ_{60}	0.01	0.16	0.94
35-49	γ_{70}	-0.24	0.23	0.29
Marital Duration	γ_{80}	0.21	0.08	0.02
Religion (reference = Hindu)				
Muslim	γ_{90}	0.54	0.16	0.00
Other Rel	γ_{100}	-0.59	0.73	0.42
Ethnicity (reference = "non-oppressed" caste)				
Scheduled tribe/caste	γ_{110}	0.09	0.12	0.43
Other Backwards Caste	γ_{120}	-0.09	0.11	0.42
Ethnicity missing	γ_{130}	-0.11	0.26	0.67
Education (reference = no school)				
Primary School	γ_{140}	0.07	0.11	0.52
Secondary School	γ_{150}	-0.37	0.17	0.03
Husband's Education (reference = no school)				
Primary School	γ_{160}	0.09	0.12	0.47
Secondary School	γ_{170}	-0.09	0.11	0.44
Husband's Age (reference = 15 thru 24)				
25-34	γ_{180}	0.29	0.14	0.03
35-49	γ_{190}	0.35	0.18	0.05
50+	γ_{200}	0.44	0.20	0.02
Missing H Age	γ_{210}	0.24	0.27	0.37
HH Wealth Factor Score	γ_{220}	-0.34	0.11	0.00
Family Structure (reference = nuclear)				
Extended family	γ_{230}	-0.33	0.09	0.00
Individual-level df		7083		
Village-level df		311		

Random Effects for variation in level-1 slopes and intercept

Variance Components		τ^2	s.d.	df	Chi-2	p
Intercept	τ_0^2	0.22	0.47	295	458.9	0.00
Woman's mobility	τ_{21}^2	0.06	0.25	303	369.8	0.01

Notes:

1. 1 = variable centered on grand mean
2. Robust Standard Errors
3. Analysis done in HLM.6
4. Village level weighted by village weight, Individual level weighted by women's weight
5. Data source: India National Family Health Survey-II / DHS 1998-1999
6. The chi-square statistics are based on the number of units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

Appendix 1: Variables included in women's status and tolerance of violence factors
N=7432 ever-married women aged 15-49

	Freq	%
Variables in "decision making autonomy" factor:		
Who decides to purchase jewelry?		
Decided by husb or others in HH w/o R	4515.0	60.7
Jointly decided with husb or others in HH	2409.5	32.4
R decides	503.1	6.8
Total	7427.6	99.9
Who decides about R staying with family?		
Decided by husb or others in HH w/o R	4876.6	65.6
Jointly decided with husb or others in HH	1941.2	26.1
R decides	596.4	8.0
Total	7414.2	99.8
Who decides on obtaining health care?		
Decided by husb or others in HH w/o R	4231.7	56.9
Jointly decided with husb or others in HH	1346.1	18.1
R decides	1851.1	24.9
Total	7428.9	100.0
Variables in "mobility" factor:		
Need permission to go to the market?		
Not permitted to go	820.9	11.0
Yes - need permission	5510.5	74.1
No - R decides	1096.0	14.7
Total	7427.4	99.9
Need permission to visit friends/relatives?		
Not permitted to go	224.8	3.0
Yes - need permission	6392.1	86.0
No - R decides	806.6	10.9
Total	7423.6	99.9
Variables in "tolerance of violence" factor:		
Husband may hit wife if she is unfaithful		
0 No	3588.3	48.3
1 Yes	3741.3	50.3
Total	7329.6	98.6
Husband may hit wife if she shows disrespect		
0 No	4746.8	63.9
1 Yes	2640.4	35.5
Total	7387.1	99.4
Husband may hit wife if she goes out w/o telling him		
0 No	4275.2	57.5
1 Yes	3114.6	41.9
Total	7389.8	99.4
Husband may hit wife if she neglects household or kids		
0 No	4621.4	62.2
1 Yes	2771.8	37.3
Total	7393.2	99.5
Husband may hit wife if she doesn't cook properly		
0 No	5031.8	67.7
1 Yes	2355.4	31.7
Total	7387.2	99.4

	Freq	%
Variables in "media exposure" dummy:		
Reads newspaper once a week		
Yes	543.4	7.3
No	6877.5	92.5
Total	7420.9	99.8
Watches TV every week		
Yes	1591.9	21.4
No	5837.4	78.5
Total	7429.3	100.0
Listens to radio every week		
Yes	1925.1	25.9
No	5505.7	74.1
Total	7430.8	100.0
Go to cinema or see a movie at least once a month		
Yes	111.4	1.5
No	7289.3	98.1
Total	7400.8	99.6

Data source: India National Family Health Survey-II / DHS 1998-1999

Appendix 2: Factor loadings, Eigenvalues, and Cornbach's alpha coefficients for women's status variables included in factor analysis

	Cornbach's alpha	Eigenvalue	Factor loading
"Decision making autonomy" factor	0.77	2.54	
Who decides to purchase jewelry?			0.87
Who decides about R staying with family?			0.87
Who decides on obtaining health care?			0.71
"Mobility" factor	0.77	1.17	
Need permission to go to the market?			0.89
Need permission to visit friends/relatives?			0.89
"Tolerance of violence" factor	0.87	3.28	
Husband may hit wife if she is unfaithful			0.63
Husband may hit wife if she shows disrespect			0.82
Husband may hit wife if she goes out w/o telling him			0.85
Husband may hit wife if she neglects household or kids			0.88
Husband may hit wife if she doesn't cook properly			0.84

Data source: India National Family Health Survey-II / DHS 1998-1999

Appendix 3: Hypotheses tested to estimate village covariates of individual level domestic violence in rural Uttar Pradesh, India

Village-level Variables	estimated direction of effect				
	Model Set A	Model Set B	Model Set C	Model Set D	Model Set E
Social disorganization theory determinants					
Village-level development					
Village Electrification	–				
Mean village wealth	–				
Tot num of shops in village	–				
Religious-caste Heterogeniety					
Index of religious heterogeniety	+				
Index of ethnic heterogeniety	+				
Residential stability					
Ave num years women lived in village	–				
Social capital determinants					
Village-average of women's status and education					
Years of education		–			
Proportion currently working		+			
Decision making autonomy		–			
Mobility		–			
Proportion with regular exposure to media		+			
Community groups					
Women's group in village		–			
Community ctr in village		–			
Village-level tolerance of Violence			+		
Village level interactions					
Village level social capital * Village level tolerance of DV				+, –	
Cross-level interactions (modeling slope of mobility)					
Village level social capital					+

(note: it is assumed that all hypotheses are tested with controls for individual level predictors - Model 4 from Table 3)

Model Set A: Tests of Social Disorganization Theory

H1: Village-level SE development will be associated with a lower probability of individual DV

H2: Religious and caste heterogeneity will be associated with higher levels of DV

H3: Residential stability will be associated with decreased levels of DV

Model Set B: Tests of Social Capital / Collective Efficacy

H1: Village-level average women's status will be associated with lower levels of DV

H2: Living in a village with a women's and/or communitiy groups will be associated with lower individual levels of DV

Model Set C: Village-level tolerance of DV

H1: Village level norms of tolerance of domestic violence will be associated with higher individual levels of DV.

Model Set D: Modifying effect of community norms of acceptance for DV

H1: The impact of community-level social capital on individual DV will vary according to whether the village has high norms of tolerance of abuse.

Model Set E: Estimating village-level variation in the slope of individual woman's mobility on DV

H1: In villages with higher social capital, measured in terms of average women's status and/or community groups, the positive relationship between a woman's mobility status and domestic violence will be stronger.