IDENTIFYING INDIVIDUAL, PARTNER, HOUSEHOLD, AND NEIGHBORHOOD PREDICTORS OF INTIMATE PARTNER VIOLENCE AMONG POOR ECUADORIAN AND COLOMBIAN REFUGEE WOMEN: A MULTI-LEVEL ANALYSIS

Sarah Treves-Kagan

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Approved by:

Suzanne Maman

Nisha Gottfredson

Kathryn E. (Beth) Moracco

Amber Peterman

Andrés Villaveces

ABSTRACT

Sarah Treves-Kagan: Identifying individual, partner, household, and neighborhood predictors of intimate partner violence among poor Ecuadorian and Colombian refugee women: A multi-level analysis

(Under the direction of Suzanne Maman)

Intimate partner violence (IPV) effects a third of South American women and results in significant health and social consequences. Previous research on IPV has relied heavily on cross-sectional data and focused almost exclusively on the characteristics of the woman, ignoring important contextual factors. South America has experienced mass migration due to the recently-ended internal conflict in Colombia, and current instability in Venezuela. The region has simultaneously undergone rapid shifts regarding women's rights. Using multilevel logistic regression on a longitudinal sample of 1312 poor Ecuadorian and Colombian women living in northern Ecuador, I explored predictors of recent emotional and physical and/or sexual IPV through two related theoretical lenses—social disorganization theory (aim 1) and feminist theory (aim 2). In the sample, 29.4% and 15.6% of women reported recent emotional and physical and/or sexual IPV, respectively. In the Aim 1 analysis, neighborhood social disorganization was marginally, positively associated with emotional IPV (AOR: 1.17, 95% CI: 0.99, 1.38) and trended in the same direction for physical and/or sexual IPV (AOR: 1.20, 95% CI: 0.96, 1.51). Mediation analysis suggest that higher social disorganization is associated with lower neighborhood-level civic engagement (AOR: 0.94, 95% CI: 0.91, 0.98) and higher neighborhood-level civic engagement is associated with lower odds of emotional IPV (AOR: 0.35, 95% CI: 0.13, 0.93). In the Aim 2 analysis, females' increasing participation in household decision-making between time 1 and time 2, at both the household and neighborhood-level, was negatively associated with emotional and physical and/or sexual IPV at time 2, respectively. Having lower education than their partner was a risk factor for IPV (emotional: AOR: 1.71, 95% CI: 1.22, 2.42; physical and/or sexual IPV: AOR: 1.57, 95% CI: 1.08, 2.28). Indicators of economic

empowerment were not associated with IPV outcomes in the expected direction. Results support investing in strategies to increase women's participation and achievement in higher education, and shifting gender norms to create more equitable households and neighborhoods. As South America, and other parts of the world, experience unprecedented mass migration, this research also underscores the importance of integrating IPV prevention and response programs into services in conflict-affected areas and host communities.

Dedicated to the women in my family who experienced violence—sexual, intimate, political.

To Neko and Aida, may you live in a world in which you are always safe and free.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CEPAR	Centro de Estudios de Población y Desarrollo Social (Center for Population Studies and Social Development)
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index (CFI)
DHS	Demographic Health Survey
EA	Enumeration Area
EFA	Exploratory Factor Analysis
ENDIREH	National Survey on the Dynamics of Household Relationships
FCS	Food Consumption Score
ICC	Intraclass Correlation
IDP	Internally Displaced Person
IFPRI	International Food Policy Research Institute
IOM	International Organization for Migration
IPV	Intimate Partner Violence
MLM	Multi-Level Modelling
NGO	Non-Governmental Organization
PTSD	Post-Traumatic Stress Disorder
RMSEA	Root Mean Square Error of Approximation
SES	Socio-Economic Status
SRMR	Standardized Root Mean Square Residual
TLI	Tucker-Lewis Index
WFP	World Food Programme
WHO	World Health Organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
VAW	Violence Against Women

CHAPTER 1. INTRODUCTION

Problem statement

Intimate partner violence (IPV), or emotional, physical and sexual abuse by a current or former partner, is a significant problem in South America and worldwide [1]. Thirty-five percent of Ecuadorian women report experiencing physical IPV in their lifetime and 37.5% of Colombian women report experiencing physical and/or sexual IPV in their lifetime [2-4]. IPV increases a woman's likelihood of experiencing depression, suicidality, alcohol use, physical injuries, sexually transmitted diseases, and homicide [1, 2, 5]. Preventing IPV relies on identifying modifiable risk and protective factors, however, significant gaps remain in our understanding of these factors [6]. To help fill this gap, I identified individual, partner, household, and neighborhood factors that predict IPV among poor Ecuadorian and Colombian refugee women in a multi-level analysis.

As outlined in the ecological framework of violence, women do not experience IPV in isolation of their familial, social, and neighborhood contexts [7, 8]. However, most research on IPV has focused on characteristics of the woman despite strong theoretical arguments to identify contextual factors—in women's partnerships, homes, and neighborhoods—that may influence IPV outcomes [8]. There is particularly limited research on neighborhood factors that predict IPV. Research has found strong associations between neighborhood factors and other health outcomes, such as mortality, depression, chronic diseases, and adverse child health outcomes [9]. A growing number of research studies, almost entirely conducted in the United States, has begun identifying neighborhood factors that influence IPV outcomes [10-15]. However, very little research conducted in South America or conflict-affected and host communities has focused on identifying neighborhood-level predictors of IPV [10, 14, 16]. As such, a critical gap remains in our knowledge regarding neighborhood factors that can be modified to reduce IPV in these settings.

Two recent systematic reviews of community and neighborhood-level correlates of IPV found a lack of research conducted in low and middle-income countries [10, 14]. Furthermore, the majority of research conducted has been cross-sectional and there is greater need to understand how factors at different levels (e.g. individual, household, neighborhood) interact to influence IPV [17]. In particular, these reviews found a need for additional research on the relationship between IPV and neighborhood social disorganization and cohesion, and community-level gender inequality [10, 14]. Given the decades-long conflict in Colombia and its spillage into neighboring countries, Venezuela's current humanitarian crisis, and the rapidly changing social status of women in South America, these are salient predictors of IPV to be explored among poor Ecuadorian and Colombian refugee women.

Colombia experienced over fifty years of violent internal conflict between the government military, left-wing guerilla groups, and right-wing paramilitary groups. Exposure to violence and stressors was ubiquitous. The conflict, which began in the late 1940s and formally ended with a peace deal ratified in 2016, displaced over 7.6 million Colombians internally and abroad [18, 19]. The majority of refugees resettled in Ecuador—with an estimated 120,000 to 450,000 Colombians living in Ecuador [18, 20]. In Ecuador, many Colombians face severe psychosocial stressors, such as poverty, food and housing insecurity, violence, and discrimination [18, 21, 22]. Currently, Venezuela's social, economic, and political instability has resulted in the migration or displacement of over 3 million people. As of July 2018, 870,000 Venezuelans had migrated to Colombia; in Ecuador, there are on average 60,000 – 70,000 Venezuelans migrating through Ecuador per month, putting intense pressure on host communities [23].

Studies have found a high prevalence of IPV among women impacted by conflict and displacement but why this occurs is not well understood. Research in conflict-affected and host communities has found that social disruption, male partner's exposure to political violence, and impoverishment increased women's risk of IPV victimization [7, 24-27]. In addition, legal status, lack of resources, and language and cultural barriers restricted refugee and migrant women's ability to leave violent relationships [28]. Very little research has explored neighborhood-level risk and protective factors for IPV in this group.

Social disorganization theory provides a strong theoretical framework to explore neighborhood predictors of IPV in conflict-affected and host communities. Social disorganization theory suggests that a community's social control over violent behavior becomes compromised when communities are characterized by crime, lack of social cohesion, and lack of resources; conversely social resources and cohesion may enhance a community's ability to prevent IPV [13, 15-20]. Research has found that community disorganization, weak community sanctions, and social norms supportive of violence increases the risk of IPV [10-13, 29]. In contrast, social support can serve to reduce the risk of IPV [15, 30, 31]. Recent interventions targeting social cohesion suggest that this is a modifiable contextual factor worthy of additional attention [32, 33].

The status of women and gender equality also demands exploration as a contextual predictor of IPV. Women's rights have been undergoing rapid shifts in South America. For example, Colombia and Ecuador have substantially improved laws regarding IPV, and school attendance for boys and girls has almost equalized [34-37]. Despite these achievements, significant gender inequalities persist in South America. Colombian and Ecuadorian women are less likely to own homes, more likely to be unemployed or lack personal income, and more likely to live in poverty compared to men [38-40]. Furthermore, in addition to high rates of IPV and other forms of violence against women, legal accountability for perpetrators is low. For example, during the conflict in Colombia, there were reports of systematic use of sexual violence by all three types of Colombian armed actors (military, guerrilla, and paramilitary), and almost total impunity for perpetrators [34, 41].

Modifying the social status of women may help reduce IPV in South America [10, 42, 43]. Feminist theory highlights gender inequality, social status, and restricted rights of women as significant contributors to the high rates of violence experienced by women [29, 44, 45]. Previous research in South American settings found that a woman's share of the couple's wealth is significantly associated with lower odds of physical violence and that land-owning women are less likely to experience IPV compared to women who did not own land [42, 43]; however, research in other settings, with nationally-representative data, has found inconsistent results [46]. Joint decision-making in the household has also been associated with a lower risk of IPV in some (but not all) communities [47, 48]. Additional research is needed to expand our understanding of the relationship between individual IPV outcomes and the status

of women, specifically at the community-level. For example, little IPV research has explored the impact of a woman's status within her household versus the impact of women's status in the neighborhood at large, or how household and neighborhood status of women interact.

Finally, studies that examine neighborhood characteristics must account for neighborhood composition—or the clustering of individuals with similar individual-level risk and protective factors [9, 49]. An individual's exposure to psychosocial stressors, adversities and poverty could also increase conflict and violence in a relationship; similarly, gender equality within the household may also predict IPV. As such, we must establish the contextual (e.g. community-level) and compositional (e.g. individual-level) impacts of social disorganization and gender inequality on IPV.

Study purpose

Most studies on contextual factors and IPV have been conducted in high-income countries, leaving much to be learned in the South American context. To my knowledge, none have been conducted with conflict-affected populations in any region. This study explicitly considers predictors of IPV that reflect the region's conflict and instability, and gender inequality. These are two socio-political factors that have deeply influenced women and communities in Ecuador and Colombia but have been underexplored in IPV literature. This study employs an ecological framework and two theoretical lenses that highlight social context—feminist theory and social disorganization theory—to explore modifiable risk and protective factors of IPV among a longitudinal sample of poor Ecuadorian and Colombian women [50, 51].

Study design and aims

To answer this research question, I conducted multi-level modelling using a clustered, panel dataset of 2,122 households from 80 neighborhoods, of which 1,312 households include a longitudinal sample of recently or currently partnered poor Ecuadorian and Colombian refugee women. Data were collected in March – April 2011 and again in October – November 2011, approximately seven months apart. Study sites were located in seven urban centers in northern Ecuador. These areas border Colombia, are characterized by high poverty rates, and are home to a large concentration of Colombian refugees. The survey sample included households categorized as low socio-economic status (SES) that were not currently receiving government subsidies, and oversampled Colombian households.

My specific aims are:

Aim 1a: *Examine the compositional and contextual effects of social disorganization factors on IPV among refugee and host-community women. Compositional hypotheses explore individual, partner, and household risk factors for recent IPV, including: female nationality, employment status, and social support; partner nationality and employment status; and household SES, mobility, civic engagement, and psychosocial stressors (e.g. adversity and discrimination). Contextual hypotheses explore neighborhood social disorganization (average household SES, residential instability, percent of female-headed households, percent of renters, and concentration of psychosocial stressors) as a predictor of IPV.*

Aim 1b: *Identify if neighborhood social cohesion partially mediates the relationship between neighborhood social disorder and individual-level IPV, after accounting for individual, partner, and household characteristics.*

Aim 2a: *Assess if recent IPV is predicted by women's status in the household and neighborhood.*

Aim 2b: *Assess if neighborhood-level status of women moderates the relationship between household status and IPV.*

Study significance

This project identifies modifiable risk and protective factors to prevent IPV through two distinct but complementary theoretical frameworks. This will serve to inform programming and policy in a region heavily impacted by IPV, but with a limited research base related to the contextual predictors of IPV. Finding mechanisms to increase the social status of women and to decrease IPV remain critical international priorities for countries and organizations like the United Nations (UN), World Health Organization (WHO) and World Bank; this research will serve to inform that agenda. Furthermore, better understanding predictors of IPV among conflict-affected communities is critical and timely. Currently, there are over 68 million people forcibly displaced worldwide—the largest displacement of people on record [52]. This study serves to expand our understanding of how to prevent and respond to IPV among refugee and conflict-affected women.

CHAPTER 2. BACKGROUND

A global systematic review of research on intimate partner violence estimates that 30% of women aged 15 or over have experienced physical and/or sexual IPV in their lifetime [1]. IPV increases a woman's likelihood of experiencing depression, poor birth outcomes, abortion, alcohol use, physical injuries, sexually transmitted diseases, and homicide [1, 2]. For women in high-conflict areas or resource-constrained environments, these health risks may be exacerbated by lack of access to health care, exposure to other violence and stressors, poverty, and/or malnutrition [53]. Since the 1990s, the international health and development communities have recognized ending violence against women, including IPV, as a critical enabler to increasing the wellbeing of women and girls, economic stability, and human rights [54]. The success of reducing violence against women and achieving the millennium development goals regarding gender equity are deeply intertwined [55, 56]. Despite the fact that IPV is consistently underreported, research has been fundamental in documenting the expansive scope of IPV [57]. A growing evidence base on risk and protective factors for IPV in various settings has allowed for more effective prevention and response programming. The need for additional evidenced-based and promising interventions to reduce IPV compel the field to continue researching root causes of IPV [1, 58].

In this chapter, I provide an overview of existing research to support my study aims. Included is a short description of the study area, the estimated prevalence and consequences of IPV mostly in northern South America and among host-communities and conflict-affected, refugee, and displaced populations, and select risk and protective factors of IPV at the individual, partner, household, neighborhood, and societal level. Whenever possible, I highlight findings from South America and from research that has employed the same theoretical frameworks used in this study.

Study context: Ecuador and Colombia

Ecuador and Colombia, located in northern South America, share borders with each other; Figure 1 highlights the study sites for this research project (also see Appendix A). Both are considered "megadiverse" countries, in terms of biodiversity, and have made significant improvements in terms of social and economic indicators over the last several decades [19, 59-61]. However, both

Figure 1: Study sites, Carchi and Sucumbíos, Ecuador

countries are also characterized by income inequality, poverty, and political or social instability. Colombia's income inequality is ranked one of the world's worst [19]. One in three Colombians and one in four Ecuadorians live below the poverty line [19, 59].

Political instability

Colombia's economic, social, and political landscape has been significantly shaped by a decades-long internal conflict, which was characterized by extreme violence towards civilians. Throughout the conflict, exposure to violence and stressors was pervasive. Colombia had one of the highest homicide rates in South America in the 1990s and into the early 2000s; in 2011 (the year this study was conducted) the murder rate was 34.1 per 100,000 – the seventh highest in the region and more than five times the global homicide rate (6.2 per 100,000 people in 2012) [62, 63]. Human rights groups reported that all three armed actors—the government military, left-wing guerilla groups, and right-wing paramilitary groups—were responsible for extreme human rights violations, such as mutilation, murder, kidnapping, forced disappearances, humiliation, rape, forced prostitution, and trafficking [19, 34]. Data from public opinion polls collected in the early 2000s found that 31% of Colombians had been victims of a crime [62]. Women were especially vulnerable to sexual violence [34]. A review of clinical records in conflict-affected areas in southern Colombia found that almost 40% of patients lived alongside members of armed groups, 30% experienced economic hardship, more than 15% experienced physical or

psychological violence, and 15% experienced female abuse [41]. Survivors have had very little recourse—especially when crimes were committed by government forces as they also represent the institution meant to protect citizens' rights—and perpetrators have been held to almost no accountability [34, 64].

The conflict displaced over 7.6 million Colombians internally (i.e. internally displaced persons (IDP)) and abroad (i.e. refugees) [18, 19]. In this dissertation, I use the terms refugees and migrants in tandem, although the two have distinct definitions (IDPs are not explored in as much detail as the data was collected in Ecuador, not Colombia). Refugees are defined as an individual who resides outside their home country owing to fear of persecution based on race, religion, nationality, membership in a social group, or political opinion, and is not able to return to their home country. Refugees are recognized under international law as a vulnerable group with rights to asylum that should be afforded certain protections in other countries. Migrants are defined as individuals moving to another country, with agency and planning, mostly to improve their lives, and have the ability to return to their home country if they choose [65]. In the context of this study, I hypothesize that there is substantial overlap between the two groups (i.e. refugees and migrants), given the long-standing nature of the conflict in Colombia, the high rates of poverty and inequality, and the decreasing availability of visas from Ecuador. In addition, study participants' documentation status is unknown.

The majority of Colombian refugees resettled in Ecuador. Ecuador is home to the largest number of refugees in the region, 98% of whom are Colombian [59]. Ecuador has granted refugee status to 60,000 Colombians [18]. Over the course of the conflict, Ecuadorian public opinion regarding refugees soured and the percent of applications approved for asylum status declined dramatically—from 80-90% granted to less than 10% granted [66, 67]. Many more Colombians have migrated to Ecuador without legal asylum or refugee status—with estimates ranging from 120,000 to 450,000 Colombians living in Ecuador [20, 21]. In addition to spill over violence and influxes of Colombian refugees, Ecuador has also experienced its own significant political upheaval. While Ecuador has had civilian governance for over 40 years, Ecuadorians have had 20 different constitutions between 1974 and 2008 [59].

Once in Ecuador, many Colombian refugees face severe psychosocial stressors, such as poverty, food and housing insecurity, and discrimination [18, 66]. Qualitative research found that in addition to facing substantial violence in Colombia, Colombians faced violence from police, sexual harassment at work, and low quality or limited access to health care in Ecuador [22]. Journalistic research reports that refugees also feared continued violence from other Colombians in Ecuador, and therefore severely restricted their own social interactions with other Colombians [68].

While the conflict in Colombia has officially ended, the region is facing a new humanitarian crisis. Currently, Venezuela's social, economic and political instability has resulted in the migration or displacement of over 3 million Venezuelans in the last three years. As of July 2018, 870,000 Venezuela's had migrated to Colombia; in Ecuador, there are on average 60,000 – 70,000 Venezuelans migrating through Ecuador per month in transit to other locations [23]. The UN International Organization for Migration (IOM) reports extreme vulnerability among many displaced Venezuelans, including food insecurity, lack of access to education and medical care, poverty, exploitation, and fear of violence [69, 70]. International agencies, such as IOM and the UN Refugee Agency (UNCHR), are leading efforts to bolster host country capacities to support and resettle refugees during this humanitarian crisis [71].

Gender inequality and the status of women

The last few decades have also seen radical shifts in the status of women in the region, especially regarding laws criminalizing violence against women and improving girls' access to education. Until the 1990s, IPV was considered a private matter in South America (and elsewhere) and, because the scope of the problem was not well-documented, IPV was considered a rare occurrence [37]. Due to local and international activism, advances regarding gender equality were made in Ecuador and Colombia. Ecuador and Colombia both outlawed domestic violence in the mid-1990s; Ecuador also made changes to its judiciary structure to improve its adjudication of cases of IPV in the 1990s [36, 72]. In 2007, Ecuador created a plan for the eradication of violence against children, adolescents, and women, signifying that violence prevention was a national priority. Further, the Ecuadorian constitution specifically names in the *Rights of Liberty* the right to live free of violence in both public and private spheres and the government's obligation to put actions in place to prevent, eliminate, and sanction all forms of violence [37]. Colombia

similarly enacted the Gender Equality Law (Law 1257) in 2008 and created specific special counsels to prosecute high priority cases of sexual violence as a result of the internal conflict [34, 72].

Women in Ecuador and Colombia have also made significant gains in closing the education gap [35]. The World Bank, United Nations, and WHO have all recognized equal access to education as a critical enabler of gender equity for women, reducing poverty, and facilitating economic development in low and middle-income countries. Low educational achievement prevents access to quality employment, increases vulnerability to poverty, and acts as a barrier to social and political stability [73]. According to the World Bank, Ecuadorian girls are enrolled in and graduating from each level of education at the same or higher rates than their male counterparts, except amongst the lowest socio-economic groups. Here the ratio of female to male lower-secondary completion rate remains at 84%. Colombian women have also achieved improvements in education, with similar enrollment and completion rates for male and female children [40].

However, significant challenges remain in terms of gender equality. Women face high rates of poverty and unemployment in both Ecuador and Colombia. In Ecuador, the ratio of female to male labor force participation rate has stayed steady at 61.4% since 2000. Only 49% of women over the age of 15 participate in the workforce compared to 80% of men over the age of 15, and the unemployment rate is almost 60% higher among women than men [39]. In Colombia, women face similar economic, political, and social disadvantages. The ratio of female to male labor force participation rate rose from 65.1% in 2007 but still remains inequitable at 72.1% in 2016. The unemployment rate is over 75% higher among women compared to men [40]. Colombian women are also less likely to have any kind of personal income compared to men [74].

IPV in Ecuador and Colombia

Despite criminalizing IPV, IPV remains a significant problem in the region. In Ecuador, a national survey found that 43.4% of women experienced psychological violence, 35% physical violence, and 14.5% sexual violence from a current or former partner in their lifetime [37]. In the last 12 months, 11.2%, 6.3%, and 2.5% of women experienced psychological, physical, and sexual violence, respectively. Of the women who had experienced IPV in the previous 12 months, 22.5% reported frequent physical violence

and over 27% of women reported frequent psychological and sexual violence [37]. The prevalence of lifetime IPV (including psychological, physical, sexual, and financial) varies by province in Ecuador—ranging from 36% to 63% [4]. Carchi and Sucumbíos (the study areas of this research project) reported prevalence lower than the national average (48.7%).

In the 2010 Demographic Health Survey (DHS) in Colombia, 37.5% of women age 15-49 reported physical or sexual IPV in their lifetime; 9.7% reported sexual violence from a partner in her lifetime [2]. Prevalence of IPV also varies by region in Colombia [2]. In addition to high rates of IPV in Colombia, there were reports of systematic use of sexual violence by all three types of Colombian armed forces and almost total impunity for perpetrators [34, 41]. For example, the 092 ruling of the Constitutional Court in 2008 set up a special counsel to prosecute high priority cases of sexual violence—of the 183 cases identified, only 11 resulted in sentences by 2013 [34].

IPV leads to significant health, social, and financial consequences. In Ecuador, over 75% of women who experienced IPV reported sadness and depression; 56.7% reported anxiety or fear; over 40% reported insomnia or changes in appetite; almost 40% reported bruising or swelling; 11.6% could not move part of their body; 11.5% suffered bleeding or hemorrhaging; and 6% had a miscarriage or premature birth [37]. Over a quarter of women reported no longer seeing their friends or family because of the abuse they faced at home [37]. In Colombia, 85% of women who experienced IPV reported physical or psychological injuries; 51% reported loss of self-esteem and feelings of worthlessness; 39% reported decreases in productivity; 30% reported that it impacted their relationship with their children; and 23% reported suicidal ideation. Less than 25% of women who experienced IPV sought medical services, and 23% reported not talking to anyone about their IPV victimization [2].

IPV in conflict settings and displaced communities

While limited, empirical research has found a high prevalence of IPV in conflict settings, among displaced and refugee populations, and in receiving communities [17, 75]. For example, over 50% of women reported physical IPV and over 70% reported sexual IPV in two communities in Liberia [76]. Almost 70% and 35% of women in the Democratic Republic of Congo reported IPV and intimate partner sexual violence, respectively, in the 2007 DHS—twice the estimated global IPV prevalence [77, 78].

Community-based participatory research conducted in South Sudan found that almost 70% of participants knew at least one woman who experienced IPV in the last month [79]. A clinic-based survey found that over 40% of respondents had experienced IPV in the previous 12 months [80]. In Eastern Cameroon, almost 40% of host and refugee women reported recent sexual violence, with intimate partners being the most common perpetrator [81]. A study of couples living in refugee camps in Jordan, found that lifetime prevalence of IPV was 44.7% [82].

Research on this topic in South America has mostly been qualitative or clinic-based. One study using a nationally representative sample in Colombia found a higher prevalence of severe forms of IPV among displaced women compared to a rural, non-displaced comparison group [83]. A small study in Colombia found that participants from a community directly affected by the conflict were 12 times more likely to experience violence, most of which was perpetrated by someone in their family, compared to participants living in a community not directly affected by the conflict [84]. In a clinic-based study of refugees from El Salvador (n=71) living in the United States conducted in the late 1980s, 30% of women reported family violence [85]. Ethnographic research with a similar population found that, while exposure to conflict-related trauma was ubiquitous, most women eventually migrated from El Salvador to the United States because of domestic, not political, violence [86].

While a high prevalence of IPV has been documented in conflict settings and among displaced and host communities, there has been little research on how exposure to conflict influences IPV. Social isolation, lack of access to resources or safe work, and uncertain legal status are among some of the factors that can increase the vulnerability of women living in these areas [87-89]. Qualitative work in post-conflict Uganda and among African refugees in Australia found that social disruption and impoverishment increased women's risk of IPV victimization [7, 24]. Wirtz's qualitative work with internally displaced Colombian women found that women attributed IPV to the violence their partners experienced in the conflict. Lost employment of their partners and economic insecurity due to displacement was also viewed as a cause of IPV [53]. She also documented patterns of "serial marriages" with abusive partners to support themselves and their children [53]. However, an analysis of 2005 DHS data from Colombia found that migration due to armed conflict was associated with decreases in physical IPV; the author theorizes that moving away from a violent community has a protective effect [90].

12

Social disorganization and social cohesion

Theory suggests that there are likely neighborhood level factors that influence IPV outcomes in settings that experience high levels of instability, poverty, and other psychosocial stressors. However, the impact of neighborhood or community factors on IPV in conflict-affected communities remains largely unexplored [91]. Social disorganization theory, described in detail in subsequent chapters, provides a fitting theoretical framework to identify neighborhood factors that may influence IPV outcomes in these settings. The majority of social disorganization research has been conducted in the United States, but has found consistent relationships between social disorganization and IPV outcomes [14, 92]. Studies have found that individuals living in communities with higher community disadvantage, high unemployment, low average incomes, low collective efficacy or social cohesion, and high legal cynicism were at higher risk of IPV [10-12, 30, 31, 93-95].

Although social disorganization theory specifically identifies social cohesion as a mediator between social disorganization and delinquency outcomes, there is a dearth of studies examining social process indicators, such as social cohesion [14]. Research has found that social cohesion may reduce a woman's vulnerability to IPV [15, 30, 31]. One study found that neighborhood collective efficacy was negatively associated with IPV in communities with a minimum level of women's share of neighborhood resources [96]. Importantly, interventions have been successful at increasing a community's solidarity, reciprocity and social cohesion, suggesting that this is a modifiable protective factor [32, 33, 50]. Further, the international community has focused extensively on promoting social cohesion to support the mental and physical health of refugees, displaced people and migrants, ensure social stability in host communities, and generate public support for social protection programs [33, 97, 98]. This suggests that social cohesion programming could be adopted for IPV prevention purposes as well.

IPV and the status of women

Social status of women and IPV

Education can increase access to safe employment opportunities, allowing for more financial independence and less economic dependence on men, although this assumes that schools are safe and of high quality [17, 99]. Empirical evidence testing this theory is inconsistent [17, 99]. For example, a

systematic review of studies exploring the relationship between indicators of empowerment, including educational attainment, and recent IPV found that 11 of 20 studies found education to be protective, two found education as a risk factor for IPV, and seven did not find an association [100]. Similarly, studies looking at the differences in educational achievement between male and female partners have also found mixed and sometimes contradictory results [47, 48, 100-103]. Inconsistencies between settings may be due to a community-level moderator; for example, the relationship between education and IPV may be different depending on the educational norms for women in the community. Examining the average educational attainment within the neighborhood can provide an important proxy measure for the general status of women within the neighborhood. While most studies have focused on individual or partner-level education status as a predictor of IPV, a bivariate analysis of 88 surveys conducted across the world found that aggregate-level educational achievement for women was negatively associated with mean prevalence of IPV [29]. An analysis of DHS data from 10 countries found that women who did not experience IPV were more likely to live in communities with a higher percent of educated women compared to those who did experience IPV [47]. Another study of over 80,000 married women aged 15-49 in India found that, after accounting for female and male education at the individual and partner-level, the likelihood of experiencing IPV declined as community-level male and female literacy increased [104].

Feminist theory suggests that one of the most proximal household predictors of IPV is the status of the woman, often measured by assessing how household decision-making is shared between male and female partners. Research on household decision-making and IPV outcomes has also resulted in inconclusive findings. In Mexico, female decision-making over employment was associated with decreased odds of experiencing IPV for most age groups but found the opposite relationship for female decision-making on reproductive health [102]. In Peru, IPV was lowest amongst those who reported joint decision-making compared to either female- or male-dominated decision-making [48]; research in Colombia found similar findings [90]. Research in Haiti found that female-dominated decision-making for large household purchases was associated with an increased risk of IPV [105]. In an analysis of ten DHS surveys, joint decision-making about women's own health care and making large household purchases was generally associated with lower IPV in about half of countries, including Haiti and Bolivia, whereas, female-dominated decision-making was associated with higher reports of violence in most countries [47].

14

A large age difference between male and female partners, specifically with older men and younger women, is also theorized to exacerbate power differentials within a relationship and increase the woman's vulnerability to IPV [106]. While research suggests that age differentials increase the risk of condomless sex and other sexual health outcomes [107, 108], there have been mixed findings regarding age differentials of partners and the relationship to IPV. In qualitative research conducted in Colombia, female survivors of IPV perceived that large age differences between partners contributed to IPV [53]. However, the WHO multi-country IPV study found weak and inconsistent associations across study sites between partner age difference and IPV outcomes [101]. Hindin examined 10 countries' DHS data and found that women with husbands older by five or more years in Zambia were actually at lower risk of lifetime IPV compared to women closer in age or older than their partners; associations for the other countries were not significant [47]. Mexico's national survey on domestic violence (ENDIREH) also found that an age difference of five or more years was actually protective against recent IPV for women age 15-21; there was no relationship between age difference and IPV outcomes for the other age groups [102].

Economic status of women and IPV

While IPV occurs in all strata of SES, poverty can make women more vulnerable to IPV by increasing dependence on men and reducing their resources to leave or avoid abusive relationships [53]. Economic empowerment has been a key pillar of gender equality and violence prevention work. Women's participation in the labor force is seen as a significant indicator of gender equality—working should increase a woman's economic independence and prevent her from being isolated and without social resources to avoid or leave violent relationships [96]. At the relational level, research suggests that one of the most proximal predictors of incidents of violence is stress and partner conflict [109]. Poverty is inherently stressful and qualitative data from this study area found that reducing conflict over how to spend resources and generally improving the family's quality of life led to fewer violent interactions between partners [110].

Research in low and middle-income countries on the relationship between SES and IPV has resulted in mixed findings and may be modified by community-level factors, such as acceptance of IPV and women's workforce engagement [17, 96]. Hindin's review of DHS data from ten countries found the

expected association between household wealth and IPV outcomes in 8 of the 10 countries; however, the relationship between female employment and IPV was either non-existent or in the opposite direction than expected [47]. Bott's review of 12 Latin American and Caribbean DHS data found that in half of the countries, wealth and IPV were highly correlated but not in the other half [111]. For recent IPV, employment was a risk factor in half the countries, protective in two countries and there was no association in four countries. Similarly, Castro's analysis of the National Survey on the Dynamics of Household Relationships (ENDIREH) from Mexico found inconsistent results when exploring SES, employment and IPV [102]. An analysis of the 2005 Colombia DHS found that current workforce participation was associated with increases in emotional and physical IPV [90].

While results from these studies are inconsistent, which could be due to the reliance on correlational analysis, intervening upon SES through micro-finance and cash transfer projects seems to be a promising mechanism to increase women's economic empowerment and decrease IPV. For example, the parent study of this project was a community randomized control trial of a Cash, Food Vouchers, and Food Transfer intervention conducted in northern Ecuador. The project targeted women to receive the transfers and resulted in improved food consumption and decreased IPV [50, 51]. A systematic review of cash transfer projects (which included the aforementioned parent study), found that eleven of fourteen studies reduced IPV; two studies found no association and one found mixed results [112]. All but one of these studies targeted women, representing a boost to their income specifically. The IMAGE study in South Africa, which combined microfinance and community mobilization activities, also saw significant decreases in IPV in intervention communities compared to control communities [113].

Previous research found that in Ecuador, a women's share of the couple's wealth is significantly associated with lower odds of physical violence [42]; similarly, land-owning women in rural Nicaragua were less likely to experience IPV compared to women who did not own land [43]. However, a study of 28 different countries found inconclusive results on the relationship between individual asset ownership and IPV, with most countries showing no association [46]. Three countries from Latin America and the Caribbean were included—Honduras, the Dominican Republic and Haiti. Shared asset ownership was negatively associated with IPV in Honduras and sole asset ownership was negatively associated with IPV in Haiti. In the Dominican Republic, land ownership was *positively* associated with IPV.

16

In her research on neighborhood predictors of IPV, Jackson theorizes that female economic status in the neighborhood serves as an important indicator of gender equity and an important mechanism in elevating the issue of ending IPV within a community [96]. Jackson found that higher women's relative neighborhood resources was associated with a lower risk of IPV but only in neighborhoods that also had at least an average level of collective efficacy to intervene on a problem to help the community [96]. Heise found that a higher percent of women engaged in the workforce was associated with lower mean IPV prevalence in a bivariate analysis (e.g. an ecological analysis) [29]. Country-level women's workforce participation also moderated the relationship between individual level risk and protective factors (e.g. working for cash) and IPV outcomes [29]. Exploring community women's economic status as a moderator could also explain the inconsistency in the relationships between female employment, SES, and asset-ownership and IPV outcomes.

CHAPTER 3. THEORY

Ecological framework of violence

In the late 1990s, Lori Heise adopted an ecological approach to examine the etiology of IPV [8]. Heise proposes that examining partner, household, and neighborhood characteristics will explain more variance in IPV outcomes than looking at individual characteristics of the women alone. Violent behavior is catalyzed, facilitated, and endorsed (or not) through multiple mechanisms, at multiple levels. The social ecology model highlights two fundamentally important issues. First, the model highlights that there is no singular cause of violence but that violence is the product of multiple factors and those must be explored and understood holistically. Second, violence is *preventable*—modifying risk factors, even if others remain, can reduce the likelihood of violence

Social ecology models, which date back to the 1950s, have evolved over the last several decades and have been increasingly popular in public health research [114, 115]. Heise's original model was based on Belsky's framework for researching child abuse and identified four levels of influence—1) ontogenetic; 2) microsystem; 3) exosystem; and 4) macrosystem [116]. Heise then updated this model in 2011 after re-reviewing the existing empirical literature base on risk and protective factors of IPV [17]. In the revised ecological framework of violence, Heise identifies seven levels of influence: 1) macrosocial; 2) community; 3) male partner; 4) relationship; 5) conflict arena; 6) IPV; and 7) the woman. Figure 2 maps on identified risk and protective factors in each level that correspond to this research study.

Heise advocates for taking an integrated approach when adopting a social ecology model. Individual, household, and neighborhood risk and protective factors do not act in isolation but influence each other across levels [8]. Most research to date has ignored the potential interaction between exposures at multiple levels [17, 117, 118]. These interactions are paramount in effectively planning and targeting interventions. Understanding these interactions also helps address non-modifiable risk factors. A holistic approach allows us to answer the question—can modifying another factor—either within the home or neighborhood—reduce the strength of the association between a non-modifiable factor and IPV outcomes.
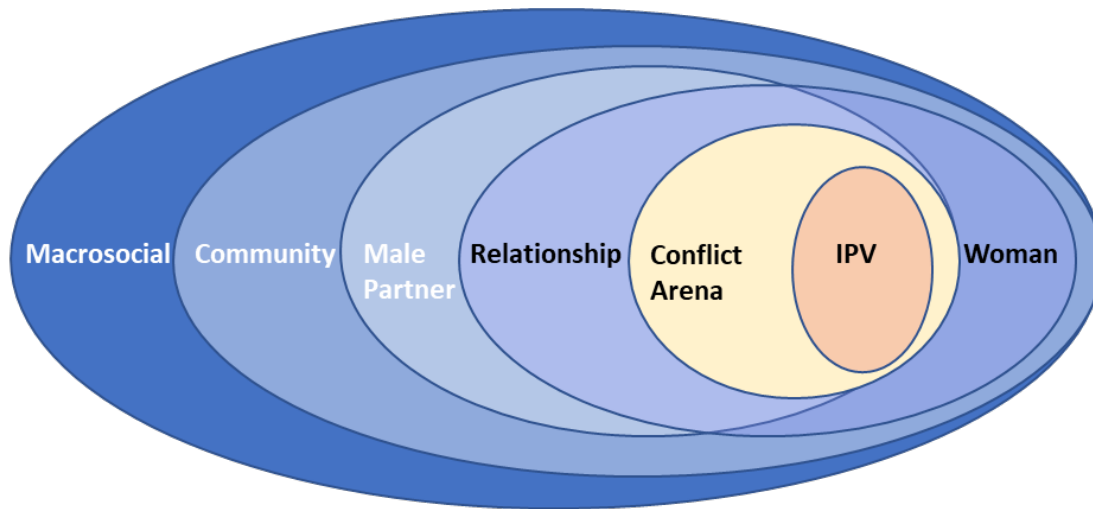
Gender Order	Neighborhood	Male partner	Interaction	Conflict arena	Woman
Composite measures of gender inequality	Community violence	Violence in childhood	Non-egalitarian decision making	Money/ distribution of family resources	Childhood traumas
Economic Factors	High unemployment	Age		Division of labor	Age
Level of development	Low Social Capital	Low education		**Patriarchal triggers**	Education
Women's access to formal wage employment	Poverty			Female challenge to male authority	Low social support
				Failure to meet gender role expectations	Employment*
				Assertions of female autonomy	Asset ownership*

*context specific

Figure 2: Revised ecological framework of violence

Social disorganization and social cohesion

Social disorganization is a pertinent theory to explore IPV among poor Ecuadorians and Colombian refugees in northern Ecuador because these communities have undergone extensive social disruption and experienced significant adversities. Originally conceptualized by Shaw and McKay [119, 120], and then tested by Sampson and Groves [121], social disorganization theory posits that neighborhood or community characteristics can either enable or hamper crime and delinquency. This was a significant departure from traditional emphasis on individual characteristics, instead highlighting the influence of neighborhood factors on individual outcomes and behaviors. The theory hypothesizes that social disorder—traditionally defined as concentrated disadvantage (e.g. poverty), residential instability, and immigrant concentration—can weaken social bonds between neighbors. Social disorganization then limits collective community action and deteriorates the community's informal social mechanisms to control violent behavior [10, 12, 15, 29, 121-124]. Drawing from literature on conflicted-affected communities, I also incorporated neighborhood-concentration of psychosocial stressors as an important neighborhood-level factor that can influence social bonds [125].

Social cohesion—or the level of trust and reliance between community members—acts as a mediator between neighborhood disorder and the likelihood of collaboration to address neighborhood challenges [10, 12]. Social cohesion can foster the exchange of resources and information, build social capital, and result in developing collective efficacy, or the belief a group can work together to achieve shared goals [126, 127]. This social process can serve to improve health outcomes; alternatively, neighborhoods and their corresponding social dynamics can foster negative outcomes, such as health inequalities, delinquency or crime [126, 128].

Attributed to Durkheim's work on suicide, social integration and social ties, various definitions of social cohesion have been used in the fields of sociology, psychology, public health and others. Despite these variations in definitions, social cohesion is understood to 1) refer to some group or network of people; 2) be a dynamic process; 3) recognize that a group is more than a sum of its parts and acknowledge the ties or relationships of individuals within a group; and 4) directly influence how individuals in the group work together through some kind of social control, pressure to conform, or feeling

20

of obligation to help others [129]. I adopt Aiyer et al's definition, used in their community empowerment research, Busy Streets: "Social cohesion [is the] presence of strong social bonds among neighborhood residents; [it] represents interpersonal connectedness, sense of community, mutual moral support, and the sharing of resources" [130].

In the context of IPV, scholars theorize that when living in a community with weak social bonds and low social cohesion, neighbors may not know when IPV is occurring or may not feel an obligation to intervene when it is occurring [10, 12, 131]. Living in a violent environment could also normalize violence in the household [16]. In communities with high levels of distrust in other neighbors or in institutions, women may be less likely to reach out for help or access police or social services [131]. Abusive partners also use social isolation as a form of abuse, making it difficult for women to leave such relationships [132].

Feminist theory

Feminist theories concerning patriarchy, power, and control provide another framework to understand the etiology of IPV. At their root, feminist theories and literature frame power and control as the driving mechanism behind IPV. Within a relationship, an individual uses IPV as a tool to maintain power and control over another. Societally, the high prevalence of IPV similarly serves to maintain men's higher social standing above women. The latter framework focuses on violence as a social phenomenon as opposed to only the result of an individual-level deficiency or delinquency [45].

At the societal level, feminist theories attribute hegemonic patriarchy as the root cause of violence against women (VAW), including IPV [45]. Hegemony is leadership or dominance of one social group over others, enacted through social norms, allocation of resources, and access to power. Hegemonic systems punish deviations from the 'norm' to uphold hierarchical social structures [133]. Patriarchy acts as a form of hegemony in which maleness is the norm and, in turn, femaleness is "less than" or inferior [134, 135]. Hegemonic patriarchy manifests itself as the systematic devaluation of women operationalized through "societal and institutional conditions, norms and rules that perpetually disenfranchise women and are intrinsically linked to issues of power and control" [135]. Violence towards women, given their inferior status, is then 'allowable' or justified within this framework. Furthermore, violence against women acts as

21

a mechanism to reinforce the existing unequal power distribution between genders. Violence as a tool of social control is not unique to patriarchy but is used to maintain all systems of oppression including race, class, sexual identity, etc. [136]. These systems interact and violence victimization and reduced social status of women is exacerbated by other axes of power and hierarchy [137, 138].

Viewing violence through the lens of patriarchy "keeps the gaze directed toward social contexts rather than toward individual[s]" [45] and encourages researchers to identify structural mechanisms that can be modified to both challenge and interrupt hegemonic patriarchies as a pathway to reducing IPV. Through this lens, the field of IPV has identified women's access to economic resources and education as critical pathways (among others) to reducing VAW. Indeed, unequal social standing not only drives VAW, but reduces women's access to education, wealth, decision-making, resources, and political power. These are direct pathways to economic and social independence for women. Unequal access to education, resources, and power further exacerbates women's vulnerability to violence. Relegating women to under-education, lower wages and unpaid work, and marginalized political power increases their dependence on men, creating more vulnerability to violence. Further, these dynamics push women into unsafe working environments, housing insecurity, and risky sexual partnerships, which are also significant risk factors for experiencing violence.

Societal gender power differentials replicate and manifest themselves within partnerships and households. One of the most widely used frameworks for IPV, focusing on male-perpetrated behaviors within intimate relationships, is Duluth's Power and Control Wheel [132, 139]. This model (see Figure 3) has power and control at the heart of the wheel; physical and sexual violence on the outer edge of the wheel; and eight mechanisms, or spokes, radiating from power and control to IPV including using coercion and threats, male privilege, economic abuse, intimidation, isolation, and emotional abuse. Within relationships, women are often at a disadvantage along lines of power other than gender—such as age, education, and wealth. This can further reduce women's power within a relationship and increase the susceptibility to violence as well as make it more difficult to leave violent relationships. As such, I explore factors related to the social status of women at multiple levels.

Figure 3: Duluth power and control

CHAPTER 4. STUDY AIMS, CONCEPTUAL MODELS, AND HYPOTHESES

In this chapter, I document my conceptual models, study aims, and hypotheses.

Aim 1

The conceptual model below (Figure 4) illustrates the relationship between neighborhood social disorganization and IPV, mediated by neighborhood social cohesion. The model also includes compositional factors that may account for variation in IPV.
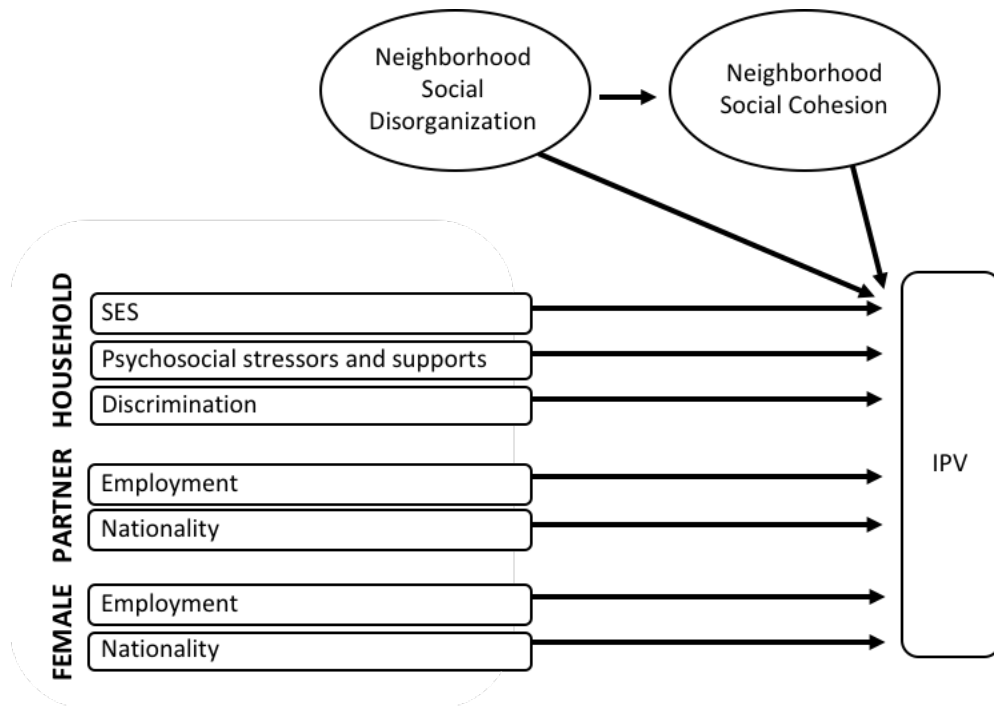
Figure 4: Aim 1 conceptual model

Aim 1a: *Examine the compositional and contextual effects of social disorganization factors on IPV among refugee and host-community women. Compositional hypotheses explore individual, partner, and household risk factors for recent IPV, including: female nationality, employment status, and social support; partner nationality and employment status; and household SES, mobility, civic engagement, and psychosocial stressors (e.g. adversity and discrimination). Contextual hypotheses explore neighborhood social disorganization (average household SES, residential instability, percent of female-headed households, percent of renters, and concentration of psychosocial stressors) as a predictor of IPV.*

Compositional hypotheses – Household exposure to discrimination, psychosocial stressors, and support (H1): Higher household SES, labor force participation, civic engagement, and social support will be negatively associated with IPV while lower SES, and experiencing discrimination and psychosocial stressors will be positively associated with IPV.

Contextual hypothesis - Social disorganization (H2): After accounting for individual, partner, and household characteristics, neighborhood social disorganization will explain variation in IPV outcomes.

Aim 1b: *Identify if neighborhood social cohesion partially mediates the relationship between neighborhood social disorder and individual-level IPV, after accounting for individual, partner, and household characteristics.*

Mediation hypothesis - Social cohesion (H3): Neighborhood social cohesion will be negatively associated with odds of experiencing IPV and will partially mediate the positive association between social disorganization and IPV outcomes, after accounting for individual, partner, and household characteristics.

Aim 2

Aim 2 approaches the quesiton of contextual predictors of IPV through feminist theory. My conceptual model (see Figure 5) illustrates the proposed relationship between indicators of the status of women and IPV at multiple levels, including how neighborhood factors moderate the relationship between specific household factors and IPV.
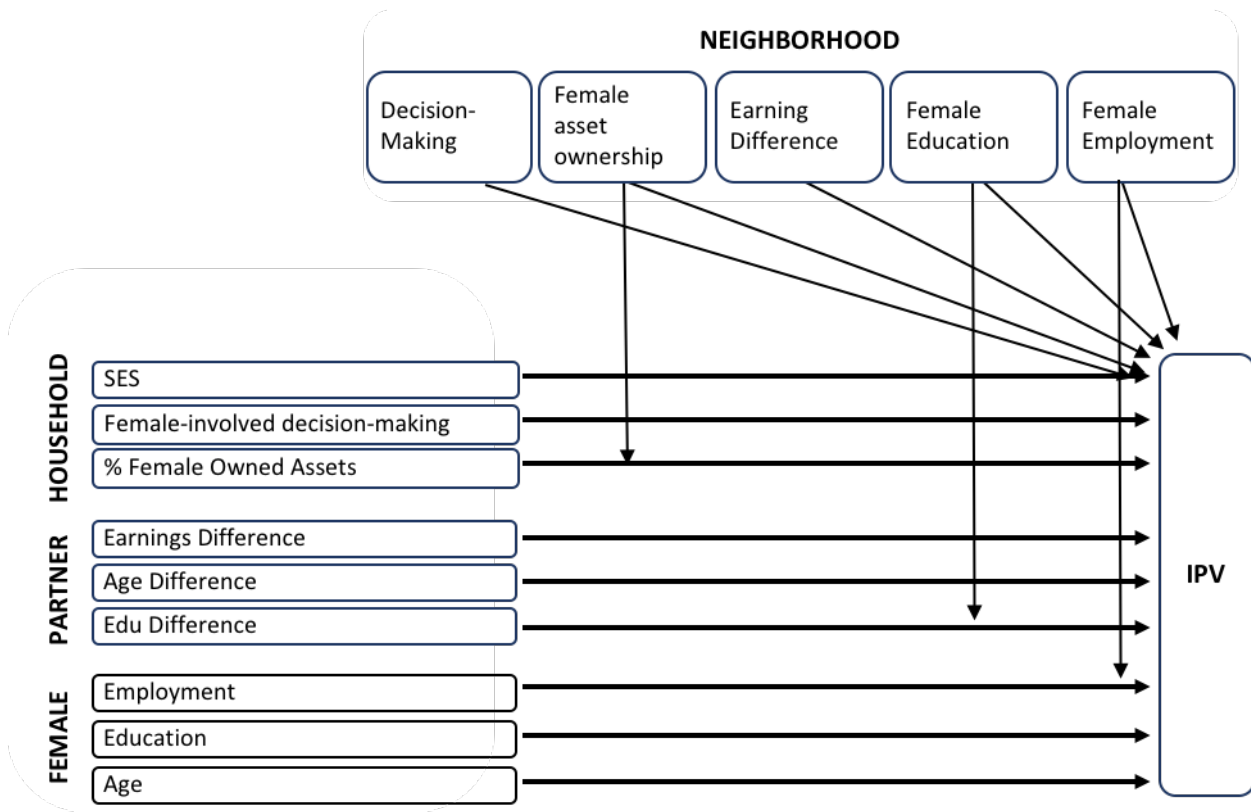
Figure 5: Aim 2 conceptual model

Aim 2a: *Assess if recent IPV is predicted by women's status in the household and neighborhood.*

Household hypotheses (H4): Lower household status of the woman (primary education or less; not participating in the labor force; lower percent of assets value owned by the woman in the household; lower female age relative to male age; lower female education relative to male education; lower female salary relative to partner; and lower percent of domains of decision-making the woman contributes to in the household;) will be associated with increased odds of IPV.

Neighborhood level hypotheses (H5): Lower status of women in the neighborhood (lower percent of women with secondary education or higher in the neighborhood; lower average percent of household goods owned by women in the neighborhood; lower percent of women engaged in the labor force; lower percent of women earning the same or more than their partner; and lower neighborhood average of female-involved household decision-making) will be associated with increased odds of IPV.

Aim 2b: *Assess if neighborhood-level status of women moderates the relationship between household status and IPV.*

Moderation by neighborhood status of women hypothesis - Education (H6): For women that live in neighborhoods with a higher percent of women with secondary education or higher than the average neighborhood, the association between educational differential and IPV victimization will be weakened.

Moderation by neighborhood status of women hypothesis – Economic (H7): For women that live in neighborhoods where women own a higher percentage of assets than average, the association between female percent of household asset ownership and IPV victimization at the household level will be weakened.

Moderation by neighborhood status of women hypothesis – Labor Force Participation (H8): For women that live in neighborhoods with a higher percent of women participating in the labor force than the average neighborhood, the negative association between female labor force participation and IPV victimization will be strengthened.

CHAPTER 5. OVERVIEW OF DATA AND METHODS

This study draws on data from a cluster randomized controlled trial of a World Food Programme's (WFP) Cash, Food Vouchers, and Food Transfer intervention conducted by the International Food Policy Research Institute (IFPRI) in northern Ecuador in 2011 [50, 51]. The project improved food consumption, decreased IPV, and increased social cohesion [50, 51, 140]. Standardized in-person surveys were administered to 2,357 households at time 1; 2,122 households were available for follow up approximately seven months later, after approximately six months exposure to the intervention. Approximately 1,312 women were partnered at both time points and in the correct age range (15 or above), and were either the spouse of the head of household, or head of the household. Households were clustered in 80 barrios, or administrative neighborhood units as defined by the government.

WFP's research project was conducted in two provinces near the Colombian border. Carchi and Sucumbíos provinces were selected because of the high concentration of poor Ecuadorians and Colombian refugees living there. Carchi and Sucumbíos represent differing geographic, cultural, and socio-economic contexts, with Carchi in the northern highlands and Sucumbíos in the Amazonian lowlands. Urban centers within these areas were then selected if more than 10% of the urban population were refugees; the poverty index exceeded 50 percent; and there was the presence of implementing NGOs and financial institutions. Seven urban centers in total were included in the study. Within those cities, neighborhoods were then selected for inclusion based on including a large percentage of Colombian refugees and low-income households.

Sample description

As documented in Figure 6, the sample includes 148 clusters, or enumeration areas (EA), grouped in 80 neighborhoods. In each cluster, households were mapped and administered a one-page questionnaire regarding basic demographic and socio-economic questions, before randomization. Randomization was stratified at the province level as the socioeconomic and geographic characteristics

differ substantially between the two provinces. Clusters were first randomized to treatment or control; in each cluster, 20-27 households were randomly selected to be interviewed in the initial survey. Additional information on the intervention and randomization can be found in previous publications [50, 51]. Colombian and Colombian-Ecuadorian households were oversampled to ensure a sufficient sample for comparative analysis. Households were eligible for inclusion if they were classified as low SES and not currently receiving the Human Development Grant (BDH), which is the Government of Ecuador's national cash transfer program [50].
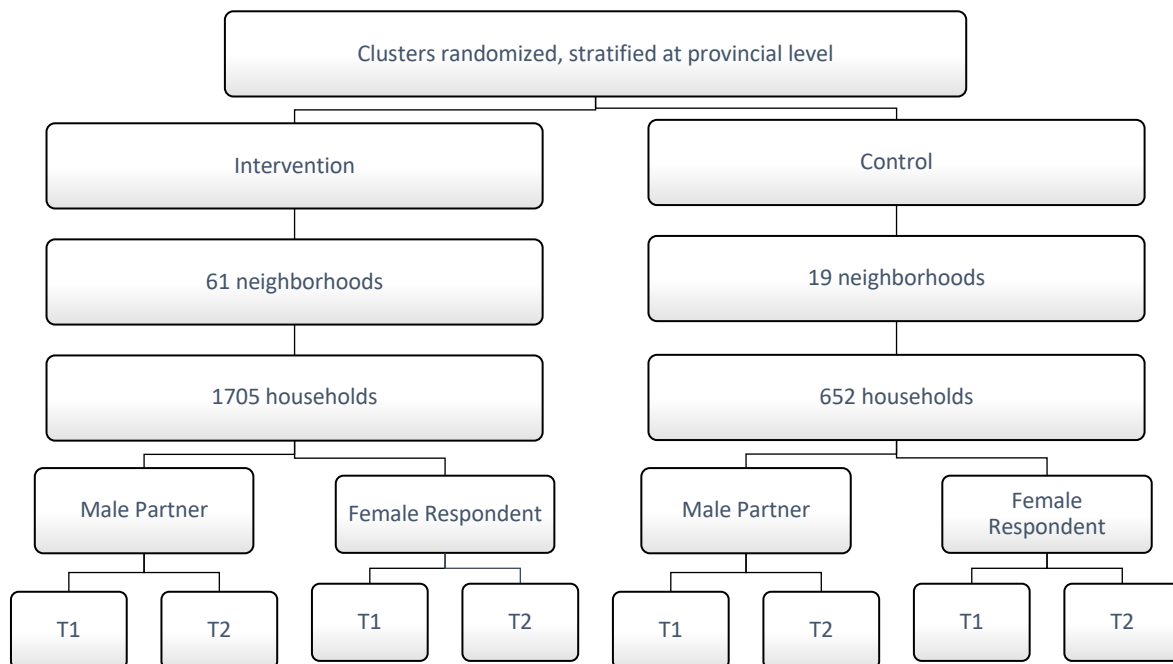
Figure 6: Study and sample design

Data collection and ethics

Data were collected in March and April 2011 and approximately seven months later (October-November 2011). Paper surveys were administered by trained field staff. Verbal consent was collected. Field staff were trained in accordance with the WHO ethical guidelines for conducting research on IPV including modules on ethical recruitment, consent, and data collection procedures; ensuring participant confidentiality, safety, and privacy; and managing data to maintain confidentiality. Specific procedures were followed during data collection to ensure the safety of the participant. For example, field staff only asked IPV questions if there were no other family members, including her partner, present. In addition, anonymized referral information was offered to the woman after completing the IPV module, regardless of whether the women had disclosed IPV or not. IRB approval was obtained from IFPRI and in-country data collection partner Centro de Estudios de Población y Desarrollo Social (CEPAR). Secondary data analysis was approved by the University of North Carolina at Chapel Hill.

Measures

Measures are described in depth in Tables 1 (Aim 1) and 2 (Aim 2). The outcome variable for both aims assesses emotional, physical, and sexual IPV in the last six months (at time 2) using the WHO Violence Against Women Instrument [141, 142]. Aim 1 exposure variables reflect social disorganization theory indicators measured at time 1. Aim 2 exposure variables reflect the status of women at the individual, household and neighborhood level. For this aim, time 1 variables and change variables (time 2 – time 1) were included (described in more detail below.) For both aims, neighborhood level variables were aggregated from household responses from the entire sample (n=2,357) to better represent the social context of our smaller sample of partnered women. These variables were also weighted to account for the over-representation of Colombian households in our sample.

Key household-level independent variables were centered within the neighborhood. Neighborhood level independent variables were grand-mean centered (i.e. centered around the entire sample's mean). Centering allows us to parse out within-neighborhood variance and between-neighborhood variance, therefore allowing us to understand the compositional and contextual affects, respectively, of these variables on IPV outcomes [143].

Analysis

For both aims, I first assessed the pattern of missing data; 3.6% and 2.1% of women were missing data for IPV at time 1 and time 2, respectively. To avoid biases caused by using complete case analysis (i.e. list-wise deletion that is used in maximum likelihood models), I conducted multiple imputation. The process creates several datasets, using correlations between variables to estimate the most likely predicted values for missing data and adds random errors around the most likely imputed data points. Final estimated parameters are based on the averages across all imputed datasets [144, 145]. Joint multilevel multiple imputation was conducted in MPLUS to account for categorical variables, and for the hierarchical nature of the data set [146].

For Aim 1, I conducted exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to generate my social disorganization and social cohesion factors. Both EFA and CFA analyses accounted for categorical response distributions and the clustered structure of the dataset. For social disorganization, I used a maximum likelihood estimator with standard errors robust to non-normality and non-independence of observations. For social cohesion, I used a weighted least square parameter estimator; this uses a diagonal weight matrix with standard errors [147]. EFA was conducted on half of the sample and results were evaluated by conducting a likelihood ratio test of model fit, examining eigenvalues, and considering root mean square error of approximation (RMSEA), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI) estimates. Items with poor factor loadings (<0.3) were removed and inter-factor correlations were assessed [148]. CFA was then conducted on the second half of the sample to confirm those domains. As some male heads of households and some female heads of household answered these questions, and perceptions of social cohesion may vary by gender, respondent gender was included as a control variable in the factor analysis. Specifically, item means were permitted to vary by gender in addition to factor means [149]. Model fit was evaluated using standardized root mean square residual (SRMR), RMSEA, TLI and CFI. I then output factor score estimates for each household. From this process, household scores were created and then aggregated into neighborhood-level scores. Neighborhood scores were then standardized to improve interpretability of regression coefficients in subsequent analyses.

I then conducted multi-level logistic regression to examine the variance in IPV outcomes attributable to individual, partner household and neighborhood-level characteristics. Multi-level models account for heterogeneity between neighborhoods and take advantage of natural clustering of population groups to explain variation in the outcome of interest [150]. All models controlled for demographic variables (province, gender of head of household, female age and nationality, and male labor force participation), intervention status (pooled treatment), and IPV at time 1. For all models, maximum likelihood parameter estimates were computed with standard errors robust to non-normality and non-independence of observations in MLPUS. In this process, standard errors are computed using a sandwich estimator [147]. Random intercepts were included in the models to account for unexplained neighborhood clustering related to IPV.

For Aim 1, I assessed the association between social disorganization, social cohesion and IPV outcomes with several models (see Equations 1 and 2). In Equation 1, I included the combined social disorganization score and a combined social cohesion score.

Two domains—concentration of psychosocial stressors and neighborhood level social support—were included separately as this did not map onto the larger domains of social disorganization and social cohesion, respectively, during the EFA and CFA process.

Equation 1

Level 1:

$\text{IPV}_{T2ij} = \beta_{0j} + \beta_{1j}\text{Psychosocial Stressors}_{T1,CWG} + \beta_{2j}\text{Discrimination}_{T1,CWG} + \beta_{3j}\text{Civic Engagement}_{T1,CWG} + \beta_{4j}\text{SocialSupport}_{T1,CWG} + \beta_{5j}\text{SES}_{T1,CWG} + \beta_{6j}\text{Moved to Neighborhood}_{T1,CWG} + \beta_{7j}\text{Control Variables} + r_{ij}$

Level 2:

$\beta_{0j} = \gamma_{00} + \gamma_{01}\text{SD}_{T1, GMC} + \gamma_{02}\text{PsychosocialStressors}_{T1, GMC} + \gamma_{03}\text{SC}_{T1, GMC} + \gamma_{04}\text{Social Support}_{T1, GMC} + \mu_{0j}$

$r_{ij} \sim N(0, \sigma^2)$

$\mu_j \sim N(0, \tau^2)$

Notes: T1: Time 1; T2: Time 2; CWG: Centered within Group (i.e. neighborhood-mean centered) GMC: Grand Mean Centered

In Equation 2, I included all individual social disorganization and cohesion domains.

Equation 2

Level 1:

$IPV_{T2ij} = \beta_{0j} + \beta_{1j}Psychosocial\ Stressors_{T1,CWG} + \beta_{2j}Discrimination_{T1,CWG} + \beta_{3j}Civic\ Engagement_{T1,CWG} + \beta_{4j}SocialSupport_{T1,CWG} + \beta_{5j}SES_{T1,CWG} + \beta_{6j}Moved\ to\ Neighborhood_{T1,CWG} + \beta_{7j}Control\ Variables_{T1} + r_{ij}$

Level 2:

$\beta_{0j} = \gamma_{00} + \gamma_{01}Residential\ Instability_{T1,GMC} + \gamma_{01}\%\ Renters_{T1,GMC} + \gamma_{01}\%\ Female\ Headed\ Households_{T1,GMC} + \gamma_{01}Average\ Community\ Wealth_{T1,GMC} + \gamma_{02}Psychosocial\ Stressors_{T1,GMC} + \gamma_{02}Trust\ in\ Individuals_{T1,GMC} + \gamma_{02}Trust\ in\ Institutions_{T1,GMC} + Discrimination_{T1,GMC} + Civic\ Engagement_{T1,GMC} + \gamma_{04}Social\ Support_{T1,GMC} + \gamma_{05}Controls_{T1,GMC} + \mu_{0j}$

$r_{ij} \sim N(0,\ \sigma^2)$

$\mu_j \sim N(0, \tau^2)$

Notes: T1: Time 1; T2: Time 2; CWG: Centered within Group (i.e. neighborhood-mean centered) GMC: Grand Mean Centered

I then conducted a 2-2-1 cross-level mediation analysis to see if social cohesion mediated the relationship between social disorganization and IPV. I also probed individual domains of social disorganization and cohesion that were significantly associated with IPV.

For Aim 2, I included fixed and time varying variables of key variables (see Equation 3) to prospectively assess the effects of our predictors on IPV outcomes [151]. All time 1 predictors were included in the model; for variables identified as likely to change between the two data collection points, change scores were created (time 2 – time 1). This included household wealth, household FCS, percent of female-owned assets, male and female labor force participation, earning difference between partners, and household decision-making. Change variables for value of female-owned assets at the household and community-level were not included as they were too highly correlated with their values at time 1; a change variable for neighborhood percent of women with secondary education or higher was not included as a t-test found that the change between time 1 and time 2 was not statistically different from zero. Random slopes for level 1 predictors were tested individually to ensure model convergence; none of the random slopes were maintained as they were not statistically significant.

Equation 3

Level 1:

$$IPV_{T2ij} = \beta_{0j} + \beta_{2j}FemaleEducation_{T1,\,CWG} + \beta_{3j}FemaleAge_{T1} + \beta_{4j}FemaleWork_{T1,\,CWG} + \beta_{5j}FemaleWorkLost_{T1,\,CWG} + \beta_{6j}FemaleWorkGained_{T1,\,CWG} + \beta_{7j}FemaleAssets_{T1,\,CWG} + \beta_{8j}\Delta FemaleAssets_{CWG} + \beta_{9j}MaleWork_{T1,\,CWG} + \beta_{10j}MaleWorkLost_{T1,\,CWG} + \beta_{11j}MaleWorkGained_{T1,\,CWG} + \beta_{12j}PercentFemaleOwnership_{T1,\,CWG} + \beta_{13j}\Delta PercentFemaleOwnership_{CWG} + \beta_{14j}RelativeEarnings_{T1,\,CWG} + \beta_{15j}\Delta RelativeEarnings_{CWG} + \beta_{16j}SharedDecision_{T1,\,CWG} + \beta_{17j}\Delta SharedDecision_{CWG} + \beta_{18j}Controls_{T1} + r_{ij}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}NeighFemaleEdu_{T1,\,GMC} + \gamma_{02}NeighEmploy_{T1,\,GMC} + \gamma_{03}\Delta NeighEmploy_{GMC} + \gamma_{04}NeighAssetRatio_{T1,\,GMC} + \gamma_{05}\Delta NeighAssetRatio_{GMC} + \gamma_{06}NeighEarnDiff_{T1,\,GMC} + \gamma_{07}\Delta NeighEarnDiff_{GMC} + \gamma_{08}NeighSharedDecision_{T1,\,GMC} + \gamma_{09}\Delta NeighSharedDecision_{GMC} + \mu_{0j}$$

$$r_{ij} \sim N(0,\,\sigma^2)$$

$$\mu_j \sim N(0,\tau^2)$$

Notes: T1: Time 1; T2: Time 2; Δ: Change (time 2 – time 1); CWG: Centered within Group (i.e. neighborhood-mean centered) GMC: Grand Mean Centered

Finally, I assessed if the social and economic status of women at the neighborhood-level at time 1 moderated the association between household status of women at time 1 and IPV outcomes. We added the following interaction terms (one at a time to ensure model convergence)*: household educational difference*neighborhood educational average for women; household percent of assets owned by females*neighborhood average percent of household assets owned by females; female labor force participation*percent of women participating in the labor force in the neighborhood. As none were significant, no additional moderation analysis was conducted.

CHAPTER 6. SOCIAL DISORGANIZATION AND IPV IN CONFLICT-AFFECTED HOST COMMUNITIES (AIM 1)

Background

Colombia experienced over fifty years of violent internal conflict between the government military, left-wing guerilla groups, and right-wing paramilitary groups. Exposure to violence and stressors was ubiquitous. The conflict in Colombia, which began in the late 1940s and formally ended with a peace deal ratified in 2016, displaced over 7.6 million Colombians internally and abroad [18, 19]. The majority of refugees resettled in Ecuador—with estimates ranging from 120,000 to 450,000 Colombians living in Ecuador [18, 20]. In Ecuador, Colombians often face severe psychosocial stressors, such as poverty, food and housing insecurity, violence, and discrimination [18, 21, 22]. The region is now facing a new humanitarian crisis that could potentially exacerbate existing problems. Currently, Venezuela's social, economic and political instability has resulted in the migration or displacement of over 3 million Venezuelans, many of which have migrated to Colombia and Ecuador [23]. Reports have documented extreme vulnerability among some displaced Venezuelans, including food insecurity, lack of access to education and medical care, poverty, exploitation, and fear of violence [69, 70].

Studies have found a high prevalence of IPV among women affected by conflict and displacement, with causal pathways poorly understood [76-81]. In general, refugees, displaced people, and people in conflict settings are at risk for human rights violations and often lack access to basic health care, housing, and education needs [152, 153]. For displaced and refugee women, this increased social vulnerability may translate into increased vulnerability in the household [53]. Research in conflict-affected communities has found that social disruption, male partner's exposure to political violence, and impoverishment increased women's risk of IPV victimization [7, 24-27]. In addition, legal status, lack of resources, and language and cultural barriers restricted refugee and migrant women's ability to leave violent relationships [28].

As outlined in the ecological framework for violence against women, women do not experience IPV in isolation of their familial, social, and neighborhood contexts [7, 8]. However, most research on IPV has focused on characteristics of the woman [8]. A growing number of research studies, almost entirely conducted in the United States, has begun identifying neighborhood factors that influence IPV outcomes [10-15]. However, very little research conducted in South America or conflict-affected communities has focused on identifying neighborhood-level predictors of IPV [10, 14, 16]. As such, a critical gap remains in our knowledge regarding neighborhood factors that can be modified to reduce IPV in South America and elsewhere.

Social disorganization theory provides a strong theoretical framework to explore community-level predictors of IPV in conflict-affected areas and host communities. Social disorganization theory, originally designed to explain why some communities experience higher crime than others, suggests that a community's social control over violent behavior becomes compromised when communities are characterized by instability, lack of social cohesion, and lack of resources. Social cohesion—or the level of trust and reliance between community members—acts as a mediator between neighborhood disorder and the likelihood of collaboration to address neighborhood challenges [10, 12]. Social cohesion can foster the exchange of resources and information, build social capital and result in developing collective efficacy, or the belief a group can work together to achieve shared goals [126, 127]. This social process can serve to improve health outcomes; alternatively, neighborhoods and their corresponding social dynamics can foster negative outcomes, such as health inequalities, delinquency, or crime [126, 128].

In the context of IPV, scholars theorize that when living in a community with weak social bonds and low social cohesion, neighbors may not know when IPV is occurring or may not feel an obligation to intervene when it is occurring [10, 12, 131]. Living in a violent environment could also normalize violence in the household [16]. In communities with high levels of distrust in other neighbors or in institutions, women may be less likely to reach out for help or access police or social services [131]. Abusive partners also use social isolation as a form of abuse, making it difficult for women to leave such relationships [132]. Conversely, social resources and cohesion may enhance a community's ability to prevent IPV [13, 15-20].

There is some empirical support for this theory. Research has found that community disorganization, weak community sanctions, and social norms supporting violence increases the risk of IPV [10-13, 29]. Although social disorganization theory specifically identifies social cohesion as a mediator between social disorganization and delinquency outcomes, there is a dearth of studies examining social process indicators, such as social cohesion [14]. Emerging data suggest that social support can serve to reduce the risk of IPV [15, 30, 31]. Importantly, interventions have been successful at increasing a community's solidarity, reciprocity, and social cohesion, suggesting that this is a modifiable protective factor and may be appropriate for IPV prevention purposes [32, 33, 50].

This study examines the relationship between neighborhood social disorganization and social cohesion factors, and individual IPV outcomes among refugee and host-community women in Northern Ecuador. Studies that examine neighborhood characteristics must try to account for neighborhood composition—or the clustering of individuals with similar individual-level risk and protective factors [9, 49]. An individual's exposure to psychosocial stressors, discrimination, and vulnerabilities could also increase conflict and violence in a relationship. As such, we aim to establish the contextual (e.g. community-level) and compositional (e.g. individual-level) impacts of social disorganization on IPV. We further identify if neighborhood social cohesion partially mediates the relationship between neighborhood social disorder and individual-level IPV, after accounting for individual, partner, and household characteristics.

Methods

This study draws on data from a cluster randomized controlled trial of a World Food Programme (WFP) Cash, Voucher, and Food Transfer intervention conducted by the International Food Policy Research Institute (IFPRI) in 2011. The project improved food consumption, decreased IPV, and increased social cohesion [33, 51, 140]. Standardized in-person surveys were administered to 2,357 households at time 1; 2,122 households were available for follow up approximately seven - eight months later, after approximately six months exposure to the intervention. In total, 1,312 women were partnered at both time points and were either the spouse of the head of household, or head of the household. Households were clustered in 80 neighborhoods (administrative units as defined by local government).

Study setting

The study was conducted in Carchi and Sucumbíos, two provinces in northern Ecuador near the Colombian border. The provinces were selected because of the high concentration of Colombians living there. Carchi and Sucumbíos represent differing geographic, cultural, and socio-economic contexts, with Carchi in the northern highlands and Sucumbíos in the Amazonian lowlands. Seven urban centers within these areas were then selected if more than 10% of the urban population were refugees; the poverty index exceeded 50 percent; and there was the presence of implementing NGOs and financial institutions. Neighborhoods were then selected based on including a large percentage of Colombian and low-income households.

Sample description

The sample includes 148 clusters, or enumeration areas, grouped in 80 neighborhoods. In each cluster, households were mapped and administered a one-page questionnaire regarding basic demographic and socio-economic questions to determine program eligibility, prior to program enrollment and study randomization. Randomization was stratified at the province level as the socioeconomic and geographic characteristics differ substantially between the two provinces. Clusters were randomized to treatment and control and then 20-27 households in each cluster were randomly selected to be interviewed in the initial survey. Additional information on the intervention and randomization can be found in previous publications [50, 51]. Colombian and Colombian-Ecuadorian households were oversampled to ensure a sufficient sample for comparative analysis. Households were eligible for inclusion in the program if they were classified as low socio-economic status (SES) and not currently receiving the Human Development Grant (BDH), which is the Government of Ecuador's national cash transfer program (Hidrobo et al., 2014).

Data collection and ethics

Data were collected prior to intervention start in March-April 2011 and approximately seven months later (October-November 2011). Paper surveys were administered by trained field staff. Verbal consent was collected. Field staff were trained in accordance with the WHO ethical guidelines for conducting research on IPV including modules on ethical recruitment, consent and data collection

procedures; ensuring participant confidentiality, safety and privacy; and managing data to maintain confidentiality. Specific procedures were followed during data collection to ensure the safety of the participant. For example, field staff only asked IPV questions if there were no other family members, including her partner, present. In addition, anonymized referral information was offered to the woman after completing the IPV module with contact information for local services, regardless of if the women had disclosed IPV or not.

IRB approval was obtained from IFPRI and in-country data collection partner Centro de Estudios de Población y Desarrollo Social (CEPAR). The data is publicly available and secondary data analysis was approved by the ethics review board at the University of North Carolina at Chapel Hill.

Measures

Measures are described in detail in Table 1. The outcome variable assesses emotional, physical, and sexual IPV in the last six months (at time 2) using the WHO Violence Against Women Instrument [141, 142]. Female participants were asked thirteen items about physical, sexual or emotional IPV. Two dichotomous variables were created from these questions: having experienced physical or sexual violence in the last six months (yes/no) and having experienced emotional IPV in the last six months (yes/no) [140]. Exposure variables, all measured at time 1, reflect neighborhood-level social disorganization and cohesion; and individual and household exposure to psychosocial stressors and discrimination, migration history, and social support.

Using the full sample at time 1 (n=2,357), exploratory and confirmatory factor analysis were conducted in MPLUS to identify underlying latent constructs of social disorganization and social cohesion [154, 155]. Both EFA and CFA analyses accounted for categorical response distributions and the clustered structure of the dataset. EFA was conducted on half of the sample and results were evaluated with several indicators of fit (RMSEA, CFI, TLI). Items with poor factor loadings (<0.3) were removed and inter-factor correlations were assessed [148]. CFA was then conducted on the second half of the sample to confirm those domains. As some male heads of households and some female heads of household answered these questions, and perceptions of social cohesion may vary by gender, respondent gender was included as a control variable in the factor analysis. Specifically, item means were permitted to vary

by gender in addition to factor means [149]. Model fit was evaluated using SRMR, RMSEA, TLI and CFI. We then output factor score estimates for each household. From this process, household scores were created and then aggregated into neighborhood-level scores. Neighborhood scores were then standardized to improve interpretability of regression coefficients in subsequent analyses.

Factor analysis identified one underlying factor of social disorganization, which included neighborhood averages of wealth, female-headed households, household ownership, and residential instability (i.e. concentration of households that had moved to the neighborhood in the last 20 years). This maps on closely to Sampson's social disorganization domains of *concentrated disadvantage and residential stability* [92, 121]. As neighborhood concentration of psychosocial stressors did not map onto the larger domain of social disorganization during the EFA and CFA process, this was included as a separate indicator.

A total of 37 indicators were included in the survey to measure social cohesion; 26 indicators, across four domains, remained after conducting EFA and CFA. The four domains include trust in individuals; trust in institutions and community connectedness; experiences of discrimination; and civic engagement. Indicators of model fit were high (RMSEA: 0.02; CFI: 0.92; TLI: 0.91; SRMR: 0.07) and all final items but one had factor loadings of 0.3 or higher. However, while three of four domains were significantly correlated at 0.05 level, the strength of the correlation was low, indicating they may not represent a higher order social cohesion factor. Neighborhood average of social support was included separately, as this was measured with only one item. Social cohesion CFA results can be found in Table 6; Table 7 documents the correlations between domains.

At the household level, indicators of household wealth, food security, female and male labor force participation, psychosocial stressors, experiences of recent discrimination, civic engagement, social support, and household mobility were included. All models controlled for female age, education, and ethnicity; province; intervention status (pooled treatment); and IPV at time 1. Key household-level independent variables were centered within the neighborhood. Neighborhood-level independent variables were grand-mean centered (i.e. centered around the entire sample's mean). Centering allows us to parse out within-neighborhood variance and between-neighborhood variance, therefore allowing us to

understand the compositional and contextual affects, respectively, of these variables on IPV outcomes [143]. We also weighted neighborhood-level aggregates to account for the over-representation of Colombian households in our sample.

Analysis

We conducted an attrition analysis to examine if women who were partnered at time 1 and then lost to follow-up at time 2, were different from our study sample. Overall, 12.8% of women that were partnered at time 1 were lost to follow up or refused to participate at time 2. Table 1 in Appendix 2 presents regression coefficients between attrition and key independent variables. We found some evidence of differential attrition: households with Colombian male partners and households that had moved to the neighborhood in the last 20 years were more likely to attrite. We discuss how these differences, particularly regarding household mobility, may have affected our estimates in the discussion.

We assessed the pattern of missing data: 3.6% and 2.1% of women were missing data for IPV at time 1 and time 2, respectively. To avoid biases caused by using complete case analysis (i.e. list-wise deletion of exogenous predictors that is used in maximum likelihood models), we conducted joint multilevel multiple imputation to account for categorical variables and for the hierarchical nature of the data set [146].

We conducted multi-level logistic regression to examine the variance in IPV outcomes attributable to individual, partner, household, and neighborhood-level characteristics. Multi-level models account for heterogeneity between neighborhoods and take advantage of natural clustering of population groups to explain variation in the outcome of interest [150]. Maximum likelihood parameter estimates were generated with standard errors robust to non-normality and non-independence of observations [147]. Random intercepts were included in the models to account for unexplained neighborhood clustering related to IPV. We conducted a 2-2-1 cross-level mediation analysis to see if social cohesion mediated the relationship between social disorganization and IPV. Individual domains of social disorganization and cohesion that were significantly associated with IPV were also tested for mediation.

Results

Sample characteristics are reported in Tables 3 and 4. The average age of women in our sample was 35.9 years. Thirty-six percent of the women identified as Colombian and 42.7% of the sample had moved to the neighborhood sometime in the previous 20 years. Sixty-three percent of the sample had less than secondary education and 32% of women indicated labor force participation. Less than 2% of households were female-headed, and 58% reported renting their homes. Twenty-three percent of households reported some kind of recent psychosocial stressor, such as illness of a family member, being robbed, or experiencing a natural disaster. Thirty-eight percent reported experiencing discrimination in the last six months. Discrimination based on economic status, nationality, and occupation were the most commonly identified forms of discrimination. Fifty percent of the sample reported engaging in some kind of community activity in the last six months, and participants reported having 1.9 people, on average, they could turn to if in need of $100 dollars.

At time 2, 29.4% and 15.6% of women reported emotional and physical or sexual IPV in the last six months, respectively (Table 5). The percent of women reporting IPV in each neighborhood varied. Neighborhood prevalence of emotional IPV ranged from 0 to 80% at time 1 and 0 to 76.9% at time 2. Neighborhood prevalence of physical and/or sexual IPV ranged from 0 to 50% at both timepoints. The intraclass correlation for both emotional and physical and/or sexual IPV was 0.04. This indicates that 4% of variation in IPV outcomes is due to neighborhood membership.

Social disorganization was marginally, positively associated with emotional IPV (AOR: 1.17, 95% CI: 0.99, 1.38) and trended in the same direction for physical and/or sexual IPV (AOR: 1.20, 95% CI: 0.96, 1.51) (Table 8 and 9, Models 1a and 2a). We also explored individual domains of social disorganization and social cohesion and their association with IPV outcomes (Tables 8 and 9, Models 1b and 2b). Residential instability was marginally, positively associated with emotional (AOR: 1.10, 95% CI: 0.98, 1.23) and physical and/or sexual IPV (AOR: 1.13, 95% CI: 0.98, 1.30). Neighborhood civic engagement was negatively associated with emotional IPV (AOR: 0.84, 95% CI 0.74, 0.96). The magnitude of the coefficient was similar for physical and/or sexual IPV, but did not reach statistical

significance at p<0.05 (AOR: 0.85, 0.72, 1.00). In contrast to our hypothesis, neighborhood 'trust in institutions and community connectedness' was positively associated with emotional IPV (AOR: 1.25, 95% CI: 1.07, 1.47).

Social disorganization and social cohesion were negatively associated (AOR: 0.76, 0.60, 0.96), but social cohesion did not act as a mediator of the relationship between social disorganization and IPV outcomes (Tables 8 and 9, Models 1a and 2a). We tested mediation for the individual domains that were associated with IPV outcomes. We found a marginally statistically significant indirect effect of social disorganization on IPV through neighborhood civic engagement (AOR: 1.06, 95% CI: 1.00, 1.14). The results suggest that higher social disorganization is associated with lower civic engagement (AOR: 0.94, 95% CI: 0.91, 0.98) and higher civic engagement is associated with lower odds of emotional IPV (AOR: 0.35, 95% CI: 0.13, 0.93; Table 8, Model 1c). We did not find the same relationship for physical and/or sexual IPV (Table 9, Model 2c). We also did not see indications of mediation for residential instability and social cohesion domains or "trust in institutions and community connectedness" and social disorganization domains (results not shown).

Within the household, psychosocial stressors and supports were associated with IPV outcomes (Table 8, Model 1c and Table 9, Model 2c). Women living in households reporting perceived discrimination at time 1 were significantly more likely to report emotional IPV (AOR: 1.49, 95% CI: 1.11, 1.99) and physical and/or sexual IPV (AOR: 1.58, 95% CI: 1.12, 2.23) at time 2, compared to households that did not report any discrimination. Women living in households reporting higher number of psychosocial stressors had significantly higher odds of emotional (AOR: 1.37, 95% CI 1.13, 1.68) and physical and/or sexual IPV (AOR: 1.64, 95% CI: 1.26, 2.15). Households reporting a higher number of people (outside of the household) in which they could borrow $100 in an emergency had significantly lower odds of reporting emotional IPV (A0R: 0.95, 95% CI: 0.91, 1.00) and marginally lower odds of reporting physical and/or sexual IPV (AOR: 0.95, 95% CI: 0.90, 1.01). Participation in community events, and male and female nationality were not associated with IPV outcomes. Household-level mobility was negatively associated with emotional IPV (AOR: 0.67, 95 % CI: 0.46, 0.97).

Discussion

While theory and research illustrate the significant impacts conflict and mass migration have on community structures and social processes, the influence of neighborhood factors on IPV remains largely unexplored [91]. To our knowledge, this is one of the first studies to examine social disorganization and social cohesion in conflict-affected and host communities in South America. Our research analyzed longitudinal data to refine and develop effective prevention and response programming in host communities and for particularly vulnerable women and families.

We found that social disorganization was marginally associated with IPV, as has been seen in other settings [14, 92]. However, our study results differ slightly from previous social disorganization and IPV research. Pinchevsky's 2012 systematic review of studies examining social disorganization factors and IPV outcomes found that indicators of concentrated disadvantage were consistently associated with IPV outcomes, but indicators of immigrant concentration and residential instability were not [92]. VanderEnde's 2012 review of literature on community-level correlates of IPV, found the same pattern among social disorganization literature [14]. When we explored individual domains of social disorganization, we found that residential instability, but not community wealth, percent of renters or percent of female headed households, was related to physical and/or sexual IPV. The majority of social disorganization research has been conducted in the United States, thus it is possible that different indicators are more relevant in international or conflict-affected areas. Furthermore, our neighborhood variables were constructed using a sample of the most economically vulnerable of the neighborhood, to fit the needs of the original intervention the data was collected for, as opposed to a representative sample of the entire neighborhood. While aggregated neighborhood variables were weighted to account for oversampling of Colombian households, these were still not representative of the entire neighborhood in terms of SES, and may be limited by low variation across geography and social strata. For example, other studies which include greater variation in SES (whereas our neighborhoods are all, by definition, poor) – may have more power to detect effects. These factors may be why we do not see a relationship between concentrated disadvantage and IPV, as has been documented in other studies.

44

We hypothesized that social disorganization would influence IPV outcomes through a social cohesion mediator. We saw a marginally significant indirect effect of social disorganization on IPV through neighborhood-level civic engagement, in the expected direction. Previous research has found that collective efficacy, a distinct but related domain of social cohesion, has similarly been identified as a protective factor for IPV in some, but not all, settings [30, 94, 156]. A neighborhood's level of civic engagement may indicate that the community is more comfortable and practiced working together on shared concerns, and therefore may be more adept at addressing or preventing issues such as IPV. The international development community has focused extensively on promoting social cohesion to support the mental and physical health of refugees, displaced people and migrants, to ensure social stability in host communities, and to generate public support for social protection programs [33, 97, 98]. These findings suggest that programming that encourages civic engagement and community participation in host communities can work simultaneously to reduce the risk of IPV.

Our combined social cohesion measure did not act as a mediator between social disorganization and IPV. Further, in contrast to our hypothesis, we found that neighborhood-level trust in institutions was positively associated experiencing emotional IPV. There are a number of potential reasons for this relationship. For example, women who have previously experienced IPV could have successfully sought help from local organizations and therefore have higher trust in certain institutions, driving this unanticipated effect. It is also possible that the relationship could reflect an endogenous placement of programs and services—local officials or community organizations could be responding to high rates of IPV prevalence in neighborhoods by purposefully placing and strengthening institutions in locations of high need. Alternatively, this association could be a result of measurement. Our measure of trust in institutions was not previously validated and there is a wide range of indicators used in international contexts [97, 129, 157]. It may be that our measure captured a different latent construct than we intended or did not capture all aspects of theorized aspects of trust in institutions and community connectedness.

We included household level indicators that mirror social disorganization and cohesion to better understand compositional versus contextual effects of the concentration of economic and social vulnerabilities. A large number of participants reported experiencing some form of discrimination or psychosocial stressor; both of which were positively related to IPV. Theory posits that external stressors

on the household and partnership increase tension in the family, therefore increasing the risk of IPV [109]. Wirtz's qualitative work with internally displaced Colombian women found that women attributed IPV to their partner's exposure to political violence, their partners' lost employment, and economic insecurity as a cause of IPV [53]. While there is not a large body of literature on the relationship between discrimination and IPV, our results are consistent with findings from other studies [158-161]. Exposure to discrimination and psychosocial stressors among conflict-affected communities has been associated with significant physical and mental health outcomes, including death, disability, post-traumatic stress disorder (PTSD), depression, increased substance use, and, in adolescents, externalizing behaviors (e.g. defiance, aggression and anti-social behavior) [110, 162-165]. These may be important mediators in the relationship between discrimination and psychosocial stressors and IPV, but were not measured in our data.

In line with our hypothesis and previous research, we found that household-level social support was protective against IPV [15, 30, 31, 166]. There are several plausible reasons for this relationship. Social support could reflect the household's social capital within their immediate network, that would encourage intervening in abusive situations. It may also be that social support can help mitigate stress and conflict that otherwise would lead to IPV. Traditional feminist theory posits that social support also plays an important role in women leaving abusive relationships. Our results, as well as other research that has found that social support mitigates the consequences of IPV in terms of mental health and perceived quality of life [167-169], suggest exploring interventions to increase women's support networks as both an IPV prevention and response mechanism.

While we found that neighborhood residential stability was marginally positively associated with physical and/or sexual IPV, we did not see a relationship between nationality, which can be seen as a proxy for international migration, and IPV outcomes. We did see that household mobility was negatively associated with emotional IPV. This analysis also did not take in to account the reason for moving to the neighborhood, years since relocating, or adversities experienced during migration. However, these likely influence IPV and merit further research. Refugees, displaced people, and people in conflict settings are often separated from families and their traditional social support networks; experience significant financial hardships; and face significant challenges resettling [85, 88, 164, 170, 171]. Further, exposure to conflict-

related violence has also been documented as a risk factor for IPV in other settings. Research conducted in Palestine found that men's exposure to political violence increased the female's partner risk of recent IPV [25]. Among Liberian men, male perpetration of IPV was significantly associated with direct war violence, coercion to participate in violence, witnessing war violence, and having taken part in the conflict [172]. Research among immigrants in the United States also found that pre-migration exposure to violence was associated with men's perpetration of IPV [26]. With over 68 million displaced people worldwide, there is a critical need to better understand the relationship between exposure to conflict, displacement, and IPV [52].

Finally, we found some differences in what factors were associated with emotional IPV compared to those associated with physical and/or sexual IPV. There are several potential explanations for those differences. First, for many predictors, they often trended in the same direction, even if they did not both achieve statistical significance, which could be a result of sample size. However, while emotional and physical and/or sexual IPV are highly correlated, and often overlap, they are distinct constructs. As such, we would expect to see some differences in what predicts each outcome [173]. This could be due to differences in the social acceptability of emotional abuse compared to physical or sexual abuse. Further, emotional abuse may not present the same way as physical violence, in terms of physical manifestations, and therefore it is more difficult for health care providers, friends or family to identify [174]. Finally, a common component of emotional violence is isolation, which further deters women from receiving support, and increasing her vulnerability to more abuse.

Our research has additional some limitations. Mediation analyses ideally use three time points to assure the temporal ordering of all variables. We only used two data points, and can only assess associations between social disorganization and social cohesion. While we cannot establish a temporal ordering of those two variables, the hypothesized model is in-line with social disorganization theory. Furthermore, our neighborhoods were defined by administrative units which may not reflect an accurate geographic boundary of women's communities [9]. Our measures of social cohesion and disorganization were not necessarily comprehensive, and other factors, such as collective efficacy and other social norms variables that may act as mediators between disorganization and IPV, such as norms supportive of violence, were not directly measured. Finally, neighborhood-level indicators represent a social context for

the women in our sample at a specific point in time. Since data was collected, a peace treaty was signed between the Colombian government and the Revolutionary Armed Forces of Colombia (FARC). While substantial progress has been made in laying down arms and reintegrating former combatants since the agreement was made in 2016, much of the accord remains to be implemented and significant violence still remains in Colombia [175]. Further, with the mass migration of Venezuelans to Colombia and Ecuador, we believe this research remains relevant.

Our findings aim to inform IPV prevention and response programming in highly vulnerable communities. Overall, our findings suggest the importance of targeting communities with high levels of residential instability and adopting social cohesion programming, specifically focusing on civic engagement, for IPV prevention. At the household-level, mitigating exposures to psychosocial stressors and discrimination, as well as increasing social support, can serve to reduce risk to IPV. Future research is needed to continue expanding our understanding of social disorganization and cohesion in conflict-affected areas and host communities, as well as, the unique risk and protective factors for migrants and displaced people in diverse settings

CHAPTER 7. WOMEN'S STATUS AND IPV: EMPIRICAL EVIDENCE FROM A LONGITUDINAL SAMPLE OF LOW-INCOME WOMEN IN NORTHERN ECUADOR (AIM 2)

Background

Intimate partner violence (IPV), or emotional, physical and sexual abuse by a current or former partner, is a significant problem in South America and worldwide [1]. Over 30% of Ecuadorian and 37.5% of Colombian women report experiencing IPV in their lifetime [2-4]. IPV increases a woman's likelihood of experiencing multiple adverse health and social outcomes, including depression, suicidality, alcohol use, physical injuries, sexually transmitted infections, and homicide [1, 2, 5].

Increasing the social and economic status of women may help reduce IPV in South America [10, 42, 43]. Feminist theory highlights gender inequality, social status, and restricted rights of women as significant contributors to the high rates of violence experienced by women [29, 44, 45]. The last few decades have seen radical shifts in the status of women in the region, especially regarding laws criminalizing violence against women and improving girls' access to education. Ecuador and Colombia both outlawed domestic violence in the mid-1990s; Ecuador also made changes to its judiciary structure to improve its adjudication of cases of IPV [36, 72]. In 2007, Ecuador created a plan for the eradication of violence against children, adolescents, and women, signifying that violence prevention was a national priority. Further, the Ecuadorian constitution specifically names, in the *Rights of Liberty,* the right to live free of violence in both public and private spheres, and the government's obligation to put actions in place to prevent, eliminate, and sanction all forms of violence [37]. Colombia similarly enacted the Gender Equality Law (Law 1257) in 2008 and created specific special counsels to prosecute high priority cases of sexual violence as a result of the internal conflict [34, 72].

These countries have achieved parallel advances on gender equality outcomes, however gaps remain. Women in Ecuador and Colombia have made significant gains in closing the education gap, a

critical enabler of gender equality [35]. According to the World Bank, Ecuadorian girls are enrolled in and graduating from each level of education at the same or higher rates than their male counterparts, except amongst the lowest socio-economic groups. Here the ratio of female to male lower-secondary completion rate remains at 84%. Colombian women have also achieved improvements in education, with similar enrollment and completion rates for male and female children [40]. However, substantial challenges remain in terms of economic equality. Women face high rates of poverty and unemployment in both Ecuador and Colombia. In Ecuador, only 49% of women over the age of 15 participate in the workforce compared to 80% of men over the age of 15, and the unemployment rate is almost 60% higher among women than men [39]. In Colombia, women face similar economic, political, and social disadvantages. The unemployment rate is over 75% higher among women compared to men and women are also less likely to have any kind of personal income compared to men [74].

Previous research in Latin American settings found that a woman's share of the couple's wealth is significantly associated with lower odds of physical violence and that land-owning women are less likely to experience IPV compared to women who did not own land [42, 43]; however, research on asset ownership in other low- and middle-income countries, with nationally-representative data, has found inconsistent results [46]. Heise and Kotsadam (2015) found that a higher percent of women engaged in the workforce was associated with lower mean IPV prevalence in a bivariate analysis (e.g. an ecological analysis); country-level women's workforce participation also moderated the relationship between individual level risk and protective factors (e.g. working for cash) and IPV outcomes [29]. Joint decision-making in the household, as a proxy for equal household power dynamics, has also been associated with a lower risk of IPV in some, but not all, settings [47, 48]. Additional research on the relationship between IPV and indicators of social and economic equality is needed.

The influence of the social and economic status of women on IPV outcomes likely operates at both the individual and community level. IPV has traditionally been framed as an individual experience, however, in reality, families are nested in their neighborhoods and communities and "do not exist in isolation from their surrounding social contexts" [12]. Feminist theory identifies hegemonic patriarchy as a critical enabler of violence against women, including IPV [45]. Hegemonic patriarchy manifests itself as the systematic devaluation of women operationalized through "societal and institutional conditions, norms

and rules that perpetually disenfranchise women and are intrinsically linked to issues of power and control" [135]. Violence towards women, given their inferior status, is then 'allowable' or justified within this framework. Above and beyond raising the social or economic position of a single woman, doing so for women en masse serves to disrupt that system and may reduce the acceptability of violence against women. Scholars also theorize that elevating the status of women could be an important mechanism in elevating the issue of ending IPV within a community [96].

An emerging body of research exploring the relationship between individual IPV outcomes and the status of women within their communities have documented protective effects of community-level education, autonomy, and gender equality, and that community-level variables moderate some individual-level associations with IPV [29, 47, 104, 176]. However, gaps, especially in the South American context, remain. For example, in a 2015 systematic review of 36 studies that explored neighborhood factors associated with IPV, the majority of studies (83%) found links between neighborhood factors and IPV, but only two were conducted in South America [10, 16, 48]. Furthermore, the majority of research conducted has been correlational, limiting our ability to make causal inferences from findings [17]. As such, additional research is needed to understand the impact of a woman's status within her household versus the impact of women's status in the neighborhood at large, or how household and neighborhood status of women interact, in the South American context.

To address these knowledge gaps, we analyzed longitudinal data collected in Northern Ecuador among low-income Ecuadorian and Colombian women to assess if women's status in the household and neighborhood predict recent IPV. We further explored if the neighborhood-level status of women moderated the relationship between household status and IPV.

Methods

This study draws on data from a cluster randomized controlled trial of a World Food Programme (WFP) Cash, Voucher, and Food Transfer intervention conducted by the International Food Policy Research Institute (IFPRI) in northern Ecuador in 2011. The project improved food consumption, decreased IPV, and increased social cohesion [33, 51, 140]. Standardized in-person surveys were administered to 2,357 households at time 1; 2,122 households were available for follow up approximately

seven - eight months later, after approximately six months exposure to the intervention. In total, 1,312 women were partnered at both time points and were either the spouse of the head of household, or head of the household. Households were clustered in 80 barrios, or administrative neighborhood units as defined by local government.

Study setting

The WFP's cash, voucher, and food transfer program was conducted in urban areas of two provinces near the Colombian border. Carchi and Sucumbíos provinces were selected because of the high concentration of low-income Ecuadorians and Colombians living there. Carchi and Sucumbíos represent differing geographic, cultural, and socio-economic contexts, with Carchi in the northern highlands and Sucumbíos in the Amazonian lowlands. Urban centers within these areas were then selected if more than 10% of the urban population were refugees; the poverty index exceeded 50 percent; and there was the presence of implementing NGOs and financial institutions. Seven urban centers in total were included in the study. Within those cities, neighborhoods were then selected for inclusion based on including a large percentage of Colombian and low-income households.

Sample description

The sample includes 148 clusters, or enumeration areas, grouped in 80 neighborhoods. In each enumeration area, households were mapped and administered a one-page questionnaire regarding basic demographic and socio-economic questions to determine program eligibility, prior to program enrollment and study randomization. Randomization was stratified at the province level, as the socioeconomic and geographic characteristics differ substantially between the two provinces. Clusters were first randomized to treatment or control, and then clusters within the treatment sample were randomized into Cash, Food, or Vouchers; in each cluster, 20-27 households were randomly selected to be interviewed in the survey at time 1. Additional information on the intervention and randomization can be found in previous publications [50, 51]. Colombian and Colombian-Ecuadorian households were oversampled to ensure a sufficient sample for comparative analysis. Households were eligible for inclusion in the program if they were classified as low socio-economic status (SES) and not currently receiving the Human Development Grant (BDH), which is the Government of Ecuador's national cash transfer program.

Data collection and ethics

Data were collected prior to intervention start (March-April 2011) and approximately seven months later (October-November 2011) (Hidrobo et al., 2014). Paper surveys were administered by trained field staff, and verbal consent was collected. Field staff were trained in accordance with the WHO ethical guidelines for conducting research on IPV, including modules on ethical recruitment, consent and data collection procedures; ensuring participant confidentiality, safety and privacy; and managing data to maintain confidentiality. Specific procedures were followed during data collection to ensure the safety of the participant. For example, field staff only asked IPV questions if there were no other family members, including her partner, present. In addition, anonymized referral information was offered to the woman after completing the IPV module with contact information for local services, regardless of if the women had disclosed IPV or not.

IRB approval was obtained from IFPRI and in-country data collection partner Centro de Estudios de Población y Desarrollo Social (CEPAR). The data are publicly available and we obtained approval for secondary data analysis from the ethics review board at the University of North Carolina at Chapel Hill.

Measures

Measures are described in detail in Table 2. The outcome variables assessed emotional, physical and/or sexual IPV in the last six months (at time 2) using the WHO Violence Against Women Instrument [141, 142]. Female participants were asked thirteen measures of physical, sexual or emotional IPV that occurred ever or in the last six months (corresponding to the intervention period). Two dichotomous variables were created: having experienced physical and/or sexual violence in the last six months (yes/no) and having experienced emotional IPV in the last six months (yes/no) [140].

Exposure variables reflect the status of women at the individual, household, and neighborhood-level including female age, education, access to resources, and household decision-making. Female access to resources was assessed with several variables including: female employment status, female earnings compared to male partner, female asset ownership, and asset ownership compared to male partner. Differences in age and education level between the woman and her partner were also constructed. Neighborhood variables were aggregated from household responses from the full sample at

time 1 to reflect women's neighborhood environment. These variables included: percent of women with secondary education or higher; average percent of household assets owned by females; average female labor force participation; percent of women earning the same or more as their partner; and average percent of female-involvement in decision-making.

Analysis

We conducted an attrition analysis to examine if women who were partnered at time 1 and then lost to follow-up at time 2, were different from our study sample. Overall, 12.8% of women that were partnered at time 1 were lost to follow up or refused to participate at time 2. Table 2 in Appendix 2 presents results of logistic regression analysis of attrition on key independent variables. While age was significant, this difference is likely to result in lower bound estimates, and not a source of significant bias.

We also assessed the pattern of missing data in our sample; 3.6% and 2.1% of women were missing data for IPV at time 1 and time 2, respectively. One to two percent of women were missing household decision-making data; and around 4% of women were missing data on earning comparison. To avoid biases caused by using complete case analysis (i.e. list-wise deletion that is used in maximum likelihood models), we conducted joint multilevel multiple imputation to account for categorical variables, and for the hierarchical nature of the data set [146].

We then conducted multi-level logistic regression to examine the variance in IPV outcomes attributable to individual, partner, household, and neighborhood-level characteristics. Multi-level models account for heterogeneity between neighborhoods and take advantage of natural clustering of population groups to explain variation in the outcome of interest from predictors at multiple levels [150]. Maximum likelihood parameter estimates were generated with standard errors robust to non-normality and non-independence of observations. Random intercepts were included in the models to account for unexplained neighborhood clustering related to IPV. Random slopes for level 1 predictors were tested; none of the random slopes were maintained as they were not statistically significant.

To prospectively assess the effects of our predictors on IPV outcomes, we included fixed and time-varying variables of key status variables [151]. All time 1 predictors were included in the model; for variables identified as likely to change between the two data collection points, change scores were

created (time 2 – time 1). This included household wealth, household FCS, value of female-owned assets, percent of female-owned assets, male and female labor force participation, earning difference between partners, and household decision-making. Change variables were also created for neighborhood variables (i.e. the change of neighborhood averages between time 1 and time 2), except for education, as a t-test indicated that the change was not statistically different from zero. Change variables for value of female-owned assets at the household and community-level were not included as they were too highly correlated with their values at time 1. All models controlled for demographic variables (province, gender of head of household, female age and nationality, and male labor force participation), intervention status (pooled treatment), and IPV at time 1.

Key household-level independent variables were centered within the neighborhood. Neighborhood-level independent variables were grand-mean centered (i.e. centered around the entire sample's mean). Centering allows us to parse out within-neighborhood variance and between-neighborhood variance [143]. We also weighted neighborhood-level aggregates to account for the over-representation of Colombian households in our sample.

We then assessed if the social and economic status of women at the neighborhood-level (at time 1) moderated the association between household status of women and IPV outcomes. We added the following interaction terms (one at a time to ensure model convergence): household educational difference*neighborhood educational average for women; household percent of assets owned by females*neighborhood average percent of household assets owned by females; female labor force participation*percent of women participating in the labor force in the neighborhood. As none were significant, no additional moderation analysis was conducted.

Results

Sample characteristics are listed in Table 10. The average age of women in our sample was 35.9 years and 39.6 years for men, representing an average 3.7-year age gap. More than 60% of the sample had less than secondary education; around 67% of households reported women having with the same level of education as than their male partners. A little more than 35% of the women identified as Colombian. The majority of women (84.7%) reported earning less than their male partners at time 1 and

women reported owning about a 1/3 of the value of assets. Women reported high levels of involvement in decision-making—on average, women were involved in over 80% of decision-making across eight domains.

At time 2, 29.4% of women reported emotional IPV and 15.6% reported physical and/or sexual IPV in the last six months; the prevalence for both were stable over time (Table 5). The percent of women reporting IPV in each neighborhood varied. Neighborhood prevalence of emotional IPV ranged from 0 to 80% at time 1 and 0 to 76.9% at time 2. Neighborhood prevalence of physical and/or sexual IPV ranged from 0 to 50% at both time points. The intraclass correlation for emotional and physical and/or sexual IPV was 0.04. This indicates that 4% of variation in IPV outcomes is due to neighborhood factors. Province was associated with emotional IPV. Women in Carchi had significantly higher odds of experiencing emotional IPV than women from Sucumbíos (AOR: 1.77, 95% CI 1.13, 2.75).

Table 11 displays results of our final models. Females' increase in participation in household decision-making between time 1 and time 2 was associated with decreased odds of physical and/or sexual IPV (AOR: 0.41, 95% CI: 0.21, 0.78); this association was similar for emotional IPV but was marginally significant (AOR: 0.57, 95% CI: 0.30, 1.06). Increases in neighborhood average female-involved decision-making was associated with decreased odds of emotional IPV (AOR: 0.78, 95% CI: 0.61, 0.99).

Female education was also identified as a protective factor. Women who completed secondary education or higher had significantly lower odds of experiencing emotional IPV than women with less than secondary education (AOR: 0.70, 95% 0.49, 0.99). At the relational level, women with lower education than their partners were significantly more likely to experience emotional IPV (AOR: 1.71, 95% CI: 1.22, 2.42) and physical and/or sexual IPV than women with the same or more education than their partners (AOR: 1.57, 95% CI: 1.08, 2.28). The neighborhood percent of women with secondary education or higher was also inversely associated with women's odds of experiencing emotional IPV, but this was marginally significant (AOR: 0.90, 95% CI: 0.78, 1.03).

Other indicators of female economic empowerment that might serve as a proxy for status of women in the household or neighborhood—such as value of female-owned assets, household percent of female-owned assets, and earning difference—were not associated with IPV outcomes. However, consistent male labor force participation was associated with lower odds of experiencing physical and/or sexual IPV (AOR: 0.30, 95% CI: 0.10, 0.92). Whereas joining the labor force between time 1 and time 2, for women, was associated with higher odds of physical and/or sexual IPV (AOR: 1.76, 95% CI: 1.18, 2.63). Assignment to an intervention group—a economic transfer with food security objectives—was protective against IPV, as previous research has found [140]. Conversely, we found that household wealth was associated with higher odds of emotional IPV (AOR: 1.14, 95% CI: 1.01, 1.30). Our analysis did not yield any significant findings regarding moderation (results not shown).

Discussion

We identified modifiable indicators of women's status in the home and neighborhood among low-income Ecuadorian and Colombian women. Theory drove the selection of predictors that we explored and we utilized a longitudinal dataset to improve our ability to make casual inferences, whereas most IPV research has relied on correlational data. We also looked at multiple levels of predictors, as well as how they interacted, as recommended by experts in the field [17]. Data on predictors of IPV in South America is limited, and this research contributes to our understanding of IPV in this setting.

We found a protective relationship between IPV and decision-making at the household and neighborhood level. Previous research has found inconsistent relationships between household-level measures of decision-making and IPV, likely as a result of differences in how the measure is treated, statistically and theoretically [177]. There are different theoretical assumptions about what best serves as a proxy for women's empowerment within the household—joint decision-making, sole decision-making on the part of the woman, or a decision-making relationship that reflects her preferences (which is often not asked) [177]. We chose to measure household decision-making as a continuous measure of the percent of domains the woman is involved in. We made this choice based on the assumption that within each couple there are unmeasured differences in preferences around who should be involved in different domains of decision-making and if that decision should be made together or independently, but that a

'gender equitable' relationship likely involves some female involvement in decision-making. Our findings support the use of interventions that provide couples with skills to communicate and negotiate around decision-making more effectively, as well as gender-transformative programming that challenges traditional ideas of masculinity and gender roles and advocates for more equitable relationship dynamics [178-180].

Average female-involved decision-making in a neighborhood provides insight into neighborhood norms around decision-making. To our knowledge, this is the first study to explore household decision-making at the neighborhood-level; this approach provides an interesting proxy for the status of women in their community. Our findings about neighborhood average decision-making support the use of community-level approaches, such as community mobilization. Qualitative research conducted in the context of a gender-transformative community mobilization randomized control trial in sub-Saharan Africa found that community-level approaches serve to generate community-level support for gender-equitable norms, which bolstered individual-level adoption of gender equitable behaviors and helped intervention participants sustain non-violent behavior [181]. When evaluated quantitatively, adolescent girls living in villages that received the gender-transformative community mobilization intervention had lower odds of experiencing IPV, compared to their peers in control villages [182].

We also found that achieving secondary education and educational parity between male and female partners was protective for women against various forms of IPV; neighborhood percent of women with secondary education or higher trended in the same direction. The World Bank, United Nations, and WHO all recognize equal access to education as a critical enabler of gender equity for women, reducing poverty, and facilitating economic development in low and middle-income countries. Low educational achievement prevents access to quality employment, increases vulnerability to poverty, and acts as a barrier to social and political stability [73]. By increasing access to safe employment, safe and high-quality education can allow for more financial independence and less economic dependence [17, 99].

Previous research has found mixed and sometimes contradictory results regarding educational differentials and IPV outcomes [48, 100-102] and that the relationship between female education and IPV may not be linear, but instead an inverted u-shape. Although we did not find that community average

education of women moderated the relationship between educational differences and IPV, there could be other, unmeasured, community-level moderators—such as community gender norms or attitudes towards violence—that would explain why the relationship between education-level, education differential and IPV is inconsistent between study settings and between IPV type [17, 99]. It is also possible that our choice of control factors, or inability to look at education-level in multiple categories (because few women reported either no education or more than secondary education) resulted in differences between our study and others.

We did not find that our other neighborhood level variables—average percent of women owned asset values, percent of women earning the same or more than their partners, or average labor force participation—predicted either emotional or physical and/or sexual IPV or act as a moderator of relational level factors and IPV outcomes. However, we did see that IPV prevalence varied between neighborhoods and province was a significant predictor of emotional IPV, with women living in Carchi being more likely to experience IPV than women living in Sucumbíos. The research on community-level predictors and moderators of IPV is still nascent; a recent systematic review of prospective studies of risk factors for IPV found only seven community and no structural level factors out of 71 measured factors [183]. As such, our proxies of women's status in their communities likely need further refinement and exploration.

We expected indicators of female economic empowerment to be protective factors. However, we did not see a relationship between IPV and the value of female-owned assets, the percentage of household assets owned by the woman, or comparative earnings at either the household or neighborhood level. Feminist theory suggests that financial dependence on men can increase vulnerability to IPV, and poverty and limited resources prevent leaving or avoiding abusive relationships [184]. Women's participation in the labor force is also seen as a significant indicator of gender equality— working should increase a woman's economic independence and prevent her from being isolated and without social resources to avoid or leave violent relationships [96]. However, we found that joining the labor force was associated with increased odds of experiencing physical and/or sexual violence. Qualitative studies in Colombia have found that female engagement in the work force resulted in working longer hours and contributing a higher percentage of family income, but no increase in bargaining power or economic independence, and increases in partner conflict [27, 83]. In the context of extremely low-

income households, it may be that the earnings from their employment are not enough to shift power dynamics within a relationship. Research in other areas have found that extremely poor women work to alleviate financial hardships, and these financial stressors may exacerbate risk of IPV [173, 185]. Alternatively, working outside the home—potentially a deviation from traditional gender norms in the area—could create conflict within a relationship. Interestingly, the parent intervention of this study, as well as several other economic empowerment programs, have identified casual reductions in IPV [112]. Of fourteen identified quantitative studies in a recent review examining cash transfers and impacts on IPV, all but one of these interventions targeted women, representing a boost to their income specifically. Our divergent findings—that intervention participation was protective, joining the labor force was a risk factor, and no relationship between other indicators of economic empowerment—reinforce the need to closely examine different strategies in which to empower women economically as a mechanism to reduce IPV.

We also found consistent participation in the labor force for men was associated with reduced odds of physical and/or sexual IPV. Although some theorize that male employment may increase the risk of IPV because of an increase in the man's bargaining power and power disparities in the relationship [186], others theorize that male unemployment, and the inability to meet social norms about providing for one's family, can cause depression, substance use, and frustration—increasing the likelihood of IPV [27, 28]. In line with our findings, a study in India found that women whose husbands had intermittent or no stable employment were at higher risk of IPV compared to women whose husbands had stable work [187]. Two qualitative studies in Colombia found that women perceived their partner's lack of employment contributed to conflict and IPV in their relationships [27, 53].

Our study has some limitations. Sample size may have limited our ability to identify community-level predictors of IPV or moderators, as the sample was originally designed to meet the data requirements for an impact evaluation. Also, this sample is not representative of these two provinces in Ecuador, but of low-income homes in neighborhoods with a high percentage of low-income and Colombian households. Our neighborhood variables were also constructed using a sample of the most vulnerable of the neighborhood, to fit the needs of the original intervention the data was collected for, as opposed to a representative sample of the entire neighborhood. While aggregated neighborhood variables were weighted to account for oversampling of Colombian households, these were still not

representative of the entire neighborhood in terms of SES. There was also some attrition in our sample. While age was significantly correlated with attrition over the panel period, it does not appear to be problematic for the main conclusions presented in the analysis. Furthermore, our neighborhoods were defined by administrative units which may not reflect an accurate geographic boundary of women's communities [9]. Finally, there may be unmeasured covariates that influence IPV outcomes that were not captured in this analysis.

Despite these limitations, we believe this research contributes significantly to the literature. A growing evidence base of causally linked risk and protective factors for IPV in various settings has allowed for more effective prevention and response programming. The need for additional evidenced-based and promising interventions to reduce IPV compel the field to continue researching root causes of IPV [1, 58]. Our results build on our current understanding of IPV, and underscore the importance of thoughtfully identifying strategies to raise the status of women within their partnerships, households and their communities. Further research should employ representative, longitudinal samples to identify how these factors interact to mitigate risk for women in diverse contexts.

CHAPTER 8. CONCLUSIONS AND FUTURE RESEARCH

This dissertation sought to identify predictors of IPV at multiple levels—individual, partner, household, and neighborhood. Informed by social disorganization (Aim 1) and feminist theory (Aim 2), I tested risk and protective factors that reflect the social context of the neighborhoods in Northern Ecuador where data was collected. I further explored how these variables interacted with each other, through mediation and moderation hypotheses.

Social disorganization was marginally, positively associated with emotional IPV, and indicated the same trend for physical and/or sexual IPV. When exploring individual domains of social disorganization and cohesion, I found that higher than average neighborhood residential instability was marginally positivity associated with IPV, and neighborhood civic engagement was negatively associated with IPV. However, one domain of social cohesion—trust in institutions and community connectedness—was positively associated with emotional IPV, in contrast to our hypothesis. At the household level, experiencing psychosocial stressors and discrimination were positively associated with all forms of IPV; while higher social support was associated with lower odds of IPV.

When examining if the social status of women influenced IPV outcomes, I found that increased household decision-making at the household-level was negatively associated with physical and/or sexual IPV, and at the neighborhood-level was negatively associated with emotional IPV. Higher female education was also a protective factor for emotional IPV, while having less education than their partner was a risk factor for both emotional and physical and/or sexual IPV. However, I did not find that indicators of female economic empowerment were negatively associated with IPV outcomes. Further, I did not see evidence of neighborhood level indicators of women's social status moderating the relationship between household factors and IPV.

Summary of limitations

This study is not without limitations. Our outcome measure, of recent emotional and physical and/or sexual violence, was self-reported. It is possible that participants were not comfortable disclosing their experiences of IPV to field staff. Gold-standard procedures for collecting IPV data were enacted to both reduce participant discomfort and protect their confidentiality and safety. For example, women who were not alone during the time of interview were not asked IPV questions. These missing values were imputed to avoid biases of excluding these women as it is possible that these women may be in especially controlling relationships. Despite the limitations of self-reported data, this data is substantially more accurate than using data from police or health facility reports, as most women do not disclose to formal authorities [57].

Our social cohesion measure was not previously validated. Measures of social cohesion vary significantly between fields and studies; our study reflected often measured domains of social cohesion in international settings, including social support or connectedness, civic engagement, trust in individuals, trust in institutions, and stigma or discrimination, but did not include collective efficacy which may be especially important in the context of IPV [97, 157]. However, I conducted robust analysis to construct these latent variables. Furthermore, while not all social cohesion measures were correlated to IPV as hypothesized, they were significantly associated with social disorganization in the expected directions.

Sample size may have limited our ability to identify community-level predictors of IPV or moderators, as the sample was originally designed to meet the data requirements for an impact evaluation. Also, this sample is not representative of these two provinces in Ecuador, but of low-income homes in neighborhoods with a high percentage of low-income and Colombian households. As such, neighborhood variables were also constructed using a sample of the most vulnerable of the neighborhood. While aggregated neighborhood variables were weighted to account for oversampling of Colombian households, these were still not representative of the entire neighborhood in terms of SES.

Furthermore, there was some differential attrition in our sample, but this does not appear to bias our main conclusions. Finally, our neighborhoods were defined by administrative units which may not reflect an accurate geographic boundary of women's communities [9].

Neighborhood-level indicators also represent a social context for Ecuadorian and Colombian women at a specific point in time. Since data was collected, Colombia's internal conflict has officially ended, with the signing of a peace treaty between the Colombian government and FARC in 2016. While substantial progress has been made in laying down arms and reintegrating former combatants, much of the accord remains to be implemented and significant violence still remains in Colombia [175]. According to the International Red Cross, other armed groups are clashing with the government and each other, in the aftermath of the peace agreements [188]. Further, neighboring Venezuela is suffering a social and economic crisis, with millions of Venezuelans migrating to Colombia, Ecuador and other countries. As such, I believe this research remains relevant.

Summary of strengths

This study benefits from many strengths. There is a dearth of research conducted in South American or conflict-affected communities in general that examine household and neighborhood level factors associated with IPV. Furthermore, two recent systematic reviews of community and neighborhood-level correlates of IPV documented very few studies conducted in this setting—only two in South America and none in conflict-affected areas [10, 14]. As such, our research fills an important gap in our knowledge about determinants of IPV in South America.

An important strength of this study lies in the marriage of a strong theoretical foundation with robust empirical analysis. The research questions and choice of predictors were driven by dominant theories, that are well suited to the study area. I also analyzed longitudinal data, whereas most IPV research has examined correlational associations. This allows us to make more robust inferences. In a recent review of studies that prospectively identified predictors of IPV, none of the 60 studies were conducted in South America and only seven of 71 measures were at the community-level [183]. Furthermore, many studies that focus on community or neighborhood level factors fail to account for clustering of participants, statistically speaking [10]. This study accounted for clustering at all stages of the analysis, including data imputation, exploratory and confirmatory factor analysis, and in our regression models.

Policy and Intervention Implications

An additional strength of this research is its direct applicability to programming. For example, this research can contribute to the IOM, UNCHR and other international development agencies programming designed to improve the health and social outcomes among displaced people. These agencies already prioritize reducing displaced people's vulnerability, supporting access to safe housing, employment, health care and education, and integration into receiving communities. Our findings support incorporating IPV prevention and response programs into these services. Results suggest targeting neighborhoods characterized by high residential instability and encouraging civic engagement. Results also suggest that helping households avoid exposures to psychosocial stressors and discrimination, and increasing social support for families living in host communities can support IPV prevention and response efforts.

Our predictors are also in line with several of the UN's 2030 Sustainable Development Goals, including achieving gender equality, quality education, and peace, justice, and strong institutions. Results support strategies that increase gender equality and women's participation and achievement in higher education. Our findings that increases in household decision-making at both the household and neighborhood level were protective against IPV, suggest the need for multi-level interventions. For example, gender transformative programming actively works to help individuals develop more gender equitable views, beliefs and behaviors [189]. A growing evidence base has found these types of programming to be effective in increasing gender equitable norms and reducing IPV perpetration [178]. However, much of the gender transformative programming to date has been conducted in individual-level or in small group settings, resulting in men wanting to implement gender equitable behavior, but lacking the support of their partners, families, or communities [190, 191]. Qualitative research in other settings suggest that a community-wide gender-transformative intervention can support shifts towards gender equitable norms and behaviors both in the household and the community, and that community-level changes support individual-level changes [181].

Additional research

Our findings also highlight the need for additional research; 1) examining predictors through an intersectional lens; 2) conducting an in-depth look at predictors of IPV specifically among refugees; 3) refining measures of social cohesion; 4) continue building the literature of higher-level determinants of IPV using longitudinal data; 5) more closely examining the pathways between neighborhood-level factors and individual IPV outcomes; and 6) conducting research towards preventing adverse childhood exposures (ACEs) that foster IPV behaviors later in life.

Intersectionality

This dissertation tested feminist theory and social disorganization theory separately. However, social disorganization, cohesion and psychosocial stressors and supports do not exist in isolation from gender inequality. An intersectional framework orients research around social identities, in which individual experience (e.g. gender, SES, citizenship) reflect multiple, interlocking systems of power at the social-structural level (e.g. sexism, classism, xenophobia) [137, 192, 193]. This is a particularly pertinent framework in which to explore predictors of IPV among poor and refugee women as it explicitly highlights that social structures influence health beyond the individual's behavior or characteristic. This orientation also aligns closely with Heise's ecological model's prioritization of identifying predictors at multiple levels and examining how they interact with each other.

In-depth analysis of experiences of migrant and refugee women

Results show that neighborhood social disorganization and residential stability were marginally positively associated with IPV, but household mobility was negatively associated with emotional IPV. This analysis did not include the reason for migration, years since migration, or adversities experienced during migration; doing so would have reduced the sample size by two-thirds and substantially reduced our statistical power to examine the main aims. However, these likely significantly influence IPV and merit further research. Exposure to conflict-related trauma, migration, and psychosocial stressors in resettlement have been associated with significant physical and mental health outcomes, including death, disability, post-traumatic stress disorder (PTSD), depression, increased substance use, and, in adolescents, externalizing behaviors (e.g. defiance, aggression and anti-social behavior) [13, 87, 110,

162-165]. There are also significant economic consequences, with many refugees and displaced people experiencing a "deep deterioration of their quality of life"—losing all of their resources, risking exploitation or theft in every stage of migration, and under-employment in the host communities [85, 164, 170, 171]. Additionally, families are often separated for long periods of times and experience 'disintegration' because of the stressors of conflict and migration [194]. A synthesis of literature exploring the impacts of displacement on family units found that migration resulted in changes in gender roles, loss of social networks and support, and reduced SES—these changes were associated with abuse and divorce for some couples [88]. With over 68 million displaced people worldwide, focusing specifically on risk and protective factors of IPV among this population is critical [52].

Refining community-level variables

The field of neighborhood and community level factors that influence individual level IPV is relatively nascent. As previously mentioned, there is particularly limited research looking at these factors in South America or conflicted-affected areas. Further, there are very few studies that have used longitudinal data to explore how changes in these higher-level factors can influence individual level IPV. We explored several neighborhood-level factors associated with IPV. Five of the hypothesized neighborhood level variables had statistically significant, or marginally significant, associations with IPV in the expected direction, while other predicted neighborhood-level factors, such as female labor force participation, average female asset ownership, and other social disorganization and cohesion measures, were not significantly associated with IPV. As previously discussed, this could be a result of not capturing the relevant domain of social cohesion. Refining measures that capture community-level latent variables, such as gender equality, empowerment, and social cohesion, will further our understanding of how larger, societal shifts influence IPV.

Pathways between neighborhood constructs and individual-level outcomes

Furthermore, how neighborhood constructs influence individual outcomes is not well understood. For example, we treated neighborhood change in average of female-involved household decision-making as one proxy measure for changes in the general status of women. We found that it was negatively associated with emotional IPV. However, we are not able to directly examine the mechanisms that drive

the protective association between neighborhood average decision-making and IPV, above and beyond household-level changes in female-involved decision-making. From a theoretical perspective, societal shifts in household dynamics may serve to elevate the status of women, and issues that affect women disproportionally—like IPV. In turn, this may reduce the acceptability of violence against women and garner resources and political will to prevent IPV. Measuring and analyzing potential mediators between neighborhood factors and individual level IPV outcomes, such as attitudes towards violence and gender equitable norms, can test that hypothesis. We also found that residential instability was marginally positively associated with IPV but that social cohesion did not act as a mediator, as was originally hypothesized. Future research can explore potential alternative pathways between residential instability and IPV. Finally, while we did not find any neighborhood level variables that moderated the relationship between household-level factors and individual IPV outcomes, theory posits that contextual factors are extremely influential. Further research on contextual moderators can help us identify what factors are harmful or protective in various settings.

Prioritizing prevention of adverse childhood exposures (ACEs)

This dissertation was not able examine adverse childhood exposures (ACEs), such as emotional, physical or sexual violence victimization or witnessing violence in their home or community. These are critical risk factors for IPV, and are associated with many other serious health issues such as injury, depression, substance use, and suicidality [195, 196]. To date, most research on the relationship between ACEs and IPV have been conducted in high-income settings, with less known about the relationship in low and middle-income countries [195]. With the roll out of the Centers for Disease Control and Prevention's (CDC) Violence Against Children surveys, the field is dramatically increasing its understanding of ACEs globally [196]. Emerging data suggest violence against children impacts an enormous number of children globally, that prevalence estimates vary widely between countries, and sequalae are consistent across settings [197-201]. While traditionally violence-related research has been conducted in silos, there is an increasing movement towards understanding how multiple forms of violence are related, and what prevention strategies can simultaneously address ACEs, IPV and other forms of violence. Effectively addressing IPV in South America and conflict-affected and host communities requires prioritizing prevention of ACEs. Future research is critical to informing these efforts.

Conclusions

This research contributes to our understanding of IPV and serves to refine and develop effective prevention and response programming for particularly vulnerable women. In line with international development and health agencies, we focused on the status of women and the impacts of living in conflict-affected and host communities. Results support investing in strategies to increase women's participation and achievement in higher education, and shifting gender norms to create more equitable households and neighborhoods. As South America, and other parts of the world, experience unprecedented mass migration, this research also underscores the importance of integrating IPV prevention and response programs into services in conflict-affected areas and host communities. Specifically, findings support promoting civic engagement, mitigating exposures to psychosocial stressors and discrimination, and increasing social support for low-income families living in host communities.

Table 1: Description of Aim 1 key measures

Variable	Description
Intimate partner violence (dependent variable, time 2)	
Intimate partner violence in the last six months (time 2)	Thirteen measures of physical, sexual, or emotional intimate partner violence that occurred in the last six months. This was be dichotomized as yes/no. "When two people are married or live together, they usually have good and bad moments. Has your spouse/partner: accused you of infidelity; tried to strangle you; utilized force to have sex when you didn't want to" [141, 142].
Household Variables (independent variables, time 1)	
Economic Stability	
Household socio-economic status	Following Demographic Health Survey guidance, a score of household wealth was constructed from a series of questions regarding the household asset data such as physical infrastructure of the house (household construction material, material of the flooring, number of rooms in the house, electricity, type of electricity, cooking type, type of bathroom, and type of water consumed), and ownership of land, tools, animals and 11 consumer items (cell phones, TVs, etc.) [47, 202].
Food security	Food security was measured by using the food consumption score based on dietary diversity, food frequency, and relative nutritional importance [203].
Female/male labor participation	A participant was considered as participating in the labor force if they indicated that had 1) farmed their own land; 2) worked in an agricultural position for pay; 3) worked in a non-agricultural position for pay; or 4) worked on non-agricultural activities, on their own, like a small business, in the last six months.
Psychosocial Stressors and Supports	
Psychosocial stressors in the last 6 months	Number of adverse situations (out of 13) in the last 6 months and 6-12 months ago that has affected the household; as this was only measured at time 2, the 6-12-month measure serves as a proxy for time 1 measures. Indicators included: robbed of cash; robbed of food; robbed of other goods; death of male adult household members; death of female adult household members; permanent debilitating injuries or illness of household member; physical attack; drought or flood; destruction of property or land due to natural disaster; destruction of property due to violence; alcoholism or drug addiction of family member; job loss or failed business; prison for household member.
Discrimination in the last six months	Coded as yes if participant responded positively to any one or ten questions about experiencing discrimination based on different characteristics (gender, race, SES, etc.). Each question began with: "Has anyone in the house felt discriminated against because of their [e.g. nationality]?" Indicators included: race; gender; economic status; occupation; political affiliation; disability; nationality; religion; appearance; other.

Civic engagement	Coded as yes if participant indicated household participation in 1) agricultural or business associations, 2) religious or spiritual groups, 3) community or neighborhood associations, 4) political groups, and/or 5) other groups (e.g. NGOs, education or cultural).
Social support	Participants were asked: If you needed $100 in the case of an emergency, how many people (outside the household) could you ask for help?
Migration history	Household moved to the neighborhood in the last 20 years (yes/no)
Male/Female Nationality	Whether the individual is Ecuador or Colombian

Neighborhood Variables[1] (independent variables, time 1)

Social Disorganization	Neighborhood SES (neighborhood average of household SES scores)
	Percent of female-headed households in the neighborhood
	Percent of owner-occupied housing in the neighborhood
	Percent of households moving to the neighborhood in the last 20 years
	Neighborhood average of reported household psychosocial stressors
Social Cohesion (see Table 6)	Trust in individuals (aggregated household factor score)
	Trust in institutions and community connectedness (aggregated household factor score)
	Percent of reporting recent civic engagement
	Percent of households reporting experiences of discrimination
	Neighborhood social support (neighborhood average of household-level indicator of social support)

1. Neighborhood variables constructed from entire sample (n=2357) and weighted to adjust for oversampling of Colombian households

Table 2: Description of Aim 2 key measures

Variable	Description
Intimate partner violence (dependent variable)	
Intimate partner violence in the last six months (time 2)	Thirteen measures of physical, sexual, or emotional intimate partner violence that occurred in the last six months. This was dichotomized as yes/no. "When two people are married or live together, they usually have good and bad moments." Example questions: Has your spouse/partner: accused you of infidelity; tried to strangle you; utilized force to have sex when you didn't want to" [141, 142]
Status of women (independent variables)	
Age	Female Age
	Age difference (Male – female)
Education	Highest level of female education, dichotomized: Secondary or above; Primary or below
	Difference in educational attainment between male and female partner (female lower vs female same or higher)
	Neighborhood percent of women with secondary education or higher[1]
Access to resources	Household SES: Following Demographic Health Survey guidance, a score of household wealth was constructed from a series of questions regarding the household asset data such as physical infrastructure of the house (household construction material, material of the flooring, number of rooms in the house, electricity, type of electricity, cooking type, type of bathroom, and type of water consumed), and ownership of land, tools, animals and 11 consumer items (cell phones, TVs, etc.) [47, 202]
	Food security: was measured by using the food consumption score based on dietary diversity, food frequency, and relative nutritional importance [203]
	Female labor force participation: A participant was considered as participating in the labor force if they indicated that had 1) farmed their own land; 2) worked in an agricultural position for pay; 3) worked in a non-agricultural position for pay; or 4) worked on non-agricultural activities, on their own, like a small business, in the last six months.
	Female earnings compared to male earnings
	Percent of household assets' value owned by women per IFPRI's guidelines on collecting and analyzing gender and assets data [204]
	Neighborhood average percent of assets' value owned by women[1]
	Average female labor participation in neighborhood[1]
	Neighborhood percent of women reporting earning the same or more earnings compared to their partner[1]

Household decision making	Household shared decision-making was measured with a series of four questions about who makes the final decisions about eight household issues such as finances, employment, education, health care utilization, childcare, and contraceptive use [42, 46, 177]. Calculated as the percent of domains in which the female partner has some say (e.g. responded with herself or jointly) in decision-making
	Neighborhood average female-involved decision-making[1]

1. Neighborhood variables constructed from entire sample (n=2357) and weighted to adjust for oversampling of Colombian households

Table 3: Aim 1 sample characteristics (at time 1) of poor Ecuadorian and Colombian refugee households in northern Ecuador (n=1312)

	n	%
Female demographics		
Female age (mean years)		35.91
Female highest education level		
Primary or less	827	62.99
Secondary or higher	486	37.01
Female headed households	28	2.13
Female nationality[1]		
Ecuadorian	836	63.67
Colombian	477	36.33
Household characteristics		
Moved to neighborhood in last 20 years	561	42.73
Female participation in labor force[2]	427	32.52
Male participation in labor force[2]	1252	95.43
Experienced discrimination in the last six months[3]	499	38.00
Number of psychosocial stressors experienced in the last six months (mean)[4]		0.30
Participated in community activities in last six months	661	50.34
Number of people can ask to borrow $100 (mean)		1.90
Neighborhood (n=80)[5]		
Percent of female headed households		1.86
Percent of renters		58.35
Residential instability[6]		42.83

1. Due to the small number of female participants reporting Ecuadorian-Colombian nationality (n=39), those participants were included with Ecuadorians; the small number of participants reporting "other" as their nationality (n=11) were included with Colombians

2. Participants were as categorized participating in the labor force if they responded yes to any of the following questions: In the last six months have you 1) farmed your own land; 2) worked in an agricultural position for pay; 3) worked in a non-agricultural position for pay; or 4) worked on non-agricultural activities, on their own, like a small business

3. Discrimination based on: race; gender; economic status; occupation; political affiliation; disability; nationality; religion; appearance; and/or other

4. Psychosocial stressors include: robbed of cash; robbed of food; robbed of other goods; death of male adult household members; death of female adult household members; permanent debilitating injuries or illness of household member; physical attack; drought or flood; destruction of property or land due to natural disaster; destruction of property due to violence; alcoholism or drug addiction of family member; job loss or failed business; prison for household member

5. Neighborhood variables weighted to extrapolate to the full eligible sample of the cash, voucher and food transfer program

6. Percent of households moving to the neighborhood in the last 20 years

Table 4: Psychosocial stressors (at time 1) among a sample of poor Ecuadorian and Colombian refugee households in northern Ecuador (n=1312)

	n	%
Any psychosocial stressor in the last six months	303	23.08
Robbed of cash	27	2.06
Robbed of food	11	0.84
Robbed of other goods	48	3.66
Death of male adult household members	2	0.15
Death of female adult household members	0	0.00
Permanent debilitating injuries or illness of household member	144	10.97
Physical attack	6	0.46
Drought or flood	49	3.73
Destruction of property or land due to natural disaster	22	1.68
Destruction of property due to violence	5	0.38
Alcoholism or drug addiction of family member	32	2.44
Job loss or failed business	38	2.89
Prison for household member	6	0.46
Any discrimination in the last six months	499	38.00
Race	67	5.10
Gender	39	2.97
Economic Status	314	23.91
Occupation	161	12.26
Political Affiliation	52	3.96
Disability	109	8.30
Nationality	180	13.71
Religion	84	6.40
Appearance	53	4.04
Other	26	1.98

Table 5: Recent IPV among a sample of poor Ecuadorian and Colombian refugee households in northern Ecuador

	Time 1 (n=1266)		Time 2 (n=1285)	
	n	%	n	%
Any emotional IPV in the last six months	363	28.67	378	29.42
Accused of infidelity	132	10.43	158	12.30
Limited contact with friends or family	140	11.06	150	11.67
Humiliated or insulted you	262	20.70	275	21.40
Threatened to leave you	170	13.43	178	13.85
Threatened to take away your children	80	6.32	95	7.39
Any physical and/or sexual IPV in the last six months	202	15.96	201	15.64
Pushed, shook or threw something at you	154	12.16	135	10.51
Slapped you or twisted your arm	93	7.35	100	7.78
Hit you with a fist or something that could hurt you	77	6.08	86	6.69
Kicked or dragged you	46	3.63	67	5.21
Tried to strangle or burn you	10	0.79	32	2.49
Attacked you with a knife, gun or other type of weapon	3	0.24	16	1.25
Threatened you with a knife, gun or other type of weapon	11	0.87	10	0.78
Used physical force to force you to have sex	36	2.84	45	3.50
Forced you to perform sexual acts that you did not want to do	26	2.05	31	2.41

Note: missings not imputed

Table 6: Standardized results of social cohesion confirmatory factor analysis (n=2,357)

	Estimate	SE	Est./SE	
Trust in individuals				
I can trust most people	0.57	0.02	26.13	***
I can count on my neighbor to send an important letter	0.94	0.02	53.45	***
I can count on my neighbor to take care of my house if I am away	0.83	0.02	44.14	***
Trust in institutions and community connectedness				
The government would help my family if I had an emergency situation	0.35	0.03	12.27	***
I have the right to basic social assistance such as health and education	0.53	0.05	9.86	***
If I am qualified for a job, I have the same chances as the rest to get it	0.39	0.03	11.48	***
If I am a victim of a crime, I can go to the police for help	0.41	0.04	11.03	***
Cultural diversity is good	0.44	0.03	15.64	***
People of different nationalities coexist well in my community	0.36	0.04	9.66	***
I feel part of the community	0.82	0.03	28.29	***
I have the space to participate in the decisions of my community	0.58	0.03	17.44	***
Experiences of discrimination				
Race	0.78	0.03	24.52	***
Gender	0.83	0.03	29.23	***
SES	0.84	0.02	40.86	***
Occupation	0.85	0.02	40.94	***
Political Affiliation	0.74	0.03	22.11	***
Disability	0.64	0.04	17.51	***
Nationality	0.61	0.04	15.33	***
Religion	0.70	0.05	14.96	***
Appearance	0.76	0.04	21.88	***
Other	0.65	0.06	10.38	***
Civic Engagement				
Agriculture Groups	0.48	0.06	8.31	***
Religion	0.48	0.04	12.04	***
Neighborhood	0.74	0.06	12.88	***
Political	0.68	0.07	10.30	***
Other	0.26	0.05	4.82	***
Covariates				
Trust in individuals on respondent gender	-0.05	0.04	-1.38	
Trust in institutions on respondent gender	-0.04	0.03	-1.40	
"I can trust most people" on respondent gender	-0.07	0.03	-2.39	*
"I can count on my neighbor to send an important letter" on respondent gender	-0.03	0.02	-1.26	

Factor correlations

Trust in individuals with

Discrimination	-0.05	0.03	-1.59	
Community participation	0.20	0.03	5.76	***

Trust in institutions with

Discrimination	-0.23	0.03	-7.70	***
Community participation	0.34	0.06	5.86	***
Trust in individuals	0.18	0.04	4.89	***

Discrimination with

Community participation	0.13	0.05	2.52	*

Indicators of model fit

RMSEA	0.02
CFI	0.92
TLI	0.91
SRMR	0.07

*p<0.05, **p<0.01, ***p<.001
SE: Standard error. Estimates generated with weighted least square parameter estimator

Table 7: Pairwise correlation coefficients for social disorganization and social cohesion factors

	Social Disorganization	Residential instability	Percent of renters	Percent of female headed households	Neighborhood average wealth	Community Adversity	Combined Social Cohesion Score	Trust in individuals	Trust in institutions and community	Discrimination	Community Participation
Combined Social Disorganization											
Residential instability[1]	0.36***	1.00									
Percent of renters	0.90***	0.26***	1.00								
Percent of female headed households	0.48***	0.17***	0.29***	1.00							
Neighborhood average wealth	-0.61*	-0.08	-0.39***	-0.31***	1.00						
Community adversity[2]	0.15	0.22***	0.26***	0.11***	-0.06***	1.00					
Combined Social Cohesion Score	-0.33***	0.05	-0.26***	-0.23***	0.36***	0.08***	1.00				
Trust in individuals	0.11***	0.35***	0.09***	0.08***	0.04	0.11*	0.56***	1.00			
Trust in institutions and community connectedness	-0.33***	0.07***	-0.24***	-0.07***	0.37***	0.04	0.72***	0.05***	1.00		
Discrimination	0.23***	0.21***	0.17***	0.26***	-0.19***	0.06***	-0.49***	0.17***	-0.34***	1.00	
Community participation	-0.41***	0.05	-0.36***	-0.13***	0.40***	0.21***	0.72***	0.54***	0.50***	-0.12***	1.00
Social support[2]	0.09***	0.27***	0.01	-0.08*	0.01	0.24***	-0.03	0.11***	-0.03	0.10*	-0.12***

*p<0.05, **p<0.01, ***p<.001

1. Percent of households moving to the neighborhood in the last 20 years

2. "Community adversity" included separately from overarching social disorganization measure

3. "Social support" included separately from overarching social cohesion measure

Table 8: Aim 1 predictors (at time 1) of emotional intimate partner violence (at time 2) among a sample of poor Ecuadorian and Colombian refugee women (n=1312)

	Model 1a				Model 1b				Model 1c			
	OR	95% CI			OR	95% CI			OR	95% CI		
Intercept	3.69	1.06	12.91		3.36	0.94	11.93		3.83	1.09	13.49	
Economic Indicators												
Female participation in labor force[1]	1.17	0.91	1.51		1.20	0.93	1.56		1.19	0.93	1.53	
Male participation in labor force[1]	1.31	0.62	2.77		1.31	0.61	2.80		1.31	0.61	2.78	
Household wealth[2]	1.16	1.01	1.33		1.16	1.01	1.32		1.16	1.02	1.33	
Food Consumption Score[3]	1.01	1.00	1.01		1.01	1.00	1.01		1.01	1.00	1.01	
Psychosocial stressors and supports												
Number of psychosocial stressors in the last six months	1.38	1.13	1.69	**	1.37	1.12	1.68	**	1.37	1.13	1.68	**
Experienced discrimination in the last six months	1.49	1.12	2.00	**	1.49	1.12	2.00	**	1.49	1.11	1.99	**
Participated in community activities in last six months	1.00	0.77	1.31		1.00	0.77	1.30		1.01	0.77	1.32	
Number of people can ask to borrow $100	0.95	0.91	1.00	*	0.95	0.91	1.00	*	0.95	0.91	1.00	*
Migration-related indicators												
Female Nationality (Colombian=1; Ecuadorian=0)	0.96	0.64	1.44		0.95	0.64	1.42		0.98	0.65	1.47	
Male Nationality (Colombian=1; Ecuadorian=0)	0.92	0.59	1.43		0.93	0.60	1.44		0.96	0.62	1.49	
Moved to neighborhood in last 20 years	0.68	0.47	1.00		0.69	0.47	1.01		0.67	0.46	0.97	*
Neighborhood[5]												
Social Disorganization[6]	1.17	0.99	1.38						1.08	0.91	1.28	
Community Adversity[7]	0.76	0.32	1.77		0.91	0.39	2.13					
Community Wealth[6]					0.98	0.83	1.15					
Percent of Female Headed Households[7]					0.98	0.84	1.16					
Percent of Renters[7]					0.99	0.90	1.10					
Residential Instability[7,8]					1.10	0.98	1.23					
Social Cohesion[6]	1.07	0.91	1.26									
Social Support	0.98	0.85	1.12		0.95	0.83	1.09					
Trust in Individuals[6]					1.04	0.86	1.28					
Trust in Institutions[6]					1.25	1.07	1.47	*				
Experiences of Discrimination[7]					1.02	0.88	1.17					
Civic Engagement[7]					0.84	0.74	0.96	*	0.35	0.13	0.93	*

Mediation

Social Disorganization on Social Cohesion	0.76	0.60	0.96	*				
Social Disorganization on Neighborhood Civic Engagement					0.94	0.91	0.98	**
Indirect Effect	0.98	0.94	1.03		1.06	1.00	1.14	

Model Fit

AIC (lower is better)	1603.85	1364.14	1303.88
BIC (lower is better)	1748.85	1524.68	1438.52

*p<0.05, **p<0.01, ***p<0.001

Model notes: Missing data imputed; all model use multilevel modeling to account for hierarchal structure; maximum likelihood parameter estimates with standard errors robust to non-normality and non-independence of observations are presented; all models controlled for emotional and physical/sexual IPV at time 1, female age, female education, province, and treatment group

1. Participants were as categorized participating in the labor force if they responded yes to any of the following questions: In the last six months have you 1) farmed your own land; 2) worked in an agricultural position for pay; 3) worked in a non-agricultural position for pay; or 4) worked on non-agricultural activities, on their own, like a small business

2. Constructed as recommended by the Demographic Health Survey using principal component analysis of source of drinking water, type of toilet, sharing of toilet facilities, material of principal floor, walls, roof, cooking fuel, and household services and possessions, such as electricity, TV, radio, types of vehicles, agricultural land size owned, and type and number of animals owned

3. Calculated by summing the number of days eight different food groups were consumed by a household, multiplying these by weighted frequencies, and summing across food groups

4. Due to the small number of participants reporting Ecuadorian-Colombian nationality (female: n=39; males: n=18), those participants were included with Ecuadorians; the small number of participants reporting "other" as their nationality (females: n=11, males: n=5) were included with Colombians

5. Neighborhood variables weighted to extrapolate to the full eligible sample of the cash and voucher program; all neighborhood variables grand-mean centered

6. Standardized to reflect a change in odds ratio per one standard deviation change in predictor

7. Scaled to reflect change in odds ratio per 10% change in predictor

8. Percent of households moving to the neighborhood in the last 20 years

Table 9: Aim 1 predictors (at time 1) of physical and/or sexual intimate partner violence (at time 2) among a sample of poor Ecuadorian and Colombian refugee women (n=1312)

	Model 2a				Model 2b				Model 2c			
	OR	95% CI			OR	95% CI			OR	95% CI		
Intercept	1.51	0.28	8.20		1.27	0.24	6.80		1.77	0.33	9.51	
Economic Indicators												
Female participation in labor force[1]	1.01	0.69	1.49		1.01	0.69	1.47		1.02	0.70	1.50	
Male participation in labor force[1]	0.57	0.23	1.41		0.55	0.22	1.34		0.57	0.23	1.44	
Household wealth[2]	1.04	0.86	1.25		1.04	0.86	1.25		1.03	0.86	1.24	
Food Consumption Score[3]	1.00	0.99	1.01		1.00	0.99	1.01		1.00	0.99	1.01	
Psychosocial stressors and supports												
Number of psychosocial stressors in the last six months	1.63	1.25	2.12	**	1.63	1.25	2.12 **		1.64	1.26	2.15	**
Experienced discrimination in the last six months	1.58	1.13	2.23	**	1.60	1.14	2.25 **		1.58	1.12	2.23	**
Participated in community activities in last six months	0.88	0.62	1.24		0.87	0.62	1.23		0.87	0.62	1.23	
Number of people can ask to borrow $100	0.95	0.89	1.01		0.95	0.89	1.01		0.95	0.90	1.01	
Migration-related indicators												
Female Nationality (Colombian=1; Ecuadorian=0)	0.77	0.47	1.26		0.75	0.46	1.22		0.76	0.47	1.22	
Male Nationality (Colombian=1; Ecuadorian=0)	1.15	0.67	1.98		1.10	0.64	1.88		1.18	0.68	2.04	
Moved to neighborhood in last 20 years	0.74	0.48	1.14		0.77	0.50	1.18		0.74	0.48	1.15	
Neighborhood[5]												
Social Disorganization[6]	1.20	0.96	1.51						1.17	0.95	1.44	
Community Adversity[7]	1.98	0.72	5.45		1.81	0.57	5.75					
Community Wealth[6]					1.02	0.83	1.25					
Percent of Female Headed Households[7]					1.04	0.85	1.27					
Percent of Renters[7]					0.99	0.87	1.12					
Residential Instability[7,8]					1.13	0.98	1.30					
Social Cohesion[6]	0.95	0.75	1.21									
Social Support	0.92	0.77	1.10		0.91	0.77	1.07					
Trust in Individuals[6]					1.14	0.86	1.51					
Trust in Institutions[6]					0.99	0.83	1.20					
Experiences of Discrimination[7]					1.01	0.86	1.19					
Civic Engagement[7]					0.85	0.72	1.00		0.55	0.14	2.20	

Mediation

Social Disorganization on Social Cohesion	0.76	0.60	0.96	*				
Social Disorganization on Neighborhood Civic Engagement					0.94	0.91	0.98	**
Indirect Effect	1.01	0.95	1.09		1.04	0.95	1.13	

Model Fit

AIC (lower is better)	1226.87	994.59	931.87
BIC (lower is better)	1371.87	1155.1	1066.51

*p<0.05, **p<0.01, ***p<0.001

Model notes: Missing data imputed; all model use multilevel modeling to account for hierarchal structure; maximum likelihood parameter estimates with standard errors robust to non-normality and non-independence of observations are presented; all models controlled for emotional and physical/sexual IPV at time 1, female age, female education, province, and treatment group

1. Participants were as categorized participating in the labor force if they responded yes to any of the following questions: In the last six months have you 1) farmed your own land; 2) worked in an agricultural position for pay; 3) worked in a non-agricultural position for pay; or 4) worked on non-agricultural activities, on their own, like a small business

2. Constructed as recommended by the Demographic Health Survey using principal component analysis of source of drinking water, type of toilet, sharing of toilet facilities, material of principal floor, walls, roof, cooking fuel, and household services and possessions, such as electricity, TV, radio, types of vehicles, agricultural land size owned, and type and number of animals owned

3. Calculated by summing the number of days eight different food groups were consumed by a household, multiplying these by weighted frequencies, and summing across food groups

4. Due to the small number of participants reporting Ecuadorian-Colombian nationality, those participants were included with Ecuadorians; the small number of participants reporting "other" as their nationality were included with Colombians

5. Neighborhood variables weighted to extrapolate to the full eligible sample of the cash and voucher program; all neighborhood variables grand-mean centered

6. Standardized to reflect a change in odds ratio per one standard deviation change in predictor

7. Scaled to reflect change in odds ratio per 10% change in predictor

8. Percent of households moving to the neighborhood in the last 20 years

Table 10: Aim 2 characteristics of a sample of poor Ecuadorian and Colombian refugee women (n=1312)

	n	%
Female		
Age (Mean years) (T1)		35.91
Highest Education Level (T1)		
Primary or less	827	62.99
Secondary or higher	486	37.01
Female headed households (T1)	28	2.13
Labor force participation[1] (T1)	427	32.52
Lost employment	145	11.04
Gained employment	183	13.94
Nationality[2]		
Ecuadorian	836	63.67
Colombian	477	36.33
Value of female-owned assets (USD)[3] (T1)		107.52
Average change in female-owned assets (USD)		-104.96
Partner		
Age (Mean years) (T1)		39.61
Highest Education Level (T1)		
Primary or less	828	63.06
Secondary or higher	484	36.86
Labor force participation[1] (T1)	1252	95.43
Lost employment	29	2.21
Gained employment	34	2.59
Household		
Age difference (mean years) (T1)		3.70
Educational difference (T1)		
Female higher education	206	15.69
Female less education	227	17.29
Same education	880	67.02
Earning difference		
Female earns less at both time points	896	74.67
Female earns same or more at both time points	65	5.42
Female started earning less between time points	119	9.92
Female started earning same or more between time points	120	10.00
Percent of assets owned by female (T1)		33.42
Change in percent of assets owned by female		3.50
Percent of decision-making with female involvement across 8 domains (T1)		81.23
Change in percent of decision-making with female involvement		-1.40

Neighborhood[5] (n=80)

Percent of females with secondary education or higher (T1)	42.02
Average percent of female owned assets (T1)	45.89
Change in average percent of female owned assets	2.90
Percent of females participating in labor force (T1)	40.26
Change in percent of female labor force participation	1.70
Neighborhood percent of women who earn the same or more than their partners (T1)	15.55
Change in neighborhood percent of women who earn the same or more than their partners	1.11
Neighborhood average female household decision-making (T1)	86.10
Change in neighborhood average female household decision-making	-1.38

T1: Time 1

1. Participants were categorized as employed if they responded yes to any of the following questions: In the last six months have you 1) farmed your own land; 2) worked in an agricultural position for pay; 3) worked in a non-agricultural position for pay; or 4) worked on non-agricultural activities, on their own, like a small business

2. Due to the small number of participants reporting Ecuadorian-Colombian nationality, those participants were included with Ecuadorians; the small number of participants reporting "other" as their nationality were included with Colombians

3. Assets include: land, large and small animals, agricultural tools, household appliances, computers, cell phones, bikes and vehicles

4. Constructed as recommended by the Demographic Health Survey using principal component analysis of source of drinking water, type of toilet, sharing of toilet facilities, material of principal floor, walls, roof, cooking fuel, and household services and possessions, such as electricity, TV, radio, types of vehicles, agricultural land size owned, and type and number of animals owned

5. Neighborhood variables weighted to extrapolate to the full eligible sample of the cash, voucher and food transfer program

Table 11: Aim 2 predictors of recent intimate partner violence in a sample of poor Ecuadorian and refugee Colombian women (n=1312)

	Emotional IPV				Physical and/or Sexual IPV			
	OR	95% CI			OR	95% CI		
Intercept	7.39	1.45	37.56	***	0.67	0.11	3.90	
Individual								
Female age (years) (T1)	0.99	0.97	1.00		0.98	0.97	1.00	*
Female educational achievement (secondary or more=1; Less than secondary=0) (T1)	0.70	0.49	0.99	*	0.95	0.58	1.54	
Female labor force participation[1] (T1)	1.26	0.89	1.78		1.36	0.88	2.12	
Change in female labor force participation								
Loss	1.04	0.69	1.58		0.91	0.45	1.83	
Gain	0.95	0.63	1.43		1.75	1.17	2.63	**
Female-owned assets (value)[2] (T1)	0.98	0.87	1.10		0.97	0.85	1.11	
Change in female-owned assets	0.96	0.83	1.10		1.01	0.87	1.17	
Partner/Household								
Household wealth[3] (T1)	1.14	1.01	1.30	*	1.01	0.83	1.22	
Change in household wealth	1.11	0.78	1.59		1.23	0.78	1.95	
Food consumption score[4] (T1)	1.01	1.00	1.02		0.99	0.98	1.00	
Change in food consumption score	1.00	0.99	1.01		0.99	0.98	1.00	
Male labor force participation (T1)	1.33	0.42	4.14		0.32	0.11	0.97	*
Change in male labor force participation								
Loss	1.22	0.50	2.96		0.33	0.04	2.44	
Gain	0.70	0.17	2.92		0.33	0.07	1.45	
Relational								
Age Difference (gap in years) (T1)	1.01	0.99	1.03		0.98	0.95	1.01	
Education Difference (Male has higher edu=1; Female has equal or more=0) (T1)	1.71	1.22	2.42	**	1.57	1.08	2.28	**
Earning Difference (Female earns equal or more=1; Male earns more=0) (T1)	0.88	0.49	1.58		0.67	0.35	1.27	
Change in earning difference	1.16	0.75	1.80		1.26	0.75	2.13	
Percent of female -owned value of assets (T1)	0.90	0.46	1.80		1.08	0.50	2.32	
Change in percent of female-owned value of assets	1.26	0.80	1.98		1.30	0.83	2.06	
Percent of female household decision-making[5] (T1)	0.91	0.36	2.30		0.74	0.29	1.86	
Change in female's household decision-making	0.57	0.30	1.06		0.41	0.21	0.78	**
Neighborhood[6]								
Province (Sucumbíos=0; Carchi=1)	1.77	1.13	2.75	*	0.94	0.58	1.54	
Neighborhood percent of women with secondary education or higher (T1)	0.90	0.78	1.03		1.02	0.83	1.26	
Neighborhood percent of women participating in labor force (T1)	1.06	0.83	1.35		1.10	0.85	1.42	

Change in neighborhood average female labor force participation	0.99	0.79	1.24	0.95	0.72	1.25
Neighborhood average of percent of household assets owned by women (T1)	1.06	0.86	1.29	1.06	0.83	1.36
Change in average percent of household assets owned by women	1.03	0.85	1.26	1.07	0.85	1.34
Neighborhood percent of women who earn the same or more than their partners (T1)	1.13	0.97	1.32	1.09	0.86	1.38
Change in neighborhood percent of women who earn the same or more than their partners	1.06	0.92	1.22	1.01	0.83	1.24
Neighborhood average female household decision-making (T1)	0.77	0.55	1.08	0.90	0.59	1.39
Model Fit						
AIC (lower is better)	1400.46			1015.66		
BIC (lower is better)	1602.45			1217.66		

*p<0.05, **p<0.01, ***p<0.001

T1: Time 1

Model notes: Missing data imputed; all models control for IPV at time 1, treatment assignment, head of household gender, female nationality; multilevel modeling used to account for hierarchal structure

1. Participants were categorized participating in the labor force if they responded yes to any of the following questions: In the last six months have you 1) farmed your own land; 2) worked in an agricultural position for pay; 3) worked in a non-agricultural position for pay; or 4) worked on non-agricultural activities, on their own, like a small business

2. Female assets transformed using inverse hyperbolic sine (IHS). Assets include: land, large and small animals, agricultural tools, household appliances, computers, cell phones, bikes and vehicles

3. Constructed as recommended by the Demographic Health Survey, using principal component analysis of source of drinking water, type of toilet, sharing of toilet facilities, material of principal floor, walls, roof, cooking fuel, and household services and possessions, such as electricity, TV, radio, types of vehicles, agricultural land size owned, and type and number of animals owned

4. Calculated by summing the number of days eight different food groups were consumed by a household, multiplying these by weighted frequencies, and summing across food groups.

5. Percent of decision-making domains (out of eight) in which the female partner has some or total decision-making authority

6. Neighborhood variables weighted to extrapolate to the full eligible sample of the cash and voucher program; scaled to reflect change in odds ratio per 10% change in predictor; and grand-mean centered

APPENDIX B. MAP OF TREATMENT AND CONTROL STUDY SITES
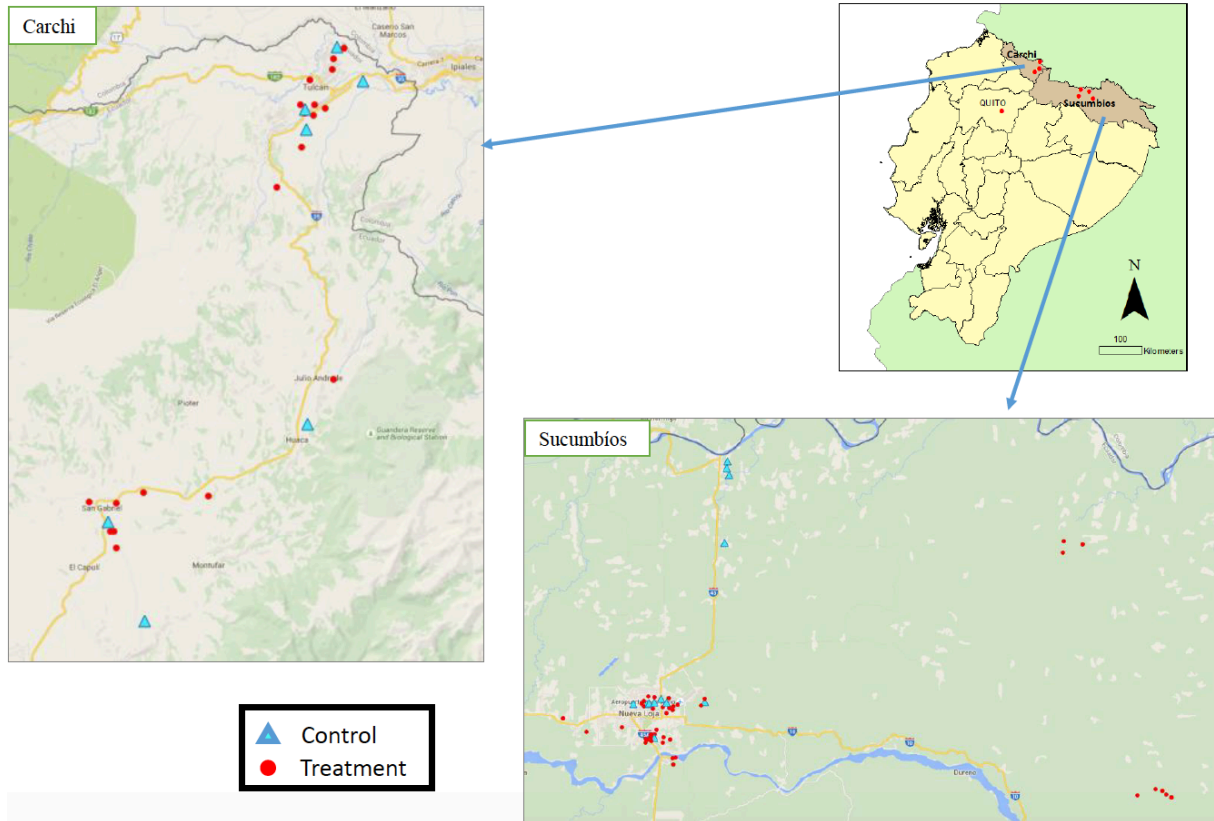
APPENDIX C. ATTRITION ANALYSIS

Aim 1 attrition regression analysis of key indicators at time 1

	Coefficient	S.E.		Coefficient	S.E.	
Emotional IPV	0.31	0.18		0.33	0.17	
Physical and/or Sexual IPV	0.10	0.25		0.09	0.25	
Economic Indicators						
Female participation in labor force	0.18	0.16		0.17	0.17	
Male participation in labor force	-0.51	0.35		-0.47	0.34	
Household wealth	-0.06	0.07		-0.05	0.08	
Food Consumption Score	0.00	0.00		0.00	0.00	
Psychosocial stressors and supports						
Experienced discrimination in the last six months	0.00	0.18		0.04	0.18	
Participated in community activities in last six months	-0.27	0.20		-0.27	0.21	
Number of people can ask to borrow $100	0.01	0.02		0.01	0.02	
Migration-related indicators						
Female Nationality (Colombian=1; Ecuadorian=0)	-0.37	0.24		-0.38	0.24	
Male Nationality (Colombian=1; Ecuadorian=0)	0.56	0.22	*	0.56	0.22	*
Moved to neighborhood in last 20 years	0.83	0.22	***	0.93	0.21	*
Neighborhood						
Social Disorganization	0.87	0.97				
Community Adversity	0.27	0.61		0.29	0.64	
Community Wealth				-0.66	0.72	
Percent of Female Headed Households				1.20	0.85	
Percent of Renters				1.09	1.01	
Residential Instability				-0.10	0.40	
Social Cohesion[6]	-0.31	0.38				
Social Support	0.08	0.08		0.08	0.07	
Trust in Individuals				-1.00	0.91	
Trust in Institutions				-1.38	0.78	
Experiences of Discrimination				-1.17	0.87	
Civic Engagement				1.10	0.83	

*p<0.05, **p<0.01, ***p<0.001

S.E. Standard Error. Standard errors robust to non-normality and non-independence of observations

	Coefficient	S.E.	
Aim 2 attrition regression analysis of key indicators at time 1			
Emotional IPV	0.20	0.18	
Physical and/or Sexual IPV	0.20	0.25	
Individual			
Female age (years)	-0.02	0.01	**
Female educational achievement (secondary or more=1; Less than secondary=0)	0.19	0.24	
Female labor force participation	0.24	0.17	
Female-owned assets (value)	0.00	0.00	
Partner/Household			
Household wealth	-0.09	0.08	
Food consumption score	0.00	0.00	
Male labor force participation	-0.73	0.33	
Relational			
Age Difference (gap in years)	0.00	0.01	
Education Difference (Male has higher edu=1; Female has equal or more=0)	0.00	0.26	
Earning Difference (Female earns equal or more=1; Male earns more=0)	0.00	0.22	
Percent of female -owned value of assets	0.21	0.24	
Percent of female household decision-making	0.48	0.42	
Neighborhood			
Province (Sucumbíos=0; Carchi=1)	-0.44	0.29	
Neighborhood percent of women with secondary education or higher	-0.02	0.90	
Neighborhood percent of women participating in labor force	-0.03	0.95	
Neighborhood average of percent of household assets owned by women	1.37	1.17	
Neighborhood percent of women who earn the same or more than their partners	0.83	0.75	
Neighborhood average female household decision-making	-0.77	1.77	

*p<0.05, **p<0.01, ***p<0.001

S.E. Standard Error. Standard errors robust to non-normality and non-independence of observations

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