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Partner Violence and Sexual Jealousy in China: A Population-Based Survey

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Abstract

Using data from a nationally representative survey of China, this paper examines the prevalence and risk factors for partner violence with a special focus on the important role of sexual jealousy. Among women age 20–49, 7.2% reported that they were hit by their partner last year. Comparison shows that the Chinese prevalence is modestly below the overall median for other societies. Net of other factors, jealousy exacerbates hitting for both men and women in a reactive pattern, with the jealous partner getting hit. This suggests a rethinking of the role of sexual jealousy in spousal violence in some social settings.

Intimate partner violence is pervasive in much of the world (Heise, Ellsberg and Gottemoeller, 1999; Jewkes, 2002; Krug, 2002; Summers and Hoffman, 2002). Common risk factors include low income, stress, male loss of income, young age, alcohol consumption, and, for women, absence of family and community support. In addition, a socio-cultural line of explanation emphasizes learned beliefs about male control of women, particularly in reaction to women's actual or imagined sexual infidelity (Brownridge, 2002; Dobash and Dobash, 1979, 1992; Lenton, 1995; Tjaden and Thoennies, 2000; Wilson, Johnson, and Daly, 1995). This socio-cultural, learning view is supported by links between childhood violent experiences and later violence and by links between beliefs about male control of women and observed levels of slapping and hitting (e.g., Krug 2002; CEPEP, 1999; KIIS, 2001). Low empowerment of women is a related issue (e.g., Malhotra and Mather, 1997; Presser and Sen, 2000; Schuler, Hashemi, Riley, and Akhter, 1996). Much of the control effort includes high levels of sexual jealousy as part of the syndrome. For scholars coming out of the evolutionary and the resource tradition, however, this jealousy is not unique to males but instead common to both genders (Buss, 1994, 2000; Dijkstra and Buunk, 2002; Townsend, 1998; White and Mullen, 1989).

This paper engages scholarly debates on the sources of intimate partner violence with new data from China. We report the prevalence of recent partner hitting and its risk factors in urban China, with attention to both mutual and unidirectional hitting. Spousal violence is an issue that is only gradually coming to be recognized in official and scholarly sources in

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China (IPS, 1994; Xü, 1997; Shen, Yang, and Li, 1999; Liu and Chan, 1999), and this is the first report of national estimates for urban patterns of the phenomenon.

Literature Review and Research Hypotheses

The risk factors for intimate partner violence span a mix of individual and societal risk factors that emerge in studies around the world (for recent reviews, Kantor and Jasinski, 1998; Jewkes, 2002; Johnson and Ferraro, 2000; Krug, 2002). While including many of the standard risk factors in our models, we focus on sexual jealousy as an important source of risk.

Sexual Jealousy and Violence

With accompanying hypotheses, we examine four questions about jealousy and partner violence:

- **a.** Do women get jealous as commonly as men? We begin with **hypothesis 1a** that they do.
- **b.** Because of jealousy, are women as likely as men to hit their partner? **Hypothesis 1b** is that they are just as likely as men to follow jealousy with hitting.
- **c.** Particularly for men, is jealousy and hitting part of a culturally learned "control-thy-partner" syndrome – with some of the same flavor as the dog park injunction that "You need to control your dog!"? **Hypothesis 1c** is that it is – though, to give some warning, our final answer will be that it is sometimes more complex than this.
- **d.** Net of other risk factors, does jealousy significantly increase the risk of hitting for both men and women? **Hypothesis 1d** is that it does.
- **e.** Is the effect of jealousy direct, with the jealous part instigating hitting? Or, does jealousy simply provoke nagging and arguments that escalate into hitting – often by the partner who is the target of the jealousy. We begin with a traditional **Hypothesis 1e** that the effect is direct. By this hypothesis, the jealous party hits his or her partner.

Are these hypotheses both non-trivial and warranted in the existing literature on this topic? We think yes, as suggested below. Three approaches stand out: First, much of the current literature views male jealousy as part-and-parcel of culturally-learned male authority patterns, with any threatened loss of male control of his partner eliciting hitting against women (e.g., Dobash and Dobash, 1979, 1992). This emphasis is supported by several observations. Physical and mental injury to women is more common in partner violence, suggesting that understanding male tendencies is more central to alleviating negative outcomes from violence (e.g., Anderson, 2002; Kurz, 1993) Moreover, recent surveys on norms in developing countries find that both women and men often agree that women should be hit when they burn dinner or violate other social norms (e.g., Koenig, et. al., 2003b; Krug, 2002). In short, these data are consistent with the argument that, for some peoples, men's hitting of women is not something that occurs unexpectedly in the heat of an argument but something that is socially approved and even expected. Despite these convincing observations, the emphasis on social norms of male control leaves unexplained any observation of women being jealous of their partner. Second, emphasizing a rational, cognitive response by the dependent partner to the threatened loss of resources by a resource rich partner, resource theory attempts to fill this gap (e.g., White and Mullen, 1989; Harris 2003). Women are more often in the economically dependent position, but men could occasionally be in a similar position – helping to explain both women's jealousy and heightened jealousy and hitting among men with little income. Third, evolutionary or

sociobiological accounts overlap with both of the previous two approaches, adding only that much of the jealousy response is pre-rational, embedded in our limbic brain, and widely shared across cultures. This pan-gender, pan-culture universality helps explain similar prevalence levels across gender and the close tie between the strong emotions connected with jealousy and subsequent violence (e.g., Buss, 1994, 2000).

The Chinese data provide little or no leverage on issues such as whether jealousy is learned, innate, or both. The data do, however, provide some evidence of whether jealousy is common among women as well as men, warning us against sole emphasis on men's learned control values (hypothesis 1a). The data also help us understand whether men's jealousy is strongly related to their generalized beliefs about women's autonomy, whether jealousy is a significant risk on top of other risk factors, and whether jealousy leads directly to lashing out by the jealous partner. The last pattern might not be the only one, some research suggests. For some empirical works suggests, nagging from the jealous partner can cause the partner suspected of sexual infidelity to silence the nagging partner with hitting (Heise, Ellsberg, and Gottmoeller, 2002).

Much of previous empirical work on jealousy and violence has been with college students and with victims in clinics and battered women's shelters (e.g., Buss, 1994, 2000; Dobash and Dobash, 1979, 1992). Recently, however, large population-based social surveys have identified sexual jealousy as a major sources of partner conflict -- both for the developed West (Lenton, 1995; Medina-Ariza, 2003; Tjaden and Thoennies, 2000; Wilson, Johnson, and Daly, 1995; Buntin et al., 2003; Paik et al., 2003) and developing countries (e.g., Diop-Sidibé, 2001; Ellsberg, Pena, Herrera, Liljestrand, and Winkvist, 1999). Since the middle 1990s, major Demographic and Health Surveys (DHS) and Reproductive Health Surveys (RHS) have included interview modules on male possessiveness of women, accusations of sexual infidelity, and partner violence (e.g., MSPP, 2000; PROFAMILIA, 2000; NIS, 2001). This study adds to that type of literature.

Other Risk Factors

Patriarchal values—As suggested in the discussion of jealousy, male violence displays a patriarchal sense of possessiveness and control (Dobash and Dobash 1979, 1992). If this explanation is plausible, then we would expect that spousal hitting is more likely to be perpetrated by men who embrace patriarchal values. Thus, we have

Hypothesis 2 *Men adhering to patriarchal values are more likely to hit their partner.*

Bargaining and Dependency—With an added boost from the 1994 Cairo Population Meetings, considerable research has emphasized the empowerment of women as critical for reproductive health outcomes, including freedom from intimate partner violence (Jewkes, 2002; Presser and Sen, 2000). Power can be derived from many sources such as education, income, and community roles, though not all of these convey equal protection to women or do so in a direct manner (Jewkes, 2002). Three measures of relative status are available in our data set. (a) *Economic status.* Women with fewer economic resources are more likely to be hit by their male partner, which is in part because these women cannot afford to leave violent relationships (Bograd 1988; Diop-Sidibé, 2001; Jewkes, 2002; Schuler, Hashemi, Riley, and Akhter 1996; Tang, 1999a, 1999b; ICRW 2000). Simple income alone, the literature warns us, is not sufficient (e.g., Mason, 1986; Malhotra and Mather, 1997). Women must control the income that they earn, which does not occur in all societies. Moreover, even when they control their income, when the male partner has little or no income and she earns most of the income, he (the resource-dependent partner) may be more likely to lash out (Anderson, 1997; Macmillan and Gartner, 1999; Fox et al., 2002; Koenig, et al., 2003a; Hindin and Adair 2002). Thus, while male-to-female hitting may decline as her

income approaches that of her husband, when she becomes the main income earner in the family, hitting may increase. (b) *Sexual dimorphism*. The evolutionary literature notes that among species with males considerably larger than females, females are at higher risk of male aggression (e.g., Dixson, 1998; Townsend, 1998). While not part of the standard empowerment literature, this observation could well be an additional source of power imbalance that might threaten women. (c) *Age gap.* The literature on some developing countries suggests that young women, often married as adolescents, are at particular risk when partnered with much older men (e.g., ICRW, 2000). We have the following:

Hypothesis 3a *Women are at greater risk of male-to-female hitting when linked to men with much higher incomes, who are taller and much older*.

Hypothesis 3b *In a curvilinear pattern, women's risk decreases as their income approaches their partner's, but it again increases when their male partner earns little income and she earns much or most of the couple's income*.

Stress/Lifestyle—Exacerbated by men's propensity to hide emotions (Umberson, 2003), stress increases levels of violence for both men and women (Gelles, 1993; Straus and Smith, 1990). Examples of common stresses that are correlated with hitting include having time-intensive young children and having low education and occupation status and income. Lifestyle also matters. Heavy alcohol consumption diminishes personal control and exacerbates hitting (Brecklin, 2002; Gelles, 1993; Koenig, et. al., 2003b) -- though, in one Canadian study heavy alcohol consumption was unimportant after attitudes about the control of women were included (Johnson, H., 2001). Cohabitation without marriage, also typically exacerbates violence (Brownridge and Halli, 2002; Tjaden and Thoennies, 2000). Therefore, we have the following subsets of hypotheses:

Hypothesis 4 *Couple violence increases when they* (a) *have a pre-school age child, (b) are of lower SES status; (c) have heavy alcohol consumption; and/or (d) cohabit*.

Social Support—A large literature suggests that women isolated from family and friends are more likely to be attacked, and that this problem may be more common in modern societies (Smuts 1992, 1995; Dobash and Dobash, 1979; Levinson, 1989). Thus,

Hypothesis 5 *Absence of other adults (mostly parents) in households increases partner hitting*.

Other control factors—Young age increases violence in most studies (for reviews, see Gelles, 1993; Kantor and Jasinski, 1998). Consistent with the socio-cultural approach, urban/rural, ethnic, and regional differences are frequently important (e.g., Tjaden and Thoennies, 2000; ICRW, 2000).

The China Case

By some indicators, urban Chinese women have a relatively good bargaining position. Though unemployment rates for women are rising, many women come close to their husband in education, occupation, and income (Whyte and Parish 1984; Parish and Busse 2000). Moreover, in contrast to some societies, Chinese urban women typically control the use of their income (except for the largest purchases) (IPS, 1994; Shen, Yang, and Li, 1999). One indicator of the effect of their bargaining position is their rising income share increases their husband's share of household chores -- (Parish and Farrer, 2000).

These advantages do not necessarily translate into protection from physical violence. Traditionally in China, marital conflict has been viewed as a domestic affair to be kept private (UNIFEM, 2005). Unless there was a severe injury, community and legal interference was rare. Official reports have long ignored the problem of wife abuse in China. Only after The 1995 World Conference on Women in Beijing, domestic violence gradually began to be publicly recognized (Yang, 2004). In a comparison of focus group responses in Beijing, Hong Kong, and Taiwan, Tang, Cheung, Chen, and Sun (2002) note that the Beijing participants were among the most likely to blame women for the start of violence in the home. A recent survey conducted in several provinces in China reports that 44% of respondents thought that there were justifiable reasons for a husband to hit his wife (Li 2003).

Despite these traditional tendencies, wife abuse has captured more attention in China over the last decade. Studies in some locales suggest that 20–30% of Chinese wives were hit by her husband during their marriage (IPS 1994; Tao and Jiang 1993; Luo 1997; Xü, et al., 2005). Risk factors identified include patriarchal values, gender inequality in the household, and lack of support networks (Xü, 1997; Wang, 1999; Leung, et al., 1999; Xü, et al., 2005). Detailed work on Hong Kong suggests that in one Chinese population women's empowerment reduces violence against women (Tang, 1999a, 1999b). In China, the rapid house building of the last two decades has caused some urban families to become more isolated from family and neighbors (Tang and Parish, 2000). Nevertheless, many young couples continue to live with an elderly parent, and even when this is the husband's parent, this parent might dampen spousal hitting. Sexual jealousy has a long history in China and plays an important role in marital relations (Paderni 2002). A history of spousal hitting increases the chances that women are infected with a sexually transmitted disease (Parish, Wang, Laumann, Pan, and Luo, 2004).

Data and Methods

With the exclusion of Tibet and Hong Kong, the survey completed in 1999–2000 is representative of China's adult population ages 20–64. Following standard procedures for complex samples, the sample was drawn from 14 strata and 48 primary sampling units with probabilities of selection proportional to population size at each of the four sampling steps down to the individual (for more details on sampling and public use data, see http://www.src.uchicago.edu/prc/chfls.php; on complex sample procedures, see Levy and Lemeshow, 1999). In comparisons of Chinese prevalence to prevalence in other societies, we use the full sample, including both urban and rural respondents. In the analysis of risk factors, we use the urban portion of the sample, which includes respondents from 12 strata and 38 primary sampling units. Because of an oversampling of urban locales, the results for those locales are more robust.

Participants responded to an hour-long computer-based interview. Most interviewers were trained mid-aged social workers and researchers who remained with the project throughout the interview period of one year. For the sake of privacy, interviews tool place outside the home of the respondent, typically in a private room in a hotel in big cities or in a meeting facility in smaller locales. Though most questions used in this study were answered when the interviewer was in control of the computer, questions about sexual jealousy and partner violence were answered while the respondent had full control of the computer. Of 5,000 individuals initially sampled in the full sample, 3,806 participants completed the interview and provided valid data for analyses, giving a final response rate of 76.1%. Participant and data losses were of three types: refusal to participate of some of the sampled persons (n=857, 17.1%), sampled person always absent, of poor health, too old or young (n=308, 6.2%), and computer/data handling loss (n=29, 0.6%). The analysis of risk factors uses the

urban portion of our sample and only includes reports from those who have a steady partner (in order to have partner hitting). With these restrictions, the sample comes down to 2,673. There are 12 cases with missing information on partner hitting, which results in 2,661 observations in the analysis of risk factors.

Throughout, we weight all results by population weights known from the sample design. Using svy methods in STATA 8.2, we adjust standard errors for sample stratification (sampling strata independently) and clustering (sampling individuals within each primary sampling unit). These adjustments include a Huber-White sandwich estimator for standard errors (Skinner, Holt, and Smith, 1989). The logistic regression results are presented as percentage point changes. Derived from the logistic results, the percentage point changes indicate what would occur were an individual to have the level of hitting of someone age 30, with all other variables at mean values, and the variable of interest shifted from a minimum to a maximum value (Long and Freese, 2001).

Men's and women's reports of hitting often disagree. In the developed West, men report less hitting than their female partner (e.g., Anderson 1997; Caetano, Shafer, Field, and Nelson, 2002). Thus, we include "male respondent" as a partial control for this phenomenon in our analysis. We also ran analyses for reports of male and female respondents separately, and we note any substantial differences in the text.

Dependent Variable

Respondents were asked, "For whatever reason, has your partner ever hit you (not including in a joking or playful way)?" And, conversely, "… have you ever hit your partner?" More literally, the question was whether your partner has "moved his/her hand to hit (*da*) you," which could include slapping, hitting, or beating. The possible response categories were, "yes, in last 12 months," "yes, but more than 12 months ago," and "never." This study analyzes the response of "yes, in the last 12 months," as compared to all other responses. Because hitting may have been mutual during the past 12 months, we distinguish unidirectional and mutual hitting.

Risk Factors

Jealousy—For jealousy, the question was, first, "How often do you feel jealous or quite insecure about your partner?" Or, more literally, the questions asked, "have you felt insecure (*bu fangxin*) or not, "swallowing vinegar" (*chicu*, or, perhaps, in American vernacular, "green eyed"), or even jealous (*jidu*)." Then, in turn, the respondent answered how often the partner felt jealous or insecure about the respondent. The responses to these two questions were recoded as 0 (never, rarely) and 1 (sometimes, often). Combining the respondent's report of his/her own jealousy of his/her partner and his/her partner's jealousy of the respondent, we distinguish four types of jealousy: male partner jealous of female partner, female partner jealous of male partner, both partners jealous, and neither partners jealous.

Patriarchal Values—Respondents were asked whether they believed that during sex, men should take the lead and women should follow. We consider those who had an affirmative response to this question as holding patriarchal sex values.

Bargaining and Dependency—Bargaining power and dependency are indicated by three measures: (a) Women's share of joint income is split into two continuous scales – one running from 0 to 45% and the other from 46 to 100%. If a woman's bargaining power increases with her income share, then, the 0–45% portion of the income share should experience decreasing hitting. Earlier research typically finds that men who earn little or none of the couple's income are more likely to hit their female partner. Tendencies of this

sort should lead to increase in male-to-female hitting in the second, 46–100% portion of the income scale. (b) Relative height is the percentage points of male partner's height relative to the female partner's height. (c) Male and female partner's age gap is measured with male minus female age.

Stress/Life Style—There are four items in this category. (a) We created an index of partner's low SES status by first converting years of education and current or former occupation into standardized scores, and then summing the standardized education and occupation scores. This scale is reverse coded so that higher scores indicate lower SES status. (b) The presence of pre-school children indicates whether there is a child age 0–6 in the family. (c) We categorized alcohol consumption based on frequency of drinking and frequency of being drunk into the following three dummy variables: "never drink," and "intermediate consumption" (drink but seldom get drunk), and "heavy consumption" (drunk at least once a month). (d) We compare cohabiting couples with couples in other unions (i.e., single, married, divorced, or widowed).

Social Support—Lack of social support is indicated by absence of other adult(s) in the household. The other adults could be the husband's parents (common), the wife's parents (uncommon), adult children (common), other adult in-laws, or other adult relatives.

Controls—Four additional items were included to control for extraneous influences: (a) Age was reverse coded to indicate a respondent's youthfulness. (b) Whether a respondent lived with his / her spouse or partner for the entire year prior to the interview is included to control for risk period of hitting. (c) North / Northeast Region is compared with the rest of China. Inductively, respondents in northern and northeastern cities and towns report more hitting. (d) The respondent's sex is included to control for the possibility of under- or over-report hitting of either male or female respondents.

Results

Descriptive Patterns

Hitting—Based on combined reports from both men and women, hitting in either direction is most common among the young (Figure 1). While only 5% of the oldest couples age 50–64 report hitting, a full 19% of the young age 20–29 report hitting last year. Across all ages, 5% of the women were hit by their partner without retaliating, 4% of men by their female partner without retaliating, and another 2% experienced mutual hitting.

We expect that the partner who is more sensitive to issues of social disapproval would under-report hitting. Our additional separate analysis on women's and men's report indicates that in China, the targets of the hitting report less hitting than the perpetrators. For example, for urban male-to-female hitting last year, 11% of men report hitting their female partner while only 5% of women report being hit ($p=.06$). For urban female-to-male hitting, the difference is not statistically significant, but still in the direction of perpetrator high, victim low. While 7% of the women say they hit their partner, only 5% of the men say they were hit. Thus, being a victim, one might infer, is the socially disapproved condition in China.

Jealousy—In urban China, using the combined reports by men and women, 7% of men were jealous of their wife, 13% of women were jealous of their husband, and 14% of couples had mutual jealousy (Table 1). Combining unidirectional and mutual jealousy, women were somewhat more jealous than men (27% vs. 22%; $p<0.05$), all of which is consistent with our beginning Hypothesis 1a.

Risk Factors for Hitting

After distinguishing direction of hitting, at age 30 among urban respondents, 6.8% of men were targets of unidirectional hitting, 7.7% of women were targets of unidirectional hitting, and 4.4% of couples experienced mutual hitting. It is around these percentages that percentage change coefficients were calculated (Table 2).

The central questions under examination include whether multiple risk factors play a role in partner hitting and whether, net of other risk factors, jealousy is a significant added risk for both men and women. To answer these questions we examine a 3-way division of hitting in a multinomial logit model, with the assumption that unanswered uni-direction hitting may be different from mutual hitting (Table 2, columns 1–3). Also, because the 3-way division creates small cell sizes that are on occasion only marginally significant, we also examine two sets of binary models for male-to-female and female-to-male hitting, ignoring whether hitting was returned by the partner (columns 4 & 5). To return to the details, at age 30, 12.1% of women and 11.2% of men were hit last year.

Jealousy—Jealousy exacerbated both male-to-female and female-to-male hitting, providing evidence consistent with Hypotheses 1b and 1d. Meanwhile, the pattern was not a simple one of the jealous partner hitting more. Instead, the partner who was jealous induced more hitting from the other partner (contrary to Hypotheses 1c and 1e). For example, a woman jealous of her husband / partner was more likely to be hit – by 10.0 percentage points (including mutual hitting, Column 4) or 7.0 percentage points of unidirectional hitting (Column 1). And, unsurprisingly, when both genders were jealous, hitting increased by similar amounts. These are all large effects, averaging 5.9 to 14.3 percentage points – which is in the same range as most of the large risk factors for hitting (Columns 4 & 5). These results suggest that jealousy is indeed important -- though as much or more for eliciting as for directly producing hitting, and as much for female-to-male as for male-to-female hitting.

Patriarchal values—Men who believe that men should take the lead in sexual activities are 3.5 percentage points more likely to hit their female partner (Column 1) and 2.5 percentage points less likely to be hit by their partner (Column 3). This result is consistent with a social-cultural account suggesting that patriarchal sex views exacerbate unidirectional male-to-female hitting while inhibiting female-to-male hitting (Hypothesis 2).

Sexual jealousy could be little more than an expression of gender values, with men who have internalized male control beliefs being the most likely both to be jealous and to hit his partner. Attempts to delve into this problem in greater depth produced mixed results. We have two measures of patriarchal values: first, that men should lead in sex and, second, the belief that men should work in the outside world and women should stay home. The first belief was a risk factor for hitting, and is presented in table 2. The second belief was by itself not a risk factor for hitting. Neither belief was significantly related to men's jealousy ($r = -.002$ for the first and $r = .08$, $p > 10$ for the second). Because of small cell sizes, we could not examine whether the first belief exacerbated the consequences of jealousy. However, the second belief did exacerbate men's hitting. Men who believed that women should have a dominant role only in the home were also significantly more likely to hit their partner when jealous (O.R. = 6.8, $p < .05$). Thus, in this one respect, cultural values may exacerbate the consequences of jealousy.

Bargaining / dependency—The issue in this portion of the analysis is whether women with fewer resources – economic, height, and age – are at greater risk of male-to-female hitting. With two qualifications, the answer is yes. The first qualification is that older husbands are not more but less likely to be involved in hitting (Columns 2 & 4). The second

qualification is that a woman earning almost all the couple's joint income is 5.8 percentage points more likely to be hit (Column 1) – a pattern that is consistent with our initial Hypothesis 3.

More encouraging, women who earn close to half of the couple's income (45% to be exact) rather than none of the couple's income are 1.5 percentage points less likely to be hit (Column 1). This particular result was repeated when we reran the income share analysis using income share and income share squared. The first term had an odds ratio of 0.97 ($p < .01$) and the second term an odds ratio of 1.04 ($p < .001$), indicating that women were least likely to be hit at the middle level of income shares.

Finally, in the results from Table 2, when she approaches her partner in height, she not only is less likely to be hit but also is more likely to return his hitting. Conversely, when the man is much taller than the woman, he is 14.5 percentage points more likely to hit her (Column 1) and she is 5.6 percentage points less likely to resist (Column 2).

These are all as one might expect from standard bargaining / dependency models. The only result that is out-of-line with those models is that when the man is significantly older than his partner, she is not more, but less likely to be hit, which is contrary to our beginning hypothesis. The pattern, it would appear, is the result of his absolute age being more important than his relative age. His greater absolute age makes him less aggressive, overwhelming any possible effects of his greater relative age. In short, setting aside the age effects and the effects of hitting by men with little or no income contribution, the empirical results are consistent with bargaining / dependency models.

Stress / lifestyle—The issue related to Hypotheses 4a to 4d is whether stress (low socio-economic status, young children) and lifestyle (alcohol consumption, cohabitation) issues are important when included in the analysis along with jealousy and other factors. Results are all supportive of these hypotheses. In separate analyses by gender, alcohol consumption is a risk factor for women as well as men (appendix Table A). Women are much less likely to drink heavily, but when they do, they have risk levels similar to those for the men hitting them. Given the small cell sizes, cohabitation is not statistically important in multinomial logit models (Columns 1–3). But it significantly increases the risk of hitting—for both male-to-female and female-to-male hitting—in simpler logit models (Columns 4 & 5). The other stress / lifestyle factors increase hitting, particularly unidirectional male-to-female hitting and, to a lesser extent, even unidirectional female-to-male hitting.

Social support—Though marginally statistically significant for only mutual hitting, the absence of another adult in the household exacerbates all types of hitting, which is consistent with Hypothesis 5. For example, net of all other conditions, absence of another adult in the household increases the likelihood of male hitting female by 2.9 percentage points (Column 4).

Other risk factors—Many other factors affect hitting in ways that we expected. Mutual hitting is common among the young. Hitting is more common in the north and northeast regions. Compared to women, men report less female-to-male hitting..

Additional checks on results—An additional issue is whether much of the influence of other risk factors flows through jealousy. If this condition were true, then, much of the influence of other risk factors would be reduced once jealousy was included. In unreported analysis, we produced a set of reduced models that included other risk factors but excluded the jealousy variables. Comparing the reduced models with those in Table 2 suggests that other risk factors were only slightly affected by including jealousy in the equations. That is,

with jealousy in the equations, the sign and levels of the coefficients in Table 2 were only slightly changed. This suggests that jealousy is more of an additional risk rather than just a conduit for other risk factors. Consistent with this conclusion, χ^2-tests using log-likelihood ratios, show that the models in Tables 2 are a statistically significant improvement over the reduced models that excluded jealousy.

Having combined men's and women's reports could have distorted the results in Table 2. To check on this possibility, we ran separate analyses for reports by each gender (see appendix Table A). The few differences in male and female patterns were as follows. In male-to-female hitting, risks were greater in men's versus women's reports for taller men (22.3 vs. −3.4 percentage points, p = 0.02) and jealous men (8.6 vs. −0.5 percentage points, p = 0.04). In female-to-male hitting, male jealousy has a larger effect when men provide the report (22 points vs. 9 points, p = 0.02; both statistically significant and yet both in the same direction as in the combined reports). In each type of hitting, men and women provided reports on 16 different risk factors, producing 16 possible differences in reports by gender. Assuming independence of these 16 tests, at α=0.05, the probabilities of finding one and two significant tests are 0.37 ($C_{16}^{1} * 0.95^{15} * 0.05$) and 0.15 ($C_{16}^{2} * 0.95^{14} * 0.05^{2}$). Given the possibility that some of these differences could have occurred by chance, the above probabilities suggest that in the aggregate reports from men and women did not differ significantly from each other.

Comparisons to Other Societies

Hitting—Despite problems with differences in question wording and samples, comparisons to other societies provide a useful context for the Chinese findings. For these comparisons, we need not studies of selected subgroups – which often produce high prevalence figures for hitting – but instead representative samples of the adult population. Published reports for these types of data include 24 studies from 22 different countries -- including the following countries and groups of countries: South, Southeast, and East Asia (5 countries); Central Europe and Russia (4); developed West (7); Latin America (5); and then, individually, Egypt and S. Africa. Ranging from a low of 2 to a high of 38, the median prevalence in these studies is 11% (Heise, 1999, table 1; with additions from CEPEP, 1999; MSPP, 2000; INEC, 1999; PROFAMILIA, 2000; NIS, 2001; CEPAR, 2001; KIIS, 2001). In 14 of the 24 studies the study population is no older than 49. And, in most, the respondents are women. If we use combined rural and urban reports from Chinese women age 20–49, then, the Chinese prevalence for hitting last year was 7.2% (95% CI = 5.6, 9.1). For the same age group of urban women, the prevalence is similar, at 6.5% (CI = 4.4, 9.4). Thus, the Chinese prevalence figures are modestly below the median prevalence for other countries.

Jealousy—With study differences in things such as ages sampled and question wording for jealousy, comparisons across societies is difficult. With that caution in mind, six studies using national samples are easily available – for Columbia, Haiti, Cambodia, Canada (2 studies), and the U.S (NIS, 2001; MSPP, 2000; Tjaden and Thownnes, 2000; Johnson, H., 1996; CCJS, 2004). In these studies, as few as 6% (Canada) and as many as many as 29% (Haiti) of women report that their partner is jealous. The median of these reports is 17%. The comparable report for China would be based on the combined urban and rural reports by women. That report has a mean of 15% (95% CI, 10.8, 20.6) for national prevalence. The comparable urban prevalence for China is higher, at 26% (CI, 23.3, 28.1). Thus, in the Chinese data, the national prevalence is similar to the median for other societies, while the urban prevalence is similar to the upper limit of reports for other societies.

Fewer studies from other locations report the relative prevalence of jealousy for men and women. Where they do, the Chinese pattern of women being as much or more jealous as

men is repeated. One example is found in the raw data from the U.S. national survey of violence against women (Tjaden and Thoennies, 2000). In that study, combining responses to the two questions “Is he/she jealous or possessive?” and “Partner wants to know where you are all the time”, 14% of men and 19% of women were jealous of their partner ($p < 0.05$ for male/female difference; data downloadable from ICPSR at U. of Michigan, study # 2566). Similarly, in a survey of adult respondents in the city of Chicago in a stable heterosexual relationship, 16% of couples had jealousy as a major source of conflict in the relationship –and women were as likely as men to be a source of this jealousy (data available at http://www.src.uchicago.edu/prc/chsls.php). Also, much as in the Chinese data, much of the jealousy in Chicago was mutual – specifically, 22% of couples reporting jealousy of any type and 10% reported mutual jealousy.

Discussion

Our analysis was limited in many ways, of course. The more refined conflict tactics scale, still unvalidated for China, was not used in the survey. The rural sample was too small for detailed analysis. Differences in question wording make comparison across societies difficult.

Even with these sorts of caveats, several risk factors for intimate partner violence emerged as important in China. This study adds to a growing list of national surveys showing a strong connection between jealousy and hitting (Hypotheses 1b & 1d). It provides support for a women’s bargaining power / dependency argument – Chinese women who more closely approximate their partner in income and height were less likely to be hit. And, if they approximated their partner in height, once hit, Chinese women were more likely to hit back. Patriarchal values mattered (Hypothesis 3a). Specifically, the belief that men should be the primary or sole initiator in sexual activities exacerbated male-to-female hitting while dampening hitting in the opposite direction (Hypothesis 2). Stress and other standard risk factors also applied in China, including youth, low socioeconomic status of partner, young children, alcohol consumption, husband contributing little income, and absence of other adults in the home (Hypotheses 4 & 5). At least for the types of hitting measured here, these stress, lifestyle, and social support items remained important net of jealousy, women’s empowerment, and beliefs about male dominance in sexual matters.

In contrast to the many findings that simply paralleled existing literature, several findings were more complex. To begin with jealousy, the usual socio-cultural, men-control-women model emphasizes male-to-female jealousy. Other approaches coming from sociobiological and resource imbalance models imply that jealousy can as easily flow in the opposite direction. The results in this paper are consistent with the latter approaches. In urban China, female-to-male jealousy was more common than male-to-female jealousy (Hypothesis 1a). Among men, the consequences of jealousy were more severe when he believed that men should command the world and women the home. However, more generally, beliefs about male control of women (as imperfectly measured in the survey) were unrelated to jealousy – suggesting that in this sample, jealousy is not merely a learned response.. The tendency of women to be at least as jealous as men is repeated in U.S. studies, suggesting that the Chinese pattern may be general and that future studies must attend to jealousy in both directions in accounting for intimate-partner conflict and hitting.

Another complex finding in the Chinese data was that it was not the jealous partner who hit more. Rather, it was the partner who expressed jealousy who was hit. Much as suggested by Heise and others (2002), the link between sexual jealousy and partner hitting was reactive rather than proactive. That is, hitting was not just a manifestation of “mate guarding” (as in the evolutionary perspective), learned behavior such as in “I own you” (the evolutionary

perspective), or “less resourceful partners want control” (the rational, cognitive perspective). Instead, jealousy of one’s partner evoked an opposite response, which was to slap or otherwise attack the jealous partner (Hypotheses 1c & 1e). In urban China, no gender differences were present in the reactive pattern of the jealous partner being hit. In urban China, then, female jealousy, even more than male jealousy, put a woman at risk of being hit.

A recurrent puzzle in work on hitting is how often women hit men, whether in self-defense or with no attack by men. We found the same conundrum in urban China. Moreover, in multivariate equations for her unidirectional hitting, we found that with one exception, she reacted to risk factors in much the same way as men (Table 2). Much as among men, she hit more often when she was provoked by his jealousy and when she was subject to the stresses of raising a preschool child or when either she or he consumed substantial amounts of alcohol. The exception to the parallelism in men’s and women’s patterns was suggestive, however. In contrast to men’s hitting, her hitting was not shaped by her bargaining power. Specifically, her income share and her relative height were unrelated to her unidirectional hitting. In short, while there was much that was parallel in men’s and women’s hitting patterns, in this one domain they were different.

Women’s economic empowerment has both benefits and limits in protecting wives from hitting by their husband. Women earning an income close to their husband experienced the least hitting, suggesting that equality in economic status reduces male violence. On the other hand, women faced even higher risk of hitting when they brought home more income than their husband (Hypothesis 3b). This situation occurred most often in households with an unemployed husband. With increased unemployment and under-employment of males from failing state-owned enterprises, this could be an increasing problem in China.

In summary, with the exception of Hypotheses 1c & 1e, the Chinese results are consistent with all the hypotheses with which we began. Hitting responds to multiple risk factors. The exceptions to hypotheses 1c and 1e suggest that jealousy plays a more complex role in hitting than commonly supposed. At least in Chinese urban settings, jealousy is not just the result of men being socialized to control women. Instead women get jealous as often as men and the arguments and nagging that jealousy produces often leads to hitting from both men and women. Thus, in at least some settings, women’s jealousy can not be ignored.

Conclusion

This analysis provides several lessons. It adds one more country to the long list of societies where spousal violence is a serious issue. In China, most adult women are in the labor force at relatively egalitarian income levels, particularly in cities and towns. Nevertheless, Chinese prevalence levels for hitting were only modestly below the median prevalence levels of other societies. This similarity in prevalence levels across societies suggests a commonality in conditions that increase violence across societies – from lifestyle and stress, through women’s bargaining power, gender values, social support, and jealousy. The Chinese results suggest that at least for one society the existing accounts of the role of jealousy are too simple. Jealousy can provoke hitting either directly, by causing the jealous partner to hit, or indirectly, by causing reactive hitting from the partner accused of infidelity. Women get jealous as much as or more often than men. Particularly in “backlash hitting,” it may be not the man’s but the woman’s jealousy that exacerbates hitting. These patterns suggest that in some settings research needs to pay as much attention to women’s jealousy as to men’s jealousy when examining risk factors for hitting.

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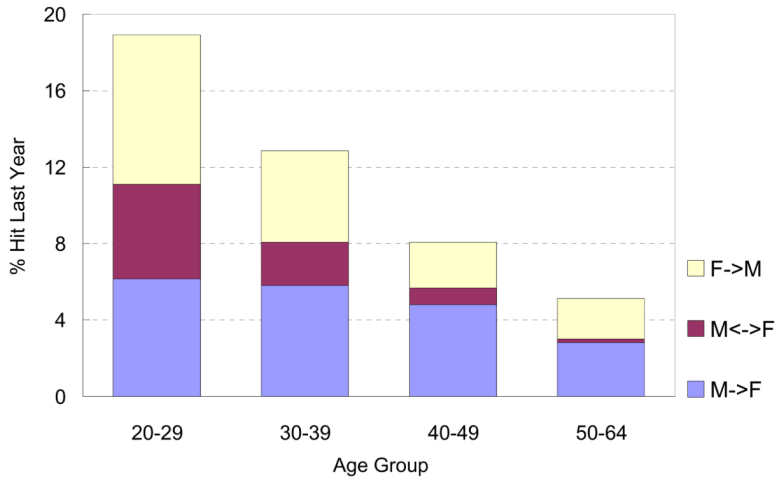

Figure 1. Hitting Last Year by Age Groups and Direction of Hitting

Notes: Based on 2,661 reports by urban women and men. Estimates weighted for sampling design.

Table 1

Descriptive Statistics for Independent Variables

Variable	Mean	S.D.	Min	Max	Points [a]
Jealousy					
man jealous	0.07	0.26	0	1	*d*
woman jealous	0.13	0.33	0	1	*d*
both jealous	0.14	0.36	0	1	*d*
Patriarchal Values					
believe men should lead in sexual activity					
female respondent	0.18	0.46	0	1	*d*
male respondent	0.11	0.37	0	1	*d*
Bargaining/Dependency					
income (logged):					
women	5.31	2.04	0	9.2	*c*
men	6.46	1.19	0	11.3	*c*
woman's income share (%):					
full range	36.2	20.05	0	100	*c*
≤ 45% [b]	31.9	14.58	0	45	*c*
> 45% [b]	4.3	9.63	0	55	*c*
man taller (%; man/woman)	106.7	3.90	91.7	122.4	*c*
man older (years, man - woman)	2.13	2.75	−4	11	*c*
Stress/Life Style					
low socioeconomic status (high to low) [e,f]					
potential woman perpetrator	0.63	0.25	0	1	*c*
potential man perpetrator	0.55	0.27	0	1	*c*
has pre-school child	0.20	0.40	0	1	*d*
alcohol consumption					
female respondent:					
never drink	0.65	0.48	0	1	*d*
intermediate drinking	0.33	0.49	0	1	*d*
heavy drinking	0.03	0.14	0	1	*d*
male respondent:					
never drink	0.21	0.41	0	1	*d*
intermediate drinking	0.44	0.50	0	1	*d*
heavy drinking	0.35	0.46	0	1	*d*
cohabiting	0.02	0.14	0	1	*d*
Social Support					
absence of other adults in home	0.62	0.48	0	1	*d*
Other Factors					

Notes: Weighted urban sample with average of 1,333 men and 1,328 women.

[a] Total data "points" for items with 3–9 categories.

[b] Transformation of woman's % of joint income into two linear splines with a break at 46%.

[c] Continuous variables with more than 10 data points.

[d] Dummy variables.

[e] Reverse of the original scale so as to be a risk factor.

[f] Standardized index combining education and current/previous occupation.

Table 2

Correlates of Hitting during Past 12 Months (percentage point changes) [a]

	Multinomial Logit			Logit	Logit
	M → F	M ←→F	F →M	M hit F	F hit M
	(1)	(2)	(3)	(4)	(5)
Percent hit (at age 30)	***7.7***	***4.4***	***6.8***	***12.1***	***11.2***
Jealousy (vs. not jealous)					
man jealous	2.8†(1.70)	−0.2 (0.05)	11.4***(4.36)	3.4 (0.92)	14.3***‡(4.62)
woman jealous	7.0***(3.50)	1.7†(1.69)	0.2 (0.55)	10.0***‡(5.00)	2.2 (1.42)
both jealous	4.7***(6.84)	2.4**(3.24)	3.1*(2.38)	7.7***(5.32)	5.9***(4.11)
Patriarchal values					
believe men should lead in sex					
male respondent	3.5***(3.71)	−0.2 (0.19)	−2.5*(2.01)	4.7$^{***\wedge}$(4.11)	−3.8*(2.02)
female respondent	−1.0 (0.68)	1.6 (0.73)	0.1 (0.10)	0.03 (0.02)	1.0 (0.37)
Bargaining/Dependency					
woman's income share (≤ 45%)	−1.5*(2.25)	0.6 (0.84)	−1.9 (1.03)	−1.4 (0.95)	−1.1 (0.43)
woman's income share (>45%)	5.8**(3.04)	0.5 (0.25)	0.9 (0.35)	7.4**(2.95)	0.8 (0.19)
man taller (man/woman)	14.5***(3.72)	−5.6†(1.79)	0.03 (0.08)	14.6$^{\dagger\wedge}$(1.81)	−5.3 (0.76)
man older (man - woman)	−3.2 (1.20)	−5.4**(2.54)	0.005 (0.11)	−7.7†(1.90)	−3.8 (0.96)
Stress / Life Style					
man low socioeconomic status	3.5**(2.63)	1.6 (1.07)	1.3 (0.67)	6.1*(2.49)	6.5^{*b}(2.52)
has pre-school child	4.0**(2.95)	1.1 (1.30)	4.3***(3.43)	5.8***(5.82)	6.0*(2.49)
respondent's alcohol drinking (vs. never drink)					
intermediate	2.3*(2.11)	−0.2 (0.09)	2.2*(2.07)	2.8 (1.42)	3.0†(1.65)
heavy (drunk ≥ once/mo.)	6.5****(6.33)	2.6**(2.87)	4.5*(2.39)	9.7***(6.33)	8.6**(3.07)
cohabiting	3.6 (1.26)	1.8 (1.28)	1.8 (0.83)	8.3*(2.32)	5.5†(1.79)
Social Support					
absence of other adult(s) in home	1.7 (1.50)	1.2†(1.76)	0.6 (0.84)	2.9*(2.38)	1.7 (1.04)
Other Factors					
woman's youthfulness	−0.5 (0.08)	9.0***(3.58)	0.9 (0.46)	4.1 (1.61)	8.3†(1.83)
north/northeast city (vs. others)	0.4 (0.89)	2.2**(2.83)	1.6 (1.49)	1.8*(2.36)	4.2*(2.86)
relationship all of last year	0.8 (0.73)	0.1 (0.13)	1.0 (1.49)	1.0 (0.52)	1.2 (1.20)
male respondent	1.0 (0.55)	−1.0 (1.15)	−1.3 (0.97)	0.8 (0.32)	−2.9†(1.94)
Log-likelihood		−1077.15		−619.44	−516.38
Pseudo-R^2		0.18		0.16	0.17
Observations		2643		2643	2644

Notes: Data based on combined female and male reports. For example, Column 2 includes both the woman's report of his jealousy of her and the man's reports of his jealousy of her. The male respondent control variable indicates the degree to which men report more or less of each type of hitting. z-values in parentheses, based on standard errors adjusted for sample design. In the outcome variables, "absence of hitting" is the reference category.

[a] Percentage point changes derived from multinomial logit and binomial logit analyses. The percentage changes indicate the consequences of minimum-to-maximum changes in each independent variable for a person with the average hitting levels of a person age 30.

[b] indicates woman's low SES status.

† p < 0.10;

* p < .05;

** p < .01;

*** p < .001

^ indicates percentage change significantly larger than for the opposite gender at p < 0.05;

≠ larger at p < 0.10.

Table A

Correlates of Hitting during Last 12 Months based on Separate Male and Female Reports (percentage point changes based on binomial logit analyses)

	Male Hit Female		Female hit Male	
	M Report	F Report	M Report	F Report
	(1)	(2)	(3)	(4)
Proportion hit (at age 30)	***12.1***		***11.2***	
Jealousy (reference: none jealous)				
man jealous	8.6* ^ (2.05)	−0.5 (0.23)	22.2*** ^ (3.86)	9.0*** (4.22)
woman jealous	9.3*** (7.43)	8.3 (1.64)	1.3 (1.12)	2.7 (0.72)
both jealous	5.9*** (3.54)	8.7*** (4.06)	3.4** (3.01)	6.0* (1.97)
Patriarchal Values				
believe men should lead in sex				
male respondent	4.6*** (3.66)		−1.9† (1.73)	
female respondent		−0.3 (0.14)		1.3 (0.45)
Bargaining/Dependency				
woman's income share (≤ 45%)	−0.7 (0.52)	−1.8 (0.72)	0.2 (0.19)	−2.1 (0.46)
woman's income share (>45%)	4.7 (0.90)	8.4* (2.02)	−5.2† ‡ (1.67)	5.0 (0.83)
man taller (%, man/woman)	22.3* ^ (2.54)	−2.5 (0.50)	−3.8 (0.79)	−3.8 (0.47)
man older (years, man - woman)	−5.9 (0.98)	−9.5† (1.88)	−2.1 (1.41)	−3.2 (0.51)
Stress / Life Style				
offender low status (educ. / occu.)	6.8† (1.92)	3.3 (0.84)	2.0 (1.60)	9.0* (2.15)
has pre-school child	4.7** (2.79)	6.8* (2.50)	2.1 (1.19)	9.9** (2.71)
respondent's alcohol consumption (vs. never drink)				
intermediate drinking	2.1 (1.10)	1.6 (1.29)	1.2 (1.02)	3.3 (1.53)
heavy drinking (drunk at least once a month)	8.6*** (4.24)	9.0* (2.50)	3.9* (2.25)	15.0* (2.27)
cohabiting	1.5 (0.31)	28.2*** ‡ (4.30)	2.7 (1.48)	11.0† (1.94)
Social Support				
absence of other adult(s) in home	2.5† (1.78)	2.5*** (3.66)	1.3 (1.41)	1.1 (0.54)
Other Factors				
woman's youthfulness	5.8† (1.65)	0.6 (0.15)	4.0 (1.11)	9.1† (1.73)
north/northeast city (vs. others)	1.4 (0.94)	2.0 (1.26)	2.0* (2.33)	4.5* (2.33)
relationship all of last year	0.7 (0.26)	1.9 (0.86)	0.1 (0.15)	2.9† (1.68)
Log-likelihood	−375.80	−229.77	−224.60	−281.64
Psuedo-R^2	0.16	0.17	0.21	0.17
Observations	1323	1320	1324	1320

Notes: See notes to Table 2.