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Gender and Intimate Partner Violence in Latino Immigrant Neighborhoods

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Abstract
Objectives Some quantitative studies indicate that overall rates of intimate partner violence (IPV) are lower in Latino immigrant neighborhoods, but numerous qualitative studies suggest residing in Latino immigrant enclaves increases women's risk of IPV victimization. We examine the association between neighborhood Latino immigrant concentration and (1) overall IPV and (2) tendencies towards female IPV victimization among resident couples.
Methods Using data from the Project on Human Development in Chicago Neighborhoods (PHDCN) and the 1990 census, we first apply Osgood and Schreck's (Criminology 45:273–312, 2007) statistical approach for examining criminal specialization to quantify overall IPV and tendencies toward female IPV victimization across couples and neighborhoods. We then test the association between Latino immigrant concentration in neighborhoods and resident couples' overall and gendered IPV patterns.
Results Results indicate that as neighborhood-level Latino immigrant concentration increased, overall IPV was lower among resident couples, but IPV tended to be directed at women when it occurred.
Conclusions Our study underscores the importance of distinguishing between tendencies toward symmetric versus unidirectional IPV when assessing the association between couple violence within Latino immigrant communities.

Keywords Latino immigrant neighborhoods · Criminal specialization · Intimate partner violence

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Introduction

Consistent negative associations between neighborhood concentrations of Latino immigrants and crime and poor health reinforce an emerging scholarly consensus regarding the link between immigration and individual and collective well-being (Cagney et al. 2007; Lee and Martinez 2009; Martinez et al. 2010; Zatz and Smith 2012). Research on intimate partner violence (hereafter, IPV) within Latino ethnic enclaves however, has yielded equivocal findings. Some have found IPV decreases with rising Latino immigrant concentration (Wright and Benson 2010), while others suggest cultural processes operating within Latino immigrant communities (e.g., norms emphasizing male dominance and female self-sacrifice; Castillo et al. 2010) increase women's risk of IPV victimization but decrease their risk of IPV perpetration (Klevens 2007; Perilla et al. 1994). Thus, how Latino immigrant enclaves shape gendered patterns of intimate partner violence remains unclear.

Inconsistent findings on IPV in Latino immigrant neighborhoods underscore a criminological paradox. Namely, overall IPV prevalence is lower in Latino immigrant neighborhoods, yet residing in Latino immigrant neighborhoods appears to increase women's risk of IPV victimization. We investigate this inconsistency by integrating insights on criminal specialization (Osgood and Schreck 2007) with research on IPV (Johnson 1995, 2006; Straus and Gozjolko 2014, 2016), immigrant revitalization (Desmond and Kubrin 2009; Kubrin and Ishizawa 2012; Martinez et al. 2010), and IPV in Latino communities (Sabina et al. 2014). Our study is the first known attempt to simultaneously quantify variation in overall couple violence and tendencies towards female IPV victimization across couples and neighborhoods.

Drawing from immigrant revitalization perspectives (Lee and Martinez 2009) and research in IPV and acculturation (Caetano et al. 2000; Klevens 2007), we tested whether Latino immigrant concentration is negatively associated with overall couple violence. Informed by research on aspects of traditional Latino culture (e.g., *marianismo* and *machismo*) and IPV (Arciniega et al. 2008; Castillo et al. 2010; Klevens 2007), we also tested whether IPV is more often directed at female partners when it occurs within Latino immigrant neighborhoods. Stated in the parlance of the criminal specialization literature (Osgood and Schreck 2007), we tested whether Latino immigrant concentration in neighborhoods is positively associated with women's IPV victimization specialization.

We elaborate on an emerging paradox surrounding IPV in Latino immigrant neighborhoods. Using data from the Project on Human Development in Chicago Neighborhoods (PHDCN) and the 1990 decennial census, we apply a novel statistical method for measuring criminal specialization and assess variation in overall IPV rates and tendencies to exhibit female IPV victimization specialization across neighborhoods and couples (Osgood and Schreck 2007; Zimmerman and Posick 2014). Importantly, our findings call into question key arguments made by scholars examining IPV among Latinas that claim women's risk of IPV victimization increases with rising concentrations of Latino immigrants in their communities.

Theoretical Background

IPV "Role Specialization"

Research on heterosexual IPV is predominantly informed by family violence and feminist perspectives. Family violence researchers note that men and women perpetrate IPV at

roughly equal rates in the U.S. and argue IPV is primarily rooted in disputes stemming from everyday conflicts and stressors as well as larger social norms that condone violence (Archer 2002; Gelles and Straus 1988; Kurz 1989; Straus 1990). Conversely, feminist perspectives acknowledge that although both men and women perpetrate couple violence, IPV is primarily perpetrated by men among some couples, and that distinct processes cause symmetric versus female-directed IPV (Johnson 1995, 2006; Kelly and Johnson 2008; Kurz 1989). Some feminist scholars argue further that couple violence that is directed primarily at women functions as a masculine control mechanism that is rooted in patriarchal gender traditions, institutions, and power relations (Johnson 1995, 2006; Kelly and Johnson 2008; Pallitto and O'Campo 2005). Thus, although aggregate rates of IPV perpetration are similar across men and women in the United States, couples vary in their tendencies to exhibit violence that is primarily directed at male versus female partners. Additionally, distinct processes may contribute to symmetric versus gender-directed IPV.

Fully addressing competing claims of feminist and family violence perspectives is beyond the scope of this article. Instead, we integrate compatible insights from feminist and family violence perspectives to examine whether and why overall couple violence and gender-directed IPV vary across contexts. We argue further that research methods and insights from the *criminal specialization* literature help reconcile aspects of family violence and feminist IPV perspectives and are useful for understanding variation in overall IPV rates versus tendencies for IPV to be directed at male or female partners. Criminal specialization refers to the tendency to enact a criminal role (e.g., violence perpetrator versus victim) or behavior (e.g., violent versus non-violent delinquency) more consistently than another (Osgood and Schreck 2007). Osgood and Schreck (2007) note that despite consistent positive associations between violent offending and victimization, some individuals exhibit stronger tendencies toward offending versus victimization and vice versa (Broidy et al. 2006; Mustaine and Tewksbury 2000; Osgood and Schreck 2007). Similarly, couple violence is largely bidirectional and perpetrated by both men and women (Archer 2002, 2006; Gormley 2005) but heterosexual couples differ in tendencies to exhibit violence primarily against the male or female partner (Johnson 2006; Straus and Gozjolko 2016). Furthermore, features of couples and larger social contexts (e.g., neighborhoods, nations, etc.) may differentially impact overall levels of couple violence and the extent to which partner violence is directed at female versus male partners.

We apply the logic and statistical methods from the criminal specialization literature to examine how individual/couple- and neighborhood-level factors contribute to overall IPV levels versus violence against women among couples. Importantly, criminal specialization studies do not rely on pre- or post hoc categorizations based on offending/victimization patterns (Schreck et al. 2012). They instead quantify the extent of differential *tendencies* to experience or perform one type of criminological outcome or behavior over another, and examine the correlates of role/behavioral specialization. We focus on *female IPV victimization specialization* (hereafter FIVS) among heterosexual couples, which we define as a couple's tendency for IPV to be directed at the woman, independent of the overall level of IPV within the couple (Osgood and Schreck 2007). To date, no known study has analyzed FIVS across couples or neighborhoods using the statistical techniques developed in the criminal specialization literature.

Family violence and feminist perspectives yield hypotheses regarding the existence of FIVS across couples and neighborhoods. Acknowledging the wealth of studies that find little difference between men's and women's rates of IPV perpetration (Archer 2002), family violence perspectives predict that little, if any FIVS exists across couples or neighborhoods. Put differently, family violence perspectives predict that no FIVS exists

beyond what is expected by random chance. Conversely, a feminist perspective would suggest that although symmetric IPV is common, some couples exhibit stronger tendencies toward female versus male IPV victimization, and vice versa (Johnson 2006). Feminist perspectives further suggest that IPV that is primarily directed at women is more common within contexts where patriarchal norms, values, and gender relations prevail (Archer 2006; Jackson 2016; Pallitto and O'Campo 2005; Yllö 1984). Therefore, FIVS potentially varies across neighborhoods.

Beyond quantifying FIVS across couples and neighborhoods, we also tested whether overall levels of IPV and FIVS among resident couples varied by neighborhood concentrations of Latino immigrants. Below we synthesize insights from research IPV among Latinos and immigrant revitalization perspectives to formulate hypotheses regarding the associations between Latino immigrant concentration in neighborhoods and gendered patterns of couple violence.

Latino Immigrant Concentration and Overall IPV

The immigrant revitalization perspective focuses on how immigrant communities maintain informal social control despite facing criminogenic risk factors (Martinez et al. 2010). For instance, economic disadvantage often present in Latino immigrant communities potentially undermines collective efficacy (Sampson et al. 1997) and contributes to cultural models conducive to crime (e.g., the code of the street; Anderson 1999). However, neighborhoods with large immigrant populations also tend to have high rates of participation in low-wage labor (Ramey 2013; Sampson 2008). High employment among immigrants (Wright and Dwyer 2003; Zhang and Sanders 1999) promotes economic growth, increases participation in conventional activities (Shihadeh and Winters 2010; Vélez 2009), and reduces strain and social isolation from conventional institutions (Ousey and Kubrin 2009; Thomas 2011). Put simply, "the effects of poverty on the propensity of immigrants to commit crime may be attenuated by the fact that they are poor but working rather than poor and jobless" (Lee and Martinez 2009:13).

Strong organizational bases within Latino immigrant neighborhoods also promote informal social control. Latino immigrant neighborhoods often contain active institutions such as religious or community-based organizations that help new residents adjust to new settings, secure social and financial resources, and integrate themselves into community social networks (Ramey 2013; Shihadeh and Winters 2010). Immigrants also often strategically resettle into locations where kin and/or friends reside (Portes and Rumbaut 2006). This selective process helps new arrivals quickly integrate into receiving communities, accelerating the pace in which they become subject to community informal social control (Ousey and Kubrin 2009; Vélez 2009). In sum, institutions and informal networks within immigrant enclaves may enhance social control and support, which offset the criminogenic effects of economic disadvantage.

The notion that cohesive kin and friendship networks are important for combating IPV reflects central arguments of the systemic model of social disorganization (Bursik 1988). The systemic model suggests social networks—largely comprised of kin and friends—enhance informal social control, and thus decrease crime and other anti-social behavior within neighborhoods (Sampson and Groves 1989; Shaw and McKay 1942). Supporting this claim, Wright and Benson (2010) found that neighborhood-level Latino immigrant concentration is negatively associated with women's IPV victimization, and that strong kin presence mediates the association between Latino immigrant concentration and women's IPV victimization. Thus, strong kin and friend networks that potentially flourish within

Latino immigrant neighborhoods may be crucial for preventing violence that occurs in private settings, like IPV.

Dimensions of traditional Latino culture may also offset the criminogenic, health-harming effects of concentrated socioeconomic disadvantage within Latino immigrant neighborhood enclaves (Gallo et al. 2009). For instance, norms and values rooted in *familismo* are thought to encourage Latinos to emphasize familial roles and relationships when forging their identities (Kim et al. 2009). *Familismo* in turn may increase prevalence of intact families and parental control within neighborhoods, thereby promoting informal social control of public spaces and private settings (Germán et al. 2009; Guilamo-Ramos et al. 2006; Kennedy and Ceballo 2013). Residents of Latino immigrant communities also preserve key elements of the cultures from their countries of origin, which impedes the spread of cultural frames, norms, and scripts conducive to violence (e.g., street codes) that may otherwise flourish in disadvantaged neighborhoods (Anderson 1999; Wright and Benson 2010). Supporting this claim, Latino immigrants have been found to be more intolerant of deviance than whites, blacks, and U.S.-born Latinos (Sampson and Bartusch 1998), which may partially account for the negative association between neighborhood-levels of Latino immigrant concentration and offending.

Ethnic enclaves—which are often socially isolated from neighborhoods where dominant race/ethnic groups reside (Iceland and Nelson 2008; Lichter et al. 2015)—also alter residents' assimilation and acculturation. For those residing in Latino immigrant neighborhoods, many (if not most) interactions can be executed in Spanish and in accordance with traditional Latino cultural norms (South et al. 2005). Thus, acculturation—which involves mastering the customs and language of one's host country—is less essential for those whose daily exchanges are confined to social spaces occupied by fellow immigrants and co-ethnics. Although acculturation and social assimilation among Latinos is associated with human capital gains (South et al. 2005; Steil et al. 2015), role strains rooted in the acculturation process might increase couple conflict and the risk of IPV and other adverse outcomes (Berry 2003; Klevens 2007; Mancera et al. 2017; Vega et al. 1997). Supporting this claim, numerous studies report that acculturation increases Latinas' risk of IPV victimization (Caetano et al. 2000; Cummings et al. 2012; Garcia et al. 2005; Jasinski 1998; Kantor et al. 1994; Lown and Vega 2001; Martin and Garcia 2011; Moreno 2007; Sorenson and Telles 1991). Thus, residing in Latino immigrant neighborhoods may decrease IPV by delaying acculturation and shielding individuals from strain.

The above discussion highlights how Latino immigrant concentration in neighborhoods may protect against overall levels of IPV among residents. Reflecting key arguments of family violence perspectives, Latino immigrant concentration may decrease couple violence through social control mechanisms and delaying acculturation which reduces stress and strain. Cultural norms and values rooted in *familismo* may further discourage couple violence within Latino immigrant communities. However, feminist IPV researchers argue that partner violence that is directed at women is rooted in men's desire to control their female partners and supported by patriarchal norms within larger social contexts (Jackson 2016; Johnson 2006; Pallitto and O'Campo 2005). Furthermore, qualitative studies suggest that women are at increased risk of victimization within Latino immigrant communities. Building on these ideas, we consider how gendered features of traditional Latino culture may lead to increased FIVS among couples residing in Latino immigrant enclaves.

Latino Immigrant Concentration and FIVS

Scholars highlight gendered aspects of traditional Latino culture that may alter gendered patterns of IPV perpetration and victimization within Latino immigrant neighborhoods. For instance, masculine norms rooted in *caballerismo* emphasize Latino men's role in financially, physically, and emotionally supporting their families and situate self- and social-esteem in one's ability to fulfill paternal roles (Arciniega et al. 2008; Cruz et al. 2011; Ojeda and Piña-Watson 2014). Conversely, *machismo* refers to hypermasculine and often anti-social elements of Latino masculinity that emphasize violence and sexual inhibition. For partnered men, *machismo* prescribes male dominance over female partners, sometimes through physical and psychological violence (Arciniega et al. 2008). Thus, while some pro-social aspects of Latino masculinity emphasize familial responsibility, *machismo* stresses masculine control and reflects more traditional patriarchal ideals and norms that operate within traditional Latino culture.

The pervasiveness of *machismo* within Latino neighborhoods and its criminological consequences have not been fully explored in large-scale population-based studies. However, Arciniega et al. (2008) study based on a sample of 477 Latino men in the U.S. found that endorsement of *machismo* attitudes was positively associated with recent arrests, fighting, and alcohol use. Related, small-scale studies based on focus groups with Latino men and women suggest that *machismo* is a significant aspect of traditional Latino masculinity and is instilled in men from a young age (Gonzalez-Guarda et al. 2010, 2011). Furthermore, male and female Latino respondents have frequently cited *machismo* as an underlying cause of men's IPV perpetration in qualitative studies (Gonzalez-Guarda et al. 2010, 2011), suggesting a link between Latino immigrant concentration, *machismo* beliefs, and men's violence. Finally, a Simon et al. (2001) study on IPV attitudes found that Hispanic/Other respondents were more tolerant than whites regarding hitting both male and female partners to discipline or keep them in line. Simon et al. (2001) also found that the coefficient capturing Hispanic/Others' increased acceptance hitting a female partner (OR 5.16, $p < .05$) was larger in than the coefficient capturing Hispanic/Others' increased acceptance of hitting a male partner (OR 1.87 $p < .05$), although the authors did not report whether these coefficients were significantly different. It should be noted however, that Simon et al.'s (2001) study could not isolate *why* Hispanic/Other respondents were more tolerant of IPV.

While *machismo* stresses male domination, norms surrounding *marianismo* emphasize chastity, self-sacrifice, and deference among women. *Marianismo* is rooted in the understanding that women are morally superior to men, making them capable of enduring emotional and physical suffering inflicted by their male partners (Malley-Morrison and Hines 2004; Stevens 1973). Further, *marianismo* norms and behavioral scripts encourage women to submit to men's desires and demands and emphasize selflessness for the sake of one's family (Castillo et al. 2010). This norm may discourage Latinas from engaging in preemptive and retaliatory IPV and from exiting abusive relationships.

Operating in conjunction, *marianismo* and *machismo* may mean that couple violence tends to be increasingly directed at women within neighborhoods with high concentrations of Latino immigrants. For instance, expectations of male domination and female submission drives power imbalances among couples that may increase the risk of male IPV perpetration and decrease the likelihood that women perpetrate or retaliate violence against their partners. Norms emphasizing women's responsibility for keeping families together and loyalty towards one's husband may discourage women from engaging actions that

jeopardize the family, such as perpetrating IPV or exiting abusive relationships (Bauer et al. 2000). In sum, some patriarchal masculine and feminine norms, values, and behavioral scripts that are rooted in traditional Latino culture mean that FIVS potentially increases with rising concentrations of Latino immigrants within neighborhoods.

Current Study

Our study had two objectives. First, informed by research on criminal specialization and IPV, we quantified the extent of variation in overall IPV and female IPV victimization specialization across couples and neighborhoods. Second, we examined how overall IPV and female IPV victimization specialization among couples vary according to neighborhood-level concentrations of Latino immigrants. Informed by the immigrant revitalization and family violence perspectives, we hypothesized that overall IPV among couples will be lower as Latino immigrant concentration in neighborhoods increase. However, drawing from insights from studies on traditional Latino culture and IPV and feminist research couple violence, we hypothesized that female IPV victimization specialization will be higher in neighborhoods with high concentrations of Latino immigrants.

Methods

Data

We use data from two components of the PHDCN—the Longitudinal Cohort Survey (LCS) and the Community Survey (CS)—and the 1990 census. The PHDCN-LCS includes a sample of youth and their caregivers who were nested within "neighborhood clusters" (NCs) consisting of two to three census tracts. PHDCN-LCS respondents were selected through a multi-stage sampling design. First, 343 NCs were identified based on sociodemographic characteristics, researchers' knowledge of Chicago neighborhoods, and geographic markers (e.g., freeways, railroad tracks, etc.). Next, a stratified sample of 80 representative NCs were randomly selected based on their racial, ethnic, and socioeconomic composition. Researchers then randomly selected city blocks within the 80 NCs, and then sampled households within selected blocks. Respondents in seven age cohorts (0, 3, 6, 9, 12, 15, and 18 years) and respondents' primary caregivers (in every cohort except 18) were interviewed. Individual-level measures used in this study were based on survey responses from primary caregivers from cohorts 0 through 15 obtained during the first (1994–1997) wave of the PHDCN-LCS.

Neighborhood-level variables were measured with data from the PHDCN-CS and the 1990 census. The PHDCN-CS includes an independent sample of 8782 adults interviewed in 1994. For the PHDCN-CS, city blocks were randomly selected within the 343 NCs, and households were randomly selected to participate within each block. We aggregated PHDCN-CS data to the NC level, which serves as our neighborhood-level unit of analysis. Neighborhood-level structural measures (including Latino immigrant concentration) were derived from the 1990 census aggregated to the NC level.

Sample

All individual/couple data come from the first wave of the PHDCN-LCS. A total of 4352 primary caregivers were interviewed during wave 1 of the study.[1] We exclude caregivers who were not involved in a cohabiting, dating, or marriage relationship during the past year (roughly 14% of primary caregivers). Because we focus on individual-level processes that potentially mediate the association between Latino immigrant concentration and FIVS, we also drop 274 primary caregivers who were male from our analysis. Dropping male caregivers did not change our results. We also exclude respondents who had missing data on all IPV violence items. Our final sample includes 3398 female respondents nested in 80 neighborhoods. Descriptive statistics for our sample are provided in Table 1.

Variables

IPV Measures. We measured overall IPV and FIVS with 16 items from the Conflict Tactics Scale (Straus et al. 1996). Among the items, half (8) measured male perpetration and the other half (8) measured female perpetration of IPV. These items thus distinguished between male and female perpetration of violence, and indicated whether (1) the respondent or (2) her partner perpetrated each violent act (e.g., kicked, bit, or hit with a fist; choked his/her partner, etc.) during arguments that occurred over the past year. Scale items captured more frequently-occurring and less-severe violence (e.g., slapping) and less-frequent but more severe violent acts (e.g., threatening with a knife or gun). Measures of male and female violence perpetration were based on responses from the primary caregiver. Item responses were ordinal and ranged from 0 = "never" to 7 = "more than 20 times".[2] The full list of the scale items and their means are provided in Table 1.

We examined overall IPV and FIVS using a 3-level Item-Response Theory (IRT) model that quantified overall IPV and gender specialization across couples and neighborhoods. The model—comprised of scale items nested in women/couples, nested in neighborhoods—adjusted for item severity and differentiated between male- and female-perpetrated items. More detailed information on the specialization model is presented in the *Modeling Strategy* section below.

Individual/Couple Measures

We included numerous independent variables at the couple/individual level. *Age* was measured in years and race/ethnicity was captured with a series of four dummy variables indicating *black*, *U.S.-Born Latina*, *Foreign-Born Latina,* and *other* (*white* is the reference category). *Socioeconomic status* was measured with the first component from a principle component analysis of the maximum value (across respondents and live-in partners) for income, occupational status, and education. We controlled for a binary variable that indicated whether the *respondent is employed* (0 = no, 1 = yes) and included two binary measures of relationship status, including *cohabiting* and *dating* (*married* was the reference category).

[1] There are fewer caregivers than children in cohorts 0–15 because some households include multiple PHDCN-LCS child respondents but have a sole primary caregiver.

[2] Logit models based on the dichotomized measures (0 = no violence, 1 = violence occurred in past year) yielded substantively similar results.

Table 1 Sample descriptive statistics: means and standard deviations (individual/couple N = 3398, neighborhood N = 80)

Variables	Mean	(SD)
Female-perpetrated IPV items		
Pushed/grabbed partner	.75	(1.40)
Threatened to hit/throw something	.71	(1.49)
Thrown something at partner	.42	(1.09)
Hit partner with something	.35	(1.02)
Slapped partner	.29	(.89)
Kicked/bit/hit partner	.29	(.94)
Choked partner	.05	(.40)
Threatened partner with knife or gun	.09	(.51)
Male-perpetrated IPV items		
Pushed/grabbed partner	.57	(1.23)
Threatened to hit/throw something	.53	(1.26)
Thrown something at partner	.24	(.83)
Hit partner with something	.19	(.73)
Slapped partner	.25	(.81)
Kicked/bit/hit partner	.20	(.79)
Choked partner	.09	(.49)
Threatened partner with knife or gun	.04	(.30)
Individual/couple variables		
Age	32.57	(8.36)
Race/ethnicity		
White	.21	
Black	.32	
U.S.-born Latina	.12	
Foreign born Latina	.31	
Other	.04	
Relationship status		
Married	.63	
Cohabiting	.16	
Dating	.21	
Socioeconomic status	− .03	(1.41)
Employed	.54	
Religiosity	− .02	(.90)
Substance use in household	.21	(.30)
Family history of legal problems	.18	
Friend support	2.47	(.47)
Family support	2.74	(.38)
Linguistic acculturation	3.83	(1.53)
Neighborhood variables		
Latino immigrant concentration	.33	(.79)
Concentrated disadvantage	− .11	(1.09)
Residential stability	− .25	(1.04)
Religiosity	.59	(.12)

Table 1 continued

Variables	Mean	(SD)
Non-intervention norms	3.32	(.31)
Intolerance of fighting	4.07	(.31)
Family ties	.45	(.16)
Friend ties	.83	(.08)
Reciprocated exchange	2.51	(.22)
Collective efficacy	3.44	(.27)

We also included measures that may confound the association between neighborhood characteristics and the IPV outcomes. We included a measure of *religiosity*, which was based on two items that tap the extent to which respondents feel religion provides her with guidance (1 = "a great deal of guidance" to 4 = "no guidance"), and how often she attended religious services (1 = "almost every week or more" to 5 = "never"). To measure religiosity, we first reverse-coded the items and took the mean of the standardized items. A measure of *substance use in the household* was based on interviewer assessments (performed during the in-home interview) that indicated whether there was evidence of (1) cigarette smoking or (2) alcohol/illegal drug use in the household (0 = no, 1 = yes). Our measure of substance use in the household was based on the mean of the two household assessment items. We also controlled for *family history of legal problems,* which was binary and indicated whether the respondent reported that a member of her immediate or extended family has a history of arrest or incarceration (0 = no, 1 = yes).

Individual social attachments may help account for the association between residence in ethnic enclaves and overall levels of IPV. We therefore included measures of *friend support* and *family support*, which were continuous scales based on caregiver responses to items such as "I feel very close to some of my friends" and "I know my family will always stand by me." To measure friend support and family support we first reverse-coded the responses (which originally ranged from 1 = "very true" to 3 = "not true") to indicate higher support and took the means of the items for the respective scales (friend support alpha = .758; family support alpha = .791). Residence in Latino immigrant neighborhoods may also influence IPV through delayed acculturation. We therefore included a measure of *linguistic acculturation*, which is based on 6 items that captured the extent to which respondents speak English or another language with their (1) children, (2) spouse/partner, (3) friends, (4) schoolmates/co-workers, and listen/watch English programming on (5) television, and (6) the radio (ordinal responses ranging from 1 = "English only" to 5 = "other language only"). To measure linguistic acculturation, we first reverse-coded each item to indicate higher English use and took the mean of the items (alpha = .965).

Neighborhood Measures

We include numerous neighborhood-level structural and sociocultural process variables that may be associated with IPV. First, we applied principal component analysis with oblique rotated factor patterns to nine measures based on 1990 census data to construct measures of NC-level structural characteristics. The first component from the analysis—*concentrated disadvantage*—was dominated by the percentage unemployed, percentage of residents with incomes below the poverty line, percentage of residents on public assistance,

percentage of female-headed households, and percentage of residents who are children younger than 18. *Residential stability*—the second component consisted primarily of the percentage of households that are owner-occupied and percentage of persons living in the same house for five or more years. Finally, *Latino immigrant concentration*—our key neighborhood-level measure—dominated the third component and primarily consisted of the percentage of residents who are Latino and percentage of foreign-born residents.

Previous research suggests cohesion and informal social control within neighborhoods protect against IPV (Browning 2002; Jackson 2016). We therefore included a measure of *collective efficacy* that combined two PHDCN-CS subscales—*social cohesion/trust* (e.g., the extent that residents feel their neighborhood is close-knit, etc.) and *informal social control* (e.g., the extent that neighbors would intervene if children were spray-painting graffiti on a local building). To measure collective efficacy, we combined the 10 items comprising the subscales into a single measure of neighborhood collective efficacy and extracted the neighborhood-level EB-adjusted intercepts from a three-level item-response theory (IRT) model (multilevel reliability = .803, ICC = .202).[3] We also controlled for neighborhood *religious involvement*, which represented the proportion of respondents within the NC who reported that a member of their household belonged to a religious organization.

We also considered whether the associations between Latino immigrant concentration and IPV and FIVS were attributable to key neighborhood-level socio-cultural processes. We included two measures to capture the presence of kin and informal friendship networks with responses from PHDCN-CS respondents that indicate the presence of ties among (1) friends and (2) family members within the neighborhood. Following Wright and Benson (2010), we constructed measures of *family ties* and *friend ties* that indicate the proportions of respondents in each NC that had at least one family member and one friendship tie (respectively) within the neighborhood. We also constructed a measure of *reciprocated exchange*, which captures neighbors' tendencies to engage in social interactions with neighbors. Following Browning et al. (2004), we combined 4 measures from the PHDCN-CS that capture the frequency with which neighbors engage in neighborly interactions (e.g., parties/get-togethers with neighbors etc.; 1 = "never" to 4 = "often"). To measure reciprocated exchange across neighborhoods, we extracted the EB-adjusted intercepts from a 3-level IRT model comprised of scale items nested in individuals nested in neighborhoods (multilevel reliability = .667, ICC = .109).

High disapproval of violence among Latino immigrants (Sampson and Bartusch 1998) may discourage IPV within Latino immigrant neighborhoods. We therefore included a neighborhood-level measure of *intolerance of fighting*, which taps the extent to which PHDCN-CS respondents feel it is wrong for (1) teenagers around 13 years of age and (2) individuals around 19 years of age to get into fist fights. Initial responses were ordinal, ranging from 1 ("extremely wrong") to 5 ("not at all wrong"). We measured intolerance of fighting by first reverse-recoding the items and calculating individual-level means of the items and taking the NC-level means of the combined items. Although the PHDCN-CS did not directly measure views on IPV, respondents did indicate whether they felt fighting between friends and family are public versus private matters. Following Browning (2002), we constructed a neighborhood measure of *non-intervention norms* PHDCN-CS respondents' agreement with the statement "Fighting between friends or within families is nobody else's business" (1 = "strongly agree" to 5 = "strongly disagree"). To measure

[3] All IRT models used to construct neighborhood social process variables were unconditional at the individual (level 2) and neighborhood (level 3) levels.

non-intervention norms, we first reverse-coded individual responses and calculated the within-NC means.

Analytic Strategy

Item-Response Theory (IRT) Model

We employed a statistical approach that extends Osgood and Schreck's (2007) 2-level IRT model designed to quantify and assess individual-level correlates of criminal specialization (Zimmerman and Posick 2014). One key advantage of simultaneously examining overall levels of IPV and gender-directed violence is that it does not rely on post hoc comparison of results from separate models from partner violence victimization and perpetration (Schreck et al. 2012).

Our models were comprised of IPV perpetration and victimization items at level 1, respondents at level 2, and neighborhoods at level 3. The measurement model at level-1 was expressed as:

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} FV_{ijk} + \sum_{m=2}^{16} \pi_{mjk} D_{mijk} + e_{ijk} \quad e_{ijk} \sim N\left(0, \sigma^2\right)$$

where π_{mjk} is item m's severity or difficulty score, D_{mijk} is a grand-mean centered dummy variable that is positive if response i refers to item m (and negative if otherwise), and coefficient π_{0jk} represents respondent j in neighborhood k's overall level of IPV. FV_{ijk} is a group-mean centered dummy variable with positive values indicating that item i refers to a female victimization/male-perpetrated item (e.g., "my partner choked me") and negative values indicating a female-perpetrated item (e.g., "I choked my partner"). The specialization coefficient, π_{1jk} captures woman j in neighborhood k's tendency to experience IPV victimization, independent of the overall level of IPV within her relationship. Positive values for π_{1jk} indicate that greater tendencies for a woman to be victimized, while negative values indicate a greater tendency for a woman to perpetrate IPV. Values at or close to 0 indicate that couple j in neighborhood k did not exhibit differential tendencies toward violence against the female or male partner. Finally, e_{ijk} is a random effect with mean 0 and variance σ^2.

Level 2 (i.e., person-level) equations measured the associations between individual-level covariates and overall IPV and FIVS:

$$\pi_{0jk} = \beta_{00k} + \sum_{p=1}^{P} \beta_{0pk} X_{pjk} + r_{0jk} \quad r_{0jk} \sim N(0, \tau_{\pi 0})$$

$$\pi_{1jk} = \beta_{10k} + \sum_{p=1}^{P} \beta_{1pk} X_{pjk} + r_{1jk} \quad r_{1jk} \sim N(0, \tau_{\pi 1})$$

where β_{00k} is a neighborhood intercept, β_{0pk} is a coefficient capturing the association between covariate p and IPV in neighborhood k, X_{pjk} is the value of covariate p for respondent j in neighborhood k, and r_{0jk} is a random effect with variance $\tau_{\pi 0}$. Coefficient β_{10k} adjusts individual j in neighborhood k's level of FIVS by the level of FIVS within her neighborhood. Coefficient β_{1pk} captures the association between covariate p and FIVS in neighborhood k, and r_{1jk} is a random effect with variance $\tau_{\pi 1}$.

The final equations measured the associations between neighborhood covariates and IPV and female IPV victimization specialization at level 3:

$$\beta_{00k} = \gamma_{000} + \sum_{q=1}^{Q} \gamma_{00q} Z_{qk} + \mu_{00k} \quad \mu_{00k} \sim N\left(0, \tau_{\beta 00}\right)$$

$$\beta_{10k} = \sum_{q=1}^{Q} \gamma_{10q} Z_{qk} + \mu_{10k} \quad \mu_{10k} \sim N\left(0, \tau_{\beta 10}\right)$$

where γ_{000} is the grand-mean intercept, or the adjusted mean level of overall IPV within the sample, γ_{00q} measures the association between neighborhood-level covariate q and overall IPV, Z_{qk} is the value of covariate q in neighborhood k, and μ_{00k} is a neighborhood-level random effect with variance $\tau_{\beta 00}$. Coefficient γ_{10q} captures association between neighborhood-level covariate q and FIVS. Finally, μ_{10k} is a neighborhood-level random effect for FIVS that has a mean of 0 and variance $\tau_{\beta 10}$. The variance component $\tau_{\beta 10}$ captures the overall level of differentiation in IPV victimization across neighborhoods.

Missing values for individual-level independent variables were imputed with the ICE procedure in Stata13 (Royston 2004). Models were estimated based on 10 imputed data sets, using the imputation estimation procedure in HLM7. Following Jackson (2016), we weighted all models at the respondent/couple level (i.e., level 2) to adjust for the unequal probability of selection that was due to excluding respondents who reported no relationship. Our weight represents the inverse probability that the respondent was in a dating, cohabiting, or marriage relationship in the year before the interview.

A limitation to the multilevel IRT approach used here and in other studies is that it assumes uncorrelated errors across levels of analysis. But given the likelihood of correlated errors across levels, we are cautious in claiming causal inference, particularly due to the potential for individual neighborhood selection processes and omitted variables to confound our results. We therefore reiterate that our findings are descriptive, meaning they assessed the extent to which overall IPV and FIVS vary across neighborhood-levels of Latino immigrant concentration, and we refrain from making or implying causal claims regarding any associations observed in our models. That said, this is the best strategy to map out variation in FIVS across neighborhoods.

Testing Model Assumptions

The IRT model assumes all scale items are equally related to the latent construct. Following Osgood and Schreck (2007), we evaluated this assumption by estimating the correlations between scale items and through an exploratory factor analysis that yielded high positive loadings on the first factor of the factor analysis for all items. Correlational analysis indicated all scale items were positively correlated with one another and the female IPV victimization items were more strongly correlated with one another than the female IPV perpetration items.[4]

[4] Two additional severe violence items, *Partner used a knife or gun and I used a knife or gun* were extremely rare in our sample and led to the violation this key assumption. As a result, these items were excluded from the scale but their inclusion did not affect our results.

Table 2 Variance and Reliability of Overall IPV and Female IPV Victimization Specialization Across Couples and Neighborhoods

	Overall IPV		FIVS	
	Couple	Neighborhood	Couple	Neighborhood
Variance	.327** (.009)	.016** (.004)	.262** (.009)	.007** (.003)
Reliability	.915	.608	.682	.406

Standard errors are in parentheses

** $p < .01$

Results

Reliability and Variation of IPV and FIVS

We first tested whether overall levels of IPV and FIVS vary across persons and neighborhoods beyond what is expected by chance. To do so, we estimated a 3-level model with item severities at level-1 but omitted all person- and neighborhood-level variables. Multilevel reliabilities and variances from this model are presented in Table 2. Given we estimated our models using maximum likelihood, statistical significance of the variances were assessed with deviance tests that compared models that include and exclude the corresponding term (Osgood and Schreck 2007).

Examining the variance components from the unconditional model, we found significant variation in overall levels of IPV across both couple ($\tau_{\pi 0} = .327$, $p < .001$) and neighborhood-levels ($\tau_{\beta 00} = .016$, $p < .001$). The variance components for FIVS were also significant at both the couple ($\tau_{\pi 1} = .262$, $p < .001$) and neighborhood levels ($\tau_{\beta 10} = .007$, $p < .001$), indicating that tendencies toward IPV role differentiation varied across analysis levels.

Table 2 displays the individual- and neighborhood-level reliabilities, which assessed the precision with which the latent measures captured tendencies toward overall IPV and FIVS across individuals and neighborhoods (Zimmerman and Posick 2014). The couple-level reliability estimates for overall IPV (.915) exceeded the conventional standard for internal consistency (i.e., .700), while the couple-level FIVS reliability estimate (.617) approached the conventional standard. The neighborhood reliability estimate for overall IPV (.680) also approached the conventional standard, while the FIVS (.417) relatability estimate was noticeably lower, which is fairly common in multilevel models in which neighborhoods represent the higher unit of analysis (Zimmerman and Posick 2014). In sum, the individual- and neighborhood-level variance estimates indicated variation in both overall IPV and FIVS *between* and *within* neighborhoods. Below we explore the correlates of overall IPV and FIVS.

Neighborhood Latino Immigrant Concentration overall IPV and FIVS

We display mean levels of female and male IPV perpetration across low and high levels of Latino immigrant concentration in Fig. 1. In this figure, the solid-black bars represent mean levels of female-perpetrated IPV items in neighborhoods with low Latino immigrant concentration (i.e., $< 20\%$ percentile, 16 neighborhoods) and the striped black bars

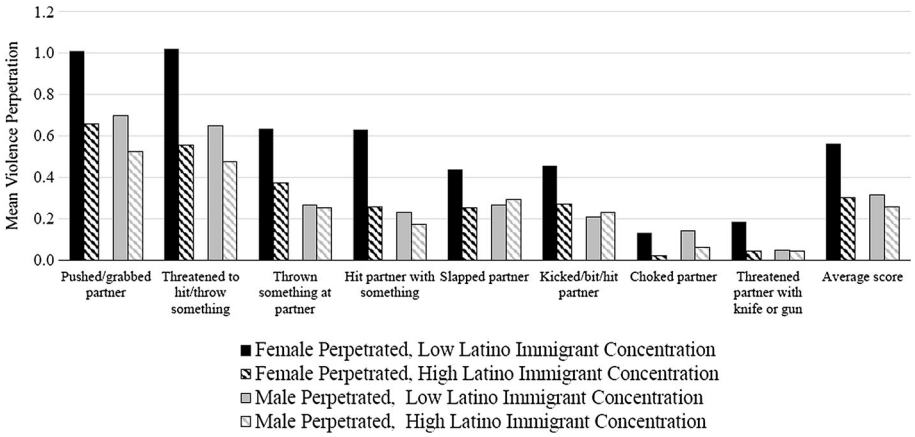

Fig. 1 Mean levels of female and male perpetration IPV within neighborhoods with low (< 20th percentile, N = 16) versus high (≥ 80th percentile, N = 16) Latino immigrant concentration

indicate mean levels of female-perpetrated IPV items in neighborhoods with high Latino immigrant concentration (i.e., ≥ 80% percentile, 16 neighborhoods). The solid gray bars display mean levels of male-perpetrated IPV items in neighborhoods with low Latino immigrant concentration and the striped gray bars indicate the mean levels of male-perpetrated IPV items in neighborhoods with high Latino immigrant concentration.

Figure 1 reveals interesting patterns of gendered IPV perpetration. Focusing on female IPV perpetration, women residing in neighborhoods with high Latino immigrant concentration (striped black bars) reported much lower levels of perpetration across all IPV items compared to women residing in neighborhoods with low concentrations of Latino immigrants (solid black bars). Comparing male IPV perpetration, men from neighborhoods with high Latino immigrant concentration (striped gray bars) perpetrate lower levels of more common forms of IPV (e.g., pushed/grabbed partner) and some rarer/more severe forms of IPV (e.g., hitting partner with something) than male residents of neighborhoods with low Latino immigrant concentration (solid gray). For other items, including thrown something at partner, slapped partner, kicked/bit/punched partner, and threatened partner with a knife or gun, the mean levels of male IPV perpetration were similar among men residing in high versus low Latino immigrant concentration neighborhoods. Figure 1 indicates that men tended to abstain from some—but not all forms—of IPV perpetration as Latino immigrant concentration increases.

Comparing IPV perpetration within neighborhoods with low levels of Latino immigrant concentration among women (solid black bars) and men (solid gray bars), we found that female IPV perpetration was higher than mean levels of male IPV perpetration across all items, except for choked partner which are roughly equivalent. Conversely, when examining IPV perpetration levels in neighborhoods with high levels of Latino immigrant concentration among women (striped black) and men (striped gray), the gender gaps in IPV perpetration were much narrower compared to those from neighborhoods with low levels of Latino immigrant concentration.

Figure 1 reveals important patterns regarding female and male IPV perpetration in neighborhoods with low versus high Latino immigrant concentration. The data supported the immigrant revitalization perspective: female and male IPV perpetration rates were lower in neighborhoods with high Latino immigrant concentration compared to

neighborhoods with low Latino immigrant concentration, for most items. However, *men refrained from IPV perpetration at much lower rates than women in neighborhoods with high Latino immigrant concentration*. To summarize: (1) overall IPV tended to be lower in neighborhoods with large concentrations of Latino immigrants, (2) women residing in Latino immigrant neighborhoods reported similar or lower levels of victimization compared to women neighborhoods with low Latino immigrant concentrations, and (3) the gender gap in IPV *perpetration* was wider among couples residing in neighborhoods with low concentrations of Latino immigrants compared to neighborhoods with high Latino immigrant concentrations.

Multilevel Models of Overall IPV and FIVS

We display results from 3-level IRT models testing the associations between neighborhood and individual variables and overall IPV and female IPV victimization specialization in Tables 3 and 4. The estimates for the overall IPV equations reflect the change in the score for a response to an "average" item with a unit increase in the independent variable. Conversely, the coefficients for the FIVS equations indicate the change in the difference between the level of IPV perpetration and the level of IPV victimization for a given item with a one-unit increase the independent variable (Osgood and Schreck 2007; Schreck et al. 2008). Substantively, a positive and significant coefficient on the FIVS equation indicates that the variable was associated with an increased tendency for women to be victimized relative to their tendency to perpetrate violence against male partners.

Model 1 (Table 3) included individual controls and neighborhood structural variables. Focusing on the overall IPV equation, we found that age, socioeconomic status, employment, and religiosity were negatively associated with overall IPV. Compared to white women, black women and US-born Latinas experienced more overall IPV, while foreign-born Latinas experienced less overall IPV. Overall IPV was also higher among cohabiting couples (compared to married couples), and substance use in the household and family history of legal problems were positively associated with overall IPV. Among the neighborhood variables, concentrated disadvantage was positively associated with overall IPV, while residential stability was negatively associated with overall IPV. Regarding our focal neighborhood variable, Latino immigrant concentration was negatively associated with overall IPV, *which suggests that overall levels of IPV tended to decrease as Latino immigrant concentration in neighborhoods increased.*

Turning to the FIVS equation in Model 1 (Table 3), age was positively associated with FIVS. Compared to white women, black and US-born Latina women had lower tendencies to report IPV victimization compared to perpetration. Women in dating relationships and who had higher socioeconomic status had lower tendencies toward victimization specialization. Women who were employed also reported a higher tendency toward IPV victimization specialization. Among the neighborhood-level variables in the FIVS equation in Model 1 (Table 4), residential stability was positively associated with FIVS. Importantly, Latino immigrant concentration was positively associated with FIVS, *indicating that when couple violence occurred, women more often occupied the victim role (versus perpetrator role) as Latino immigrant concentration increased.*

Model 2 (Table 3) introduced neighborhood-level social and cultural process variables to assess whether they mediated the associations between Latino immigrant concentration on overall IPV and FIVS. Turning to the neighborhood-level coefficients of the IPV equation in Model 2, the *reciprocated exchange* coefficient was negative and marginally significant, suggesting that overall levels of IPV decreased with increasing neighbor

Table 3 Multilevel IRT models of overall IPV and female IPV victimization specialization

	Model 1		Model 2	
	Overall IPV	FIVS	Overall IPV	FIVS
Individual variables				
Age	− .010** (.001)	.008** (.002)	− .010** (.001)	.008** (.002)
Race/ethnicity (white is reference)				
Black	.078* (.035)	− .122** (.032)	.065^{+} (.037)	− .129** (.039)
Latina	.078^{+} (.043)	− .094* (.039)	.072 (.043)	− .090* (.040)
Foreign born Latina	− .080* (.032)	.024 (.036)	− .089** (.034)	.027 (.039)
Other	.067 (.055)	− .084^{+} (.044)	.058 (.055)	− .087^{+} (.046)
Relationship status (married is reference)				
Cohabiting	.151** (.038)	− .055 (.037)	.149** (.038)	− .054 (.037)
Dating	.012 (.032)	− .119** (.033)	.010 (.032)	− .119** (.033)
Socioeconomic status	− .055** (.009)	.005 (.011)	− .055** (.009)	.006 (.011)
Respondent is employed	− .062** (.020)	.057** (.020)	− .064** (.020)	.056** (.021)
Religiosity	− .048** (.014)	− .003 (.011)	− .048** (.013)	− .003 (.011)
Substance use in the household	.163** (.038)	− .035 (.039)	.166** (.038)	− .035 (.039)
Family history of legal problems	.175** (.031)	.007 (.035)	.177** (.031)	.006 (.035)
Neighborhoods variables				
Latino immigrant concentration	− .046** (.016)	.050** (.018)	− .044* (.018)	.047* (.020)
Concentrated disadvantage	.040* (.020)	.000 (.015)	.058* (.028)	− .010 (.016)
Residential stability	− .024* (.010)	.022* (.010)	− .010 (.015)	.023 (.014)
Collective efficacy			.049 (.063)	− .021 (.058)
Family ties			− .095 (.108)	.060 (.078)
Friend ties			− .047 (.143)	− .345** (.128)
Reciprocated exchange			− .138^{+} (.074)	.030 (.077)
Intolerance of fighting			− .005 (.043)	− .009 (.044)
Non-intervention norms			.004 (.034)	− .001 (.037)
Religiosity			.001 (.140)	.053 (.104)
Intercept	.325** (.010)		.325** (.010)	

Robust standard errors are in parentheses

** $p < .01$; * $p < .05$; $^{+}p < .10$ (two-tailed tests)

interactions. The magnitude of the coefficient for *residential stability* decreased by more than half and became non-significant, suggesting that neighbor interactions may mediate the association between residential stability and overall levels of partner violence. Notably, introducing the neighborhood-level sociocultural process variables in Model 2 did little to change the coefficient for *Latino immigrant concentration* on the overall IPV equation observed in Model 1. Introducing the neighborhood-level social and cultural variables also did little to change the individual-level coefficients on the overall IPV equation from the previous model, except for *black*, which decreased in magnitude (but remained marginally-significant) and *U.S.-born Latina*, which became non-significant.

Table 4 Multilevel IRT models of overall IPV and female IPV victimization specialization

	Model 3		Model 4		Model 5	
	Overall IPV	FIVS	Overall IPV	FIVS	Overall IPV	FIVS
Individual variables						
Age	− .009** (.001)	.008** (.002)	− .010** (.001)	.008** (.002)	− .009** (.001)	.008** (.002)
Race/ethnicity (white is reference)						
Black	.066^{+} (.037)	− .137** (.039)	.034 (.037)	− .111** (.039)	.036 (.037)	− .115** (.039)
Latina	.078^{+} (.043)	− .096* (.041)	.087* (.043)	− .100* (.041)	.090* (.042)	− .101* (.041)
Foreign born Latina	− .063^{+} (.034)	.013 (.039)	.066^{+} (.038)	− .065 (.048)	.074* (.037)	− .071 (.048)
Other	.063 (.052)	− .094* (.045)	.063 (.054)	− .090* (.045)	.066 (.052)	− .095* (.045)
Relationship status (married is reference)						
Cohabiting	.135** (.038)	− .058 (.037)	.127** (.037)	− .041 (.038)	.117** (.037)	− .047 (.038)
Dating	− .001 (.032)	− .117** (.033)	− .027 (.031)	− .097** (.035)	− .032 (.031)	− .097** (.035)
Socioeconomic status	− .054** (.010)	.010 (.012)	− .071** (.009)	.015 (.012)	− .068** (.009)	.020 (.012)
Respondent is employed	− .060** (.019)	.058** (.020)	− .067** (.020)	.058** (.021)	− .065** (.019)	.053** (.019)
Religiosity	− .041** (.014)	.000 (.011)	− .042** (.014)	− .007 (.010)	− .037** (.014)	− .003 (.010)
Substance use in the household	.164** (.039)	− .033 (.039)	.164** (.038)	− .034 (.039)	.155** (.040)	− .016 (.035)
Family history of legal problems	.157** (.030)	− .002 (.034)	.160** (.031)	.016 (.034)	.140** (.029)	.007 (.033)
Friend support	.038^{+} (.022)	− .064** (.024)			.027 (.022)	− .055* (.023)
Family support	− .165** (.033)	− .035 (.041)			− .153** (.034)	− .045 (.041)
Linguistic acculturation			.076** (.011)	− .045** (.012)	.069** (.010)	− .044** (.012)
Neighborhood variables						
Latino immigrant concentration	− .045* (.019)	.048* (.020)	− .037* (.018)	.043* (.019)	− .038* (.018)	.043* (.020)
Concentrated disadvantage	.052^{+} (.027)	− .011 (.016)	.053^{+} (.027)	− .007 (.016)	.047^{+} (.027)	− .009 (.016)
Residential stability	− .010 (.015)	.024^{+} (.014)	− .010 (.015)	.023 (.014)	− .009 (.015)	.023 (.014)
Collective efficacy	.042 (.064)	− .023 (.058)	.030 (.065)	− .009 (.056)	.023 (.065)	− .012 (.057)
Family ties	− .081 (.104)	.063 (.079)	− .101 (.108)	.064 (.079)	− .087 (.104)	.070 (.079)

Table 4 continued

	Model 3		Model 4		Model 5	
	Overall IPV	FIVS	Overall IPV	FIVS	Overall IPV	FIVS
Friend ties	− .039 (.142)	− .339* (.129)	− .037 (.144)	− .351** (.129)	− .037 (.143)	− .344* (.129)
Reciprocated exchange	− .133^{+} (.074)	.035 (.077)	− .142^{+} (.074)	.033 (.076)	− .133^{+} (.072)	.035 (.076)
Intolerance of fighting	− .005 (.044)	− .010 (.044)	.008 (.043)	− .016 (.044)	.005 (.044)	− .017 (.044)
Non-intervention norms	.006 (.034)	.004 (.037)	.007 (.035)	− .002 (.037)	.010 (.034)	.002 (.037)
Religiosity	.007 (.143)	.055 (.106)	.022 (.137)	.039 (.105)	.022 (.140)	.043 (.106)
Intercept	.324** (.010)		.323** (.010)		.322** (.010)	

Robust standard errors are in parentheses

** $p < .01$; * $p < .05$; $^{+}p < .10$ (two-tailed tests)

Turning to the FIVS equation in Model 2 (Table 3), the coefficient for *friend ties* was negative and significant. None of the other neighborhood sociocultural processes were associated with FIVS. After introducing the neighborhood-level sociocultural measures the coefficient for and *Latino immigrant concentration* changed little and remained positive and significant.

Model 3 (Table 4) introduced *friend support* and *family support* to the individual-level equations. Focusing on overall IPV, the *family support* coefficient was negative and significant while the *friend support* coefficient was positive and marginally significant. Importantly, the magnitude of the coefficient for *Latino immigrant concentration* on the overall IPV equation changed little with the inclusion of the social support variables, suggesting that individual support does not explain the association between Latino immigrant concentration and overall IPV. However, the coefficient for *foreign-born Latina* decreased in magnitude from Model 2 and became only marginally significant. Turning to the FIVS equation in Model 3, *friend support* was negatively associated with FIVS. Including the social support variables in the FIVS equation also did little to change the magnitude of the positive and significant coefficient for *Latino immigrant concentration* observed in the previous model. Results from Model 3 suggest individual-level support does not account for the associations between Latino immigrant concentration and overall IPV or FIVS among resident couples.

Model 4 (Table 4) omitted friend and family support measures and introduced *linguistic acculturation* to the individual-level equations. Linguistic acculturation was positively associated with overall IPV. Interestingly, the magnitude of the negative *Latino immigrant concentration* coefficient on the overall IPV equation decreased by roughly 16% (from Model 2) but remained negative and significant. Thus individual-level acculturation may account for part of the association between Latino immigrant concentration and overall IPV within couples observed in Model 2. We also found that the negative coefficient for *foreign-born Latina* decreased in magnitude and became marginally significant once *linguistic acculturation* was included in the model. This suggests that delayed acculturation partially accounts for the negative association between foreign-born Latina and overall IPV. Notably, the coefficient for *U.S.-born Latina* increased in magnitude in model 4 with the inclusion of the linguistic acculturation variable.

Turning to the specialization equation in Model 4, *linguistic acculturation* was negatively and significantly associated with FIVS, suggesting that although overall levels of couple violence were higher among more linguistically acculturated women, more acculturated women exhibited lower tendencies towards victimization specialization. Importantly, the coefficient for *Latino immigrant concentration* on the specialization equation decreased by roughly 9% from Model 2 but remained positive and significant, indicating acculturation does not fully account for women's tendencies towards IPV victimization in neighborhoods with high concentrations of Latino immigrants.

Finally, we re-introduced friend and family support to the equations in Model 5. We found that the magnitudes and significance levels of those coefficients were similar to those observed in Models 3 and 4. We also found that the coefficients for Latino immigrant concentration on the overall IPV equation remained negative and significant, while the coefficient for Latino immigrant concentration FIVS equation remained positive and significant.

Summary of Key Findings

Our multilevel specialization models indicated that *couples exhibited lower overall levels of IPV as Latino immigrant concentration within neighborhoods increased*, which supported key arguments from the immigrant revitalization perspective. However, key neighborhood-level sociocultural process variables and individual acculturation did not fully account for the negative association between Latino immigrant concentration and couples' overall IPV. Thus, unmeasured neighborhood-level social and cultural factors may help explain why overall levels of IPV were lower with increasing Latino immigrant concentration. We also found that Latino immigrant concentration was positively associated with women's victimization specialization. Thus, while overall levels of IPV were lower in Latino immigrant neighborhoods, women's level of *IPV victimization relative to the level of perpetration was higher with rising Latino immigrant concentration*. However, as Fig. 1 illustrated, the Latino immigrant concentration FIVS coefficient was most likely positive and significant because *women refrained from IPV at much higher rates than their male partners in neighborhoods with high Latino immigrant concentration.* Importantly, the coefficient for Latino immigrant concentration on the FIVS equation remained positive and significant after including key sociocultural and acculturation measures.[5] However, we were unable to measure *marianismo* within neighborhoods, which may help explain why women exhibited strong tendencies to refrain from IPV perpetration in neighborhoods with high concentrations of Latino immigrants.

Discussion

Little research has explored the association between neighborhood-level concentrations of Latino immigrants and couple violence. Importantly, research on IPV in Latino immigrant neighborhoods has yielded conflicting findings and has almost exclusively focused on female victimization (Perilla et al. 1994; Wright and Benson 2010). Most studies on women's IPV victimization in Latino communities however, are qualitative or small in scale and therefore preclude assessing the association between Latino immigrant concentrations and couple violence across neighborhoods. As a result, how couple violence varies across neighborhood-level concentrations of Latino immigrants remains unclear.

This study synthesized numerous perspectives to examine the association between Latino immigrant concentrations in neighborhoods and residents' couple violence. Utilizing statistical methods and insights from the criminal specialization literature (Osgood and Schreck 2007) and informed by both family violence and feminist research on couple violence, we first quantified variation in overall couple violence and *female IPV victimization specialization*—which we defined as the tendency for IPV to be directed at a female partner, independent of the overall level of IPV within the couple (Osgood and Schreck 2007)—across couples and neighborhoods. We found that overall levels of IPV and FIVS varied across both couples and neighborhoods.

Our findings revealed men residing in neighborhoods with high concentrations of Latino immigrants perpetrated similar or lower levels of IPV as men residing in neighborhoods

[5] Notably, the coefficients for Latino immigrant concentration were relatively small in magnitude, which is common in multilevel "neighborhood effects" studies on individuals. However, these coefficients relate to all couples within neighborhoods and are thus important from a criminological and public health standpoint (Browning et al. 2013).

with low concentrations of Latino immigrants. Conversely, levels of female-perpetrated IPV were much lower in neighborhoods with high concentrations of Latino immigrants compared with neighborhoods with low concentrations. Statistical analyses indicated a negative association between Latino immigrant concentration and overall couple violence. But independent of overall levels of IPV within couples, Latino immigrant concentration within neighborhoods was positively associated with FIVS.

Our findings have numerous implications for current debates on IPV among Latino/as as well as broader criminological research on immigration and crime. Our results suggest that like other forms of interpersonal violence, levels of overall IPV in neighborhoods with high concentrations of Latino immigrants tend to be equal to or lower than levels of IPV in neighborhoods with fewer Latino immigrants (Ousey and Kubrin 2018). This finding adds to the scholarly consensus regarding increasing immigrant presence within communities and crime (Lee and Martinez 2009). Importantly, neighborhood-level variables capturing social processes that are central to the immigrant revitalization perspective (e.g., family/friend ties) did not account for the association between Latino immigrant concentration and overall IPV. Although these measures may not fully capture the social organization processes that scholars theorize explain the immigrant concentration/neighborhood crime link, gender and cultural processes likely play important roles in explaining why violence tends to be lower in immigrant communities.

Our findings partially support previous studies on Latino culture and IPV. Some research suggests *marianismo* norms—which emphasize female chastity and deference—discourage women in Latino immigrant communities from perpetrating IPV against their male partners. Indeed, women tended to refrain from IPV perpetration as Latino immigrant concentration increased, while female victimization specialization increased with rising Latino immigrant concentration. Together these results suggest that women are more often the victim (versus the perpetrator) when IPV occurs in couples as Latino immigrant concentration increases. This finding may indicate that masculine norms rooted in *machismo* offset the crime-reducing effects of *familismo* and other social organizational characteristics of Latino immigrant communities (e.g., strong kin networks) that could otherwise reduce male IPV perpetration.

More broadly, our study reinforces the need for research on how gender and cultural processes operating within Latino immigrant communities affect crime and violence (Ousey and Kubrin 2018). Although we found women refrained from *couple* violence much more than men as Latino immigrant concentration increased, it remains unknown whether female offending occurring outside of the home is similarly responsive to increasing neighborhood concentrations of Latino immigrants. Reduced female offending that is rooted in *marianismo* norms may help explain why Latino immigrant concentration tends to be negatively associated with neighborhood crime. Future studies may also assess whether Latino immigrant concentration is associated with male offending that occurs inside versus outside of the home. For instance, *familismo* and *caballerismo* may discourage IPV among men and boys through increased family attachment. Future research that measures cultural processes that potentially operate within Latino immigrant neighborhoods may provide novel insights into crime in Latino immigrant communities.

Our application of the criminal specialization model to heterosexual IPV allowed us to simultaneously examine how factors differentially co-vary with overall levels of IPV versus female-directed violence. Our study suggests that individual and neighborhood factors are correlated with overall levels of couple violence—which supports family violence perspectives—but certain factors increase women's risk of IPV victimization when it occurs—which supports feminist perspectives. Future research that applies methods and

insights from the criminal specialization literature may help further untangle the factors that contribute to overall couple violence versus gender-directed violence. Such research may also help integrate aspects of family violence and feminist perspectives into more holistic theories of partner violence. Alternatively, research on IPV specialization may also help determine whether violence against male and female partners have distinct etiologies, or if family violence theories are sufficient to explain IPV (Felson and Lane 2010). Either way, methods and insights from the criminal specialization perspective may help address enduring theoretical debates among IPV scholars.

Our study also expands the understanding of criminal specialization. To our knowledge, no study has applied the methods used in the study of criminal specialization to quantify couple- and neighborhood-level variation in couple violence or gender specialization in couple violence. Our strategy for modeling couple violence allowed us to quantify both variation in IPV across neighborhoods and FIVS across couples and geographic contexts. Future research that applies our approach to measuring variation in overall levels of IPV and gender specialization across different units of analysis (e.g., cities, states, or nations) may help understand how gendered processes operating within larger social contexts shape men's and women's experiences with IPV.

We caution against interpreting the positive and significant association between Latino immigrant concentration and female IPV victimization specialization as indicating that women's risk of IPV victimization increases as Latino immigrant concentrations in neighborhoods rise. Rather, our results suggest that as Latino immigrant concentration rises in neighborhoods, IPV is increasingly directed at women *when it occurs*. Considering overall levels of IPV within couples, the positive and significant FIVS coefficient for Latino immigrant concentration is primarily a function of *women refraining from IPV perpetration at much higher rates than their male counterparts* as Latino immigrant concentration increases. Thus, while the gender gap in IPV perpetration closes as neighborhood-level concentrations of Latino immigrants rise, women have similar levels of IPV victimization across different neighborhood levels of Latino immigrant concentration. Thus, claims made by researchers, such as "emotional and physical abuse of Latinas by their male partners is deeply woven into the tapestry of Latino culture in the United States" (Perilla et al. 1994:325) may be exaggerated, partially because these claims were primarily informed by studies that could not compare IPV victimization rates across several neighborhoods. Furthermore, even if patriarchal norms prevail within Latino immigrant communities (which remains an empirical question), researchers may have exaggerated the adverse consequences of *machismo* on women's IPV victimization in Latino immigrant enclaves.

We encourage researchers to be sensitive to the policy implications of certain claims regarding IPV in Latino immigrant communities. For instance, emphasizing *machismo* while neglecting pro-social aspects of Latino masculinity may buttress popular but erroneous assumptions regarding violence among Latino immigrants that reinforce negative stereotypes of immigrant communities (Ferraro 1989) and justify anti-immigrant policies. Such policies likely erode any benefits that influxes of immigrants bestow on local communities (Lyons et al. 2013). Similarly, immigrant women's experiences of IPV are often rooted in adverse circumstances (e.g., uncertain legal status, lack of incorporation, etc., Menjívar and Salcido 2002), which anti-immigrant policies exasperate. Instead, localized programs and policies that are culturally tailored to the actual experiences of immigrants may better alleviate women's risk of IPV (Menjívar and Salcido 2002). Additionally, our results suggest that both men and women perpetrate more IPV in neighborhoods with low concentrations of Latino immigrants. Thus, programs and policies aimed at reducing

couple violence should be cognizant of gendered patterns of IPV across social contexts to more effectively reduce IPV among both men and women.

Despite the novelty of our study, we acknowledge some limitations. First, we drew from research on gendered features of traditional Latino culture to theorize why Latino immigrant concentration may increase FIVS. Unfortunately, the PHDCN-CS did not gather data on the *familismo*, *marianismo*, or *machismo* norms or ideals. We were thus unable to assess whether these cultural processes accounted for the association between Latino immigrant concentration and IPV. That said, no known dataset combines information on the presence of these or other traditional Latino cultural norms within neighborhoods with information on male and female IPV perpetration. Thus, future data collection efforts are needed to assess whether these or other processes explain the association between Latino immigrant concentration and FIVS observed in this study.

We also were unable to examine gender differences in personal motivations for, or physical and/or emotional following specific IPV acts due to data limitations. Women in our study tended to perpetrate IPV more frequently than men, but we cannot argue our male respondents were more harmed by couple violence, especially since most studies suggest IPV is more harmful for women's well-being (Johnson 1995; Whitaker et al. 2007). We were also unable to account for the underlying motivation for perpetrating IPV (e.g., coercive control), or assess whether IPV was reactionary or proactive. Thus, we could not determine whether Latino immigrant concentration is associated with different forms of intimate partner violence, such as intimate terrorism or situational couple violence that have been identified in literature on IPV (Straus and Gozjolko 2014, 2016).

Another limitation is that our sample only included women who were caregivers. Future research based on samples that include non-caregivers may shed light on whether the processes observed in this study apply to childless couples. Our IPV measure was also based on a single respondent's report, rather than reports by both partners. As a result, our assessment of overall IPV and FIVS may be subject to report biases. And although no strong conclusions can be made regarding whether men or women more often under report victimization or perpetration (Chan 2011), future research that includes both partners' reports of IPV perpetration and victimization may reduce any reporting biases. Related, fear of legal consequences associated with reporting IPV perpetration or victimization—particularly among undocumented immigrants—as well as the sentiment shared by many immigrant women that IPV is a family issue (Raj and Silverman 2002) may have discouraged certain respondents from reporting partner violence. Future research that focuses on other forms of partner violence that do not require self-reports (e.g., partner homicide) may help corroborate our findings and advance the understanding of the association between Latino immigrant concentration and gendered patterns of violence.

Our sample was based on a clustered random sample. Although this approach helps ensure our findings are representative to Chicago residents, some argue random samples most often exclude women who experience the most severe forms of IPV (Kelly and Johnson 2008). Future data collection efforts that over-sample individuals who are at the highest risk of the most severe and persistent IPV may help determine whether our results apply to all levels and forms of couple violence. Additionally, the first wave of the PHDCN was collected in the mid-1990s and gathered from respondents from a single city in the United States. The PHDCN remains one of the only large-scale studies that measured both male- and female-perpetrated IPV among respondents nested in neighborhoods that vary in their sociodemographic composition. Thus, it remains the best data source for testing our hypotheses. And though we do not suspect that our results are period or geographically-

specific, data collection efforts that build on the aim and scope of the PHDCN will help ensure that our results continue to operate today and across different regions.

Finally, we acknowledge an important methodological limitation related to our modeling strategy. As noted earlier, our results are vulnerable to correlated errors across levels due to omitted variable biases as unmeasured factors may have driven neighborhood selection and confounded the associations observed in our models.[6] Therefore, our results must be interpreted as descriptive (rather than causal) in nature. Given the prevalence of multilevel random effects modeling in neighborhood research, this methodological issue is not unique to our study. And although we are heartened by recent work that suggests that the selection of individuals into neighborhoods is not as large an issue as thought previously (Sampson 2012), we nevertheless encourage future work to grapple with how best to assess and address this complex issue. Fruitful avenues include experimental designs that may help address sources of selection biases that potentially affect the assessment of contextual effects on individual outcomes. We also encourage researchers to directly acknowledge potential selection biases when interpreting their results, but also hope scholars develop methodological strategies for circumventing potential selection biases that limit the ability to make causal claims in multilevel neighborhood research.

Despite these limitations, our study contributes to research on immigrant revitalization, feminist and family violence perspectives on IPV, and criminal specialization. We illustrate the importance of considering gendered processes when understanding how concentrations of Latino immigrants within neighborhoods impact couple violence. We hope our study informs future research that further investigates the relationship between gendered patterns of couple violence as well as other types of offending. This research will be particularly important and informative with the changing sociodemographic makeup of neighborhoods in the United States and across the world.

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[6] We thank an anonymous reviewer for raising this important point.

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