

Intimate Partner Violence in Peru: An assessment of competing models.

Corey S. Sparks¹ and Alelthie Valencia²

1Department of Demography, The University of Texas at San Antonio, San Antonio, TX 78207

2 Institute for Demographic and Socioeconomic Research, The University of Texas at San Antonio, San Antonio, TX 78207

1. Introduction

Intimate partner violence (IPV) is one of the most common forms of violence against women worldwide (Heise, Ellsberg, & Gottemoeller, 1999; Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002; Tjaden & Thoennes, 1998; World Health Organization, 2005). Unlike men, who normally suffer violence at the hands of same-sex strangers and acquaintances, women more often suffer violence at the hands of someone they know, especially a current or former partner (Daly & Wilson, 1988; Rennison, 2003; Schwartz, 2005). The WHO (World Health Organization, 2005, 2013) has conducted a series of global studies of IPV and women's health in many countries. Initial prevalence results from the most recent (2013) reports show that nearly one third (30%) of women reported ever experiencing either physical IPV, with regional figures as large as 38%. In its 2005 study, the WHO found that 61% of women in rural areas of Peru, and 49% of women in Peruvian cities had reported ever experiencing partner violence. Furthermore, between 18 and 25% of these women were currently in violent relationships. Clearly, IPV is a major public health concern in Peru.

Multiple theoretical models have been employed to improve understanding of IPV associated and risk factors. Known risk factors include witnessing the abuse of a parent (Heise, et al., 1999; Hotaling & Sugarman, 1986; Krug, et al., 2002), rigid social gender norms (Pallitto & O'Campo, 2005; Yllo & Straus, 1984), poverty and its consequences (Gage & Hutchinson, 2006), couple conflict (Ellsberg, Pena, Herrera, Liljestrand, & Winkvist, 2000; Krug, et al., 2002), women's control by men (Gage & Hutchinson, 2006; Krug, et al., 2002), family size (D. F. Flake, 2005; D. F. Flake, & Forste, R., 2006), women's educational attainment (D. F. Flake, 2005; Hotaling & Sugarman, 1986; R. Jewkes, 2002; R. Jewkes, Penn-Kekana, & Levin, 2002; Martin, Tsui, Maitra, & Marinshaw, 1999), age at marriage (D. F. Flake, 2005), employment and decision making (D. F. Flake, 2005; Macmillan & Gartner, 1999; Rao, 1997; Schuler, Hashemi, Riley, & Akhter, 1996), and men's alcohol consumption, impulsivity, age, and low education and/or income (Krug, et al., 2002).

Taken together, this evidence depicts a complicated network of factors at multiple levels that may lead to the experience of IPV. Despite evidence of this complex pattern, many studies focus on a single or a few factors associated with IPV at one time. In addition, studies tend to focus on the relationship between IPV and characteristics at the individual, dyadic, or structural levels, producing a set of competing conceptual frameworks for IPV risk.

Conceptual Frameworks

In this paper, we consider two competing conceptual approaches which are used in the current literature on IPV risk. First, we consider individual and couple - centric models of IPV risk, followed by an ecological nested model (ENM) of IPV risk. The goal

of the present analysis is to present, within a single national setting of reported high IPV prevalence, a systematic evaluation of competing models of IPV risk.

Individual and Couple-Centric Models

The individual-centric model represents a combination of several theories of IPV risk situated in the conflict theory, relative resource theory and feminist literatures. Family stress and resource theory (Gelles, 1976) suggests that the accumulation of stressors, such as poverty or unemployment, combined with excess in demands over resources can lead to IPV and other types of family abuse. Research finding greater rates of IPV among impoverished or unemployed couples lends support to this theory (R. Jewkes, 2002; Kishor & Johnson, 2006; Tjaden & Thoennes, 1998). Similarly, resource theory focuses on the relationship between resources and IPV, but places greater emphasis on the differences in resources between partners. Resource theory suggests that in those partnerships where the male earns more or has a higher status position than his partner, IPV may result from a sense of entitlement or superiority over the woman. Some studies have found that women who are economically dependent on their partners are at an increased risk of IPV (Dobash & Dobash, 1979; Gelles, 1976; Kalmus & Straus, 1982; Krug, et al., 2002). However, in resource theory IPV can also be conceptualized as a choice of last resort available to individuals, especially low status males, with limited alternative resources (Goode, 1971). Relative resource theory (Macmillan & Gartner, 1999; McCloskey, 1996) suggests that where there are discrepancies in status, i.e., education or income differences between partners, women with higher status than their male partners are at a greater risk of IPV because the male partner perceives them to be challenging his role as head of the household. However, this theory does not detail the process by which status discrepancies, whether it is a man's sense of superiority or entitlement over a woman or a man's sense of failure at meeting the socially ascribed gender role of provider, lead to IPV.

Ecological Framework

An adapted ecological perspective similar to models used by Heise et al (1999) is also used in the present study to examine the nested nature of risk factors for IPV. Whereas Heise and colleagues include four levels in their model, the present study includes variables from all four levels but combines them into two levels in order to fit a two-tier multi-level statistical model. The first level of analysis in this model includes individual level factors, such as a woman's age, education, and history of IPV, and couple or household level characteristics, such as partner discrepancies in age, education, and occupation. The second level of analysis includes variables at the social institutional and societal levels, such as aggregate measures of socioeconomic status, education, employment, and beliefs on IPV. The ecological framework argues that the interplay of the individual characteristics of both partners is very important to understanding conflict in couples, including IPV. When there are power disparities, such as in age or education, mutual benefit is no longer equal for the two partners, and conflict can arise. Empirically, one of the most consistent markers of IPV has been marital conflict (Ellsberg, et al., 2000; Krug, et al., 2002), likely arising from asymmetry between partners, which would be supportive of the individual-centric model. Still, other evidence has been found that suggests that structural or social institutional and societal, factors, including low socioeconomic status/unemployment, isolation of women and family, and delinquent peer associations also influence IPV risk in developing nations (Heise et al., 1999).

Perhaps the most important aspect of this type of model is highlighted by a recent review of family policy in Latin America (García & de Oliveira, 2011), where the authors discuss the many facets of governmental, societal and personal life that combine to influence the well-being of families in the region. The continuing transformation of families in the region highlights the need for the present research and the need for understanding how individual, family, and societal factors combine to influence IPV risks.

Empirical evidence linking social and cultural contexts and IPV is well documented. In fact, one of the main tenets of the feminist approach is that violence against women will be greatest in patriarchal societies, particularly those with rigid gender roles. According to Yllo and Straus (1984), the structural element of patriarchy can be seen in the low status women generally hold, relative to men, in the family and in economic, educational, political, and legal institutions. Similarly Krug et al. (2002) discuss the impact contextual factors can have on a woman's risk of experiencing IPV. For instance, they argue that in those societies where women have relatively low status, there will be no need for men to control women via IPV, because their standing in society is already low. They also argue that in those societies where women have gained significant status, IPV will also be less common since sanctions and support systems are likely in place to discourage this reaction from men against women. However in those societies where women are undergoing a transition in status, there will likely be higher rates of IPV. Men will be fighting to retain their traditional gender roles while women will be increasingly resistant to this system. As such conflict will likely arise, including in the form of partner violence. Studies focusing on the relationship between IPV and place of residence, poverty, and gender roles highlight the contribution of structural level factors to this relationship.

Materials and Methods

The study used data from the Demographic and Health Surveys (DHS) conducted, in Peru between 2004 and 2008. This country was selected because the WHO found in its 2005 study (World Health Organization, 2005) that 61 percent of women in rural areas of Peru, and 49 percent of women in Peruvian cities had reported ever experiencing partner violence. Furthermore, between 18 and 25 percent of these women were currently in violent relationships. This established a clear need for study because of these excessively high rates of IPV (the highest rates of the countries surveyed in the WHO study), and a clear difference between risk for women in rural and urban areas, which suggests an ecological or residential component to the risk.

The DHS is a nationally representative household survey conducted in over 80 countries, with a goal of advancing global knowledge of health and population trends in developing countries to be used in policy formation, program planning, monitoring, and evaluation (Macro International, 1996). The DHS samples are representative at the national and regional levels, and the sample consists of a probability sample based on a stratified two-stage cluster design (Macro International, 1996). Many countries also include the optional DHS domestic violence module. This module includes about 30 questions related to different types of IPV, relation to the perpetrator(s), frequency of IPV episodes, injuries incurred from IPV, and history of IPV in the family of origin. The questions are asked of women who have ever lived with a partner or have been married, and thus represent a subset of women in the survey.

Outcome Variable

The current research used a broad definition of IPV. While admittedly, IPV can be separated into sexual, physical abuse and emotional abuse, with each of these three types being important in their own right, in order to succinctly address the determinants of IPV, a single outcome was used in the current analysis. This outcome was the self-report of having experienced physical violence at the hands of a woman's partner. Physical IPV was measured using the following DHS set of questions: "Has your partner ever slapped you; punched with his fist or something that could hurt you; kicked you, dragged you, or beaten you up; tried to choke you or burn you on purpose; or threatened or attacked you with a gun, knife, or other weapon". Physical IPV was dummy coded into a dichotomous variable that had a value of 0 if a woman did not report experiencing any of the above items and a value of 1 if she reported experiencing any of those items. Several other physical abuse items were present in the data, but these responses were used because they involved more severe forms of physical abuse or threats.

Independent Variables

Woman's factors

As described in the literature review above, there are a number of variables that have associations with IPV and women's autonomy and status. The following variables were included as controls in this analysis. Women's age has been found to be negatively associated with IPV, with younger women being more likely to experience IPV than women of more mature ages. A woman's age was measured continuously years increments as was her partner's age. A woman's residential location was coded as rural versus urban using a dummy variable. Woman's education was coded using three dummy variables, indicating if she had a primary, secondary or higher than secondary education, with the reference group being no formal education. Having larger families or multiple children has been found to be positively associated with IPV. The number of children a woman had given birth to was measured continuously. History of abuse in an individual's nuclear family has been found to be positively associated with IPV, for both the abuser as well as the abused. The present analysis included a woman's history of IPV as a control variable. This indicates whether the women witnessed IPV in her parent's relationship. This variable was dummy coded, with a value of 0 identifying those women without a history of IPV and a value of 1 for those women who had a history of IPV.

Couples factors

A variable was created to identify discrepancies in education. A dummy coded variable was created and given a value of 1 in those cases where a woman had more education than her partner and a value of 0 otherwise. A variable used to measure occupation asymmetries was also created. This variable was given a value of 1 if the woman had done any work outside the home in the last 12 months and her occupation was of professional, technical, managerial, clerical or sales and her partner's occupation was in agriculture, skilled or unskilled labor, or service industry; the variable was coded 0 otherwise. A number of DHS survey items ask about whom in the partnership usually makes a variety of decisions. These decision-making items were used to measure two types of women's autonomy: household and sexual autonomy. Household decision-making autonomy was defined as whether a woman usually has the final say on decisions about large and small household purchases. Sexual decision-making was defined as a women's ability to refuse sex with her husband under a set of hypothetical circumstances,

including husband having an STD, husband being involved with other women, woman recently given birth, or woman being tired or not in the mood. Responses to these hypothetical circumstances were used to create a dummy variable with a value of 0 if a woman could refuse to have sex with her partner in three or fewer situations or a value of 1 if a woman could refuse to have sex with her partner under all four circumstances.

The household's socio-economic status was measured using an index of wealth for her household. This index was created by using an inventory of items related to ownership or access to a variety of commodities, including a refrigerator, telephone, radio, television, flush toilet, durable floor, and running water. A composite score averaging the response to these socio-economic questions was present in the DHS datasets, and a dummy variable was constructed to indicate whether the SES of the household was in the lower 2 quintiles of this index; if so, then the variable was coded as 1 to represent "low SES" and 0 otherwise.

Regional-level predictors

To measure characteristics of the regions where the respondents lived, three region-level predictors were used. To measure all region-level predictors, two methods were used. The first used data from the 2001 Peruvian census Public Use Microdata Sample (PUMS), and the second used data from the DHS. The following weighted average method was used to calculate all region level variables:

$$z_k = \frac{\sum_{ik} w_{ik} z_{ik}}{\sum_{ik} w_{ik}}$$

where, w_{ik} is the sample-weight for the i^{th} woman in the k^{th} region and z_{ik} is the dummy variable indicating if the i^{th} woman in the k^{th} region had the trait in question. The PUMS was used to measure the proportion of women working in professional occupations in each region. Likewise, the percentage of the population that lived in urban areas was also measured. The DHS data were used to measure the proportion of women in a region who had some say in household purchasing decisions. A number of DHS survey items ask about who in the partnership usually has the final say on a variety of decisions, with response choices of woman, partner, woman and partner jointly, someone else, and other. Responses to the household decision items were used to create an individual level dummy variable with a value of 0 if someone other than the woman usually had the final say on decisions about large and small household purchases and a value of 1 if a woman had the final say on the purchase of these items. The scores for women in the region were then averaged to measure region-level women's household autonomy. All region-level predictors were z-scored prior to entry into the analysis.

Statistical Methods

Multi-level generalized linear mixed models (GLMMs) were used to control for both individual and aggregate level effects on the odds of a woman experiencing a physical IPV outcome. A model of the form:

$$\text{logit}(p_{ij}/(1-p_{ij})) = \gamma_{0j} + X'\beta + Z'\eta$$

was fit to the data. This model specified the log-odds or logit transformation of the probability of a woman in region j of Peru having experienced physical IPV. The effects in the model were separated in to fixed and random components, where the β 's represent the fixed effects of the individual level predictors, and the γ 's represent the random model intercepts in the model. The random effects were specified as a nested hierarchical

structure, with individuals nested within regions. A random intercept for each region (γ_{0j}) was used. Finally, we specified effects (η) of region-specific predictor variables, Z . We assumed the random intercepts to be separated into average population intercepts and group-specific deviation components, such as: $\gamma_{0j} = \gamma_0 + \gamma_j$, with the γ_j following a normal distribution with mean zero and variance parameter σ_γ^2 . This variance parameter informs us as to the amount of between region variance there is in the average IPV rate. These models were estimated using the Integrated Nested Laplace Approximation, a Bayesian modeling technique which approximates the posterior distribution of all model parameters using numerical methods instead of Markov-Chain Monte Carlo (Rue, Martino, & Chopin, 2009) in the R statistical programming environment (R Development Core Team, 2011).

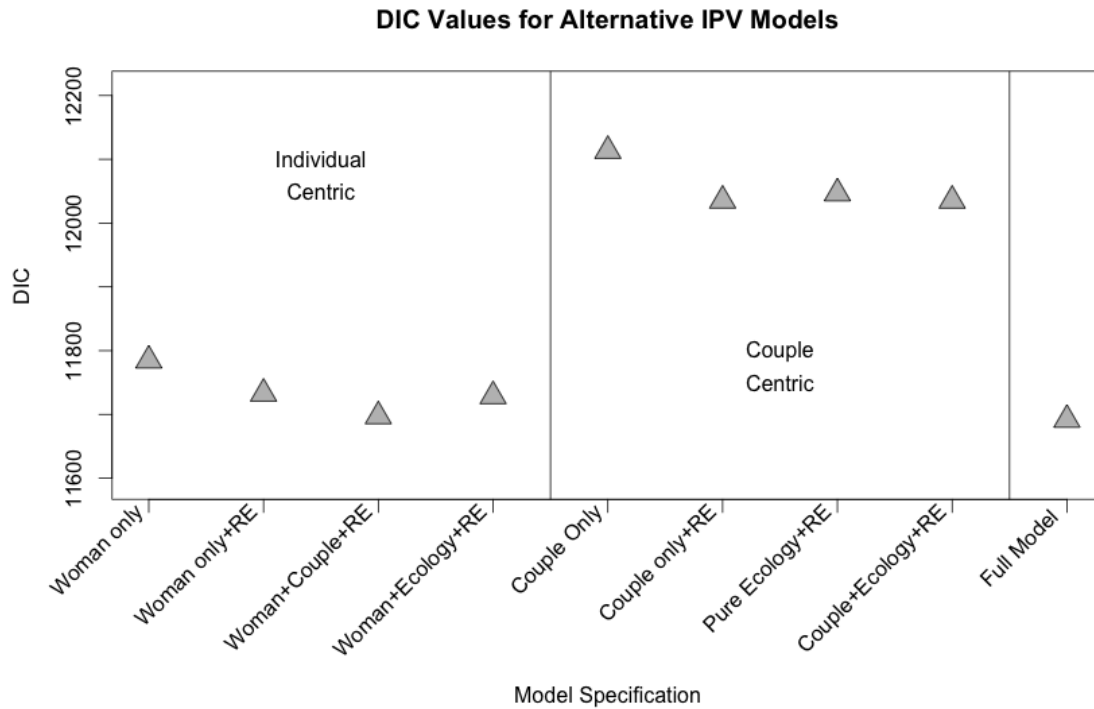
The analysis proceeded by considering nine models for the outcome variable. Each model considered different combinations of the individual-centric, couple-centric and ecological models, with and without regional heterogeneity, and a full model with all of the effects combined. The nine model structures are provided in the following Table 1.

Model Structure
Woman only
Woman only + Regional Random Effects
Woman + Couple + Regional Random Effects
Woman + Ecology + Regional Random Effects
Couple Only
Couple Only + Regional Random Effects
Pure Ecology + Regional Random Effects
Couple + Ecology + Regional Random Effects
Woman + Couple + Ecology + Regional Random Effects

All models were compared using the Deviance Information Criteria (DIC) (Spiegelhalter, Best, Carlin, & van der Linde, 2002) to judge model improvement.

Results

Results from each of the nine model specifications are summarized in Figure 1.



In general, the individual-centric models fit the data better than the couple-centric models, and the best fitting model considered woman's and couple's effects, plus random effects at the region level.

Overall, we suggest that in the Peruvian setting, partner violence is largely a product of individual and couple-level dynamics, with little effect of higher-level predictors. That being said, there is substantial regional heterogeneity in risk of IPV, and once controlling for regional-level predictors, the heterogeneity diminishes substantially.

It is likely that these effects are a byproduct of historical, political and cultural patterns that have been longstanding for generations. We also suggest that, as the Peruvian economy changes from a traditional agrarian economy to a more service sector based economy, that the traditional role of men and women will continue to erode, and higher levels of partner violence against women may ensue.

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