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Uncertain Futures: An Examination of Intimate Partner Violence and Contraceptive Use in Kenya

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Uncertain Futures: An Examination of Intimate Partner Violence and Contraceptive Use in Kenya

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy in Community Health Sciences

by

Subasri Narasimhan

2018

ABSTRACT OF DISSERTATION

Uncertain Futures: An Examination of Intimate Partner Violence and Contraceptive Use in Kenya

by

Subasri Narasimhan

Doctor of Philosophy in Community Health Sciences

University of California, Los Angeles, 2018

Professor Anne R. Pebley, Chair

Kenya has had a history of promoting both family planning and efforts against gender-based violence. However, intimate partner violence (IPV) remains a significant factor in women's lives. Although experience of IPV has been shown to create a significant burden on reproductive health outcomes, less work has focused on the impact of IPV on women's contraceptive use particularly in Kenya. Using the data from the 2003, 2008-09, and 2014 Kenya Demographic and Health Surveys (Kenya National Bureau of Statistics (KNBS) & ICF Macro 2004, 2010, 2015) this dissertation focused on the association between IPV, fertility intentions, women's autonomy, and contraceptive use. I integrate the theory of gender and power and the social-ecological model to examine the association between IPV and contraceptive use.

In the first study I focus on the impact of IPV on women's fertility intentions. IPV experience *increases* the likelihood women would want to limit their childbearing as compared to wanting to space births or have children soon. This indicates that women would be less likely

to want to raise children in an environment they are unsure is safe or supportive, a concept I call the *uncertain futures* hypothesis.

The second study examines whether exposure to IPV reduced contraceptive use. I find that IPV did not uniformly reduce contraceptive use. Instead, IPV exposure *decreased* the likelihood of traditional contraceptive use but *increased* the likelihood of modern contraceptive use. This lends further credence to the possibility that women are making planful contraceptive decisions in IPV situations.

In the final study I examined whether healthcare decision making, representing a facet of women's autonomy, mediates the relationship between intimate partner violence and recent modern contraceptive use. This study found that there *no mediated effect* of healthcare decision making. However, healthcare decision-making remained significant in all models underscoring the need to consider ability to make healthcare decisions as a possible barrier to contraceptive access for women in abusive partnerships.

This dissertation improves the evidence that IPV may facilitate women's greater use of modern contraceptives in African contexts. It also underscores the need to consider IPV experiences when advising women on family planning.

The dissertation of Subasri Narasimhan is approved.

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2018

Dedicated to my mother and Kalasri.

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LIST OF ACRONYMS

CU:	Contraceptive Use
DHS:	Demographic and Health Surveys
KDHS:	Kenya Demographic and Health Survey
IPV:	Intimate Partner Violence
IRB:	Institutional Review Board
NGO:	Non-Governmental Organization
OSCC:	One is the One Stop Crisis Center
STIs:	Sexually Transmitted Infections
WHO:	World Health Organization

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Chapter One: Introduction

1.1 Introduction

Intimate partner violence (IPV) severely impacts women's health and well-being. The *World Health Organization (WHO) Multi-Country* Study[1] found among women who had ever been in a partnership, the lifetime prevalence of physical violence by a partner ranged from 13–61% (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006; World Health Organization (WHO), 2005). In the ten low and middle-income countries surveyed, 6–59% of women also reported sexual violence by a partner at some point in their life, and 20–75% reported experiencing at least one lifetime emotionally abusive act from a partner (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006). Recent estimates from African countries indicate a high lifetime prevalence of IPV between 25% and 48% (i.e. 48% in Zambia, 34% in Egypt, 30% in Uganda and 25% in South Africa) and an annual prevalence ranging between 10% and 26% (Jewkes et al. 2002, Kishor & Johnson 2004, Koenig, Ahmed, Hossain, & Mozumder, 2003).

In Kenya, one in two women have experienced physical or sexual violence by age eighteen, with more than 70% at the hands of a romantic partner (Hatcher et al., 2013). The 2014 Kenya Demographic and Health Survey (KDHS) found that 43.4% of women experienced had experience of physical sexual, or emotional violence and more than 40% of women reported experiencing some form of IPV within the past year (KNBS & ICF Macro, 2015, Ahinkorah, Dickson, and Seidu, 2018). Around 31% of these women reported chronic IPV, meaning they had a history of violence in relationships and were currently living with ongoing violence in the home (KNBS & ICF Macro, 2015). Violence, therefore, remains a central issue impacting the health of women and has negative repercussions for sexual and reproductive health.

[1] Full name for study: World Health Organization (WHO) Multi-Country Study on Women's Health and Domestic Violence Against Women

Studies focusing on IPV and unintended pregnancy in sub-Saharan Africa find that women suffer disproportionately from negative outcomes including increased HIV incidence, lower use of prenatal care, lower birthweight infants, increased miscarriage, and increased abortion incidence (Gazmararian et al. 1995, Goodwin et al. 2000, Kishor & Johnson, 2004, Saltzman et al. 2003, Pallitto et al. 2005, Williams, 1991). The prevailing narrative is women in abusive partnerships lack autonomy and self-efficacy, which extends to their reproductive behaviors. Inability to control specific aspects of their sexual lives increases the likelihood of experiencing unintended pregnancies (Bacchus et al. 2006, Charles & Perreira 2007, Gazmararian et al. 1995, Goodwin et al., 2000, Millar et al. 2010, Pallitto et al. 2005, Peralas et al. 2009, Peterson et al., 1997)

One of the key factors leading to unintended pregnancy is the inability to use contraceptives. This phenomenon exists even among women who experience abuse even with a strong desire to control their fertility (Gee, Mitra, Wan, Chaykin, & Long, 2009; Williams, Larsen & McClosky, 2008). Some literature has focused on the relationship between IPV and CU however the evidence that does exist shows mixed results. In the United States, empirical evidence points to a lower likelihood of modern contraceptive use with exposure to IPV (Williams, Larsen, & McCloskey, 2008). In contrast, the small group of studies in Sub-Saharan Africa have primarily found a positive relationship between IPV and CU (Fanslow et al., 2008; Okenwa, Lawoko, & Jansson, 2011). In a six-country study which included Kenya, Alio et al. (2009) found a positive relationship between IPV and use of traditional and modern contraceptive methods accounting for socioeconomic and demographic factors. In 2008, Emenike et al. found that women in Kenya who experienced sexual, emotional, or physical violence had significantly higher odds of contraceptive use after accounting for other factors.

The theory which I term the *uncertain futures hypothesis* attributes this positive relationship to a woman's increased motivation to prevent pregnancy when they perceive negative outcomes for children or a tenuous future with a partner (Alio et al. 2009, Biddlecom & Fapohunda, 1998, Pallitto & O'Campo, 2004). However, many studies have neglected to consider women's fertility intentions, described as desire for another child, in the association between IPV and CU, a key factor in contraceptive non-use in Kenya (KNBS & ICF Macro, 2015).

Scholars have suggested some theoretical mechanisms that link IPV to negative contraceptive use. First, Heise (1998) hypothesized that a "climate of control" is created in abusive partnerships and this may constrain a woman's agency or ability to fulfill their wishes and exercise choices, manifesting as the inability to negotiate contraceptive use (Gage, 2005). Blanc (2001) described how lack of individual agency in IPV contexts may be linked with greater patriarchal, or male-dominated, control which might be exacerbated in contexts with rigid traditional gender norms, which advantage men at the expense of women (Kanago, 2005). They hypothesized that gender-based inequality leading to lack of power, a characteristic of IPV contexts, has a direct relationship in undermining women's reproductive health and fertility goals, possibly impacting CU (Blanc, 2001). Several studies have focused on women's empowerment (or disempowerment), specifically the role of a woman's autonomy, as a step towards egalitarianism and for positively increasing modern contraceptive uptake in Sub-Saharan Africa (Do & Kurimoto, 2012; Kwagala, Wandera, Ndugga, & Kabeagenyi, 2013).

Autonomy is a central dimension of the women's empowerment concept, broadly described as the expansion of people's ability to make strategic life choices in a context where this ability was previously denied to them. Where empowerment is considered a dynamic

concept, autonomy is considered static, and thereby easier to measure (Kabeer, 2002, Mishra & Tripathi, 2011; Malhothra & Schuler, 2005). Several studies describe decision-making participation as the goal, specifically describing the positive aspects of women's joint decision-making as positive in health matters (Carter, 2002, Story & Burgard, 2012). However, some have pointed out that joint decision-making in some arenas simply masks male dominance and is insufficient in improving women's position (Allendorf, 2007; Becker et al., 2006, DeRose & Ezeh, 2010, Goetz & Sen Gupta, 1996, Story & Burgard, 2012).

Commonly, women's autonomy operationalized in research studies as dominance in household decision-making (Ahinkorah, Dickson, & Seidu, 2018, Upahayay et al, 2014). As a result, the current research related to contraceptive use neglects other areas where women may have agency. One specific area often overlooked relates to healthcare decision-making, which is extremely important in improvement of reproductive health outcomes (ICPD, 1994).

This dissertation will test associations between IPV and contraceptive use. Specifically, I will examine whether fertility intentions are impacted by IPV experiences. Subsequently, fertility intentions will be considered as important indictors of contraceptive use and may account for paradoxical uptake in contraceptives despite abuse in sub-Saharan Africa. Next, I will consider the role of women's autonomy within the relationship between IPV and CU by testing healthcare decision-making as a mediating factor between the two variables. Women's autonomy has been theorized as an important mechanism thorough which woman may be able to fulfill fertility desires, however, few studies have empirically tested if women's autonomy within this relationship using African datasets.

I close this chapter with a presentation of the objectives and research questions. Chapter two will outline the background of the study. This section will describe the current state of the

research concerning the relationship between IPV and CU, addressing the definitions and role of dimensions of fertility preference, women's autonomy, contraceptive determinants, and measurement considerations in this relationship. This section will highlight prior studies conducted in African contexts, particularly Kenya and describe the significance and contribution of my dissertation study. In the third section, I present the theoretical background and my dissertation's integrated conceptual framework. In the fourth section, I provide methodological details of the 2003, 2008, 2009 and 2014 Kenya Demographic and Health Surveys. Sections five through seven I discuss my hypotheses, data analysis plans for all studies. Finally, in section eight I outline some results for each study, and overall strengths, limitations, implications, and conclusions of the project.

1.2 Overview of Research Questions

This dissertation builds on prior work on intimate partner violence, fertility, and contraceptive use using the KDHS. This work centers on two primary research questions: *What is the likelihood of contraceptive use when faced with intimate partner violence experience for Kenyan reproductive-aged women? How do fertility intentions and autonomy characteristics affect this relationship?*

The dissertation is divided into three studies that examine parts of these questions. I focus on only those women who were included in the domestic violence module and who are able to become pregnant.

My first aim addresses the relationship between intimate partner violence and fertility preferences. The key questions in this aim are:

1. What is the association between IPV and fertility intentions?

    a. Is there a difference in the association of IPV with fertility intentions coded as:

(a) dichotomous (wants another child or doesn't want another child) and (b) a more complex variable including desired fertility timing (wants child within the next two years, wants a child after two years, and wants no additional children)?

3. Does the association between IPV and fertility intentions differ by violence type?

This section serves a dual purpose. First, it will examine if there is an existing association between IPV and fertility intentions, which will build the case to examine the IPV-contraceptive use relationship by fertility intentions in subsequent chapters. Second, this study enhances to the body of literature about the association between IPV and fertility intentions in Sub-Saharan Africa, an area where further research is warranted (Alio et al., 2009, Fanslow, Silva, Whitehead, & Robinson, 2008, MacQuarrie, Mallick, & Kishor, 2016, Williams, Larsen, & McCloskey, 2008).

My second aim examines the impact of IPV on contraceptive use considering the role of fertility intentions. The key questions here are:

1. What is the impact of IPV on CU?

a. Does the impact of IPV on CU differ by a women's fertility intentions?

b. Does impact of IPV on CU differ by violence type?

Few studies examining IPV and CU have considered the role of fertility intentions in the relationship between IPV and CU, despite the fact that fertility intentions is an important determinant of contraceptive use (Alio et al., 2009, Emineke, Lawoko, & Dalal, 2008). The most common treatment of fertility intentions is as a demographic control (O'Hara, Tsai, & Haider, 2013). No studies in African contexts have controlled for or examined this association within groups that differ by fertility intentions (Alio et al., 2009, Emineke, Lawoko, & Dalal, 2008, O'Hara, Tsai, & Haider, 2013, Okenwa, Lawoko, & Jansson, 2011).

My final aim focuses on the role of women's autonomy in the relationship between IPV and CU. The key question here is:

My final aim focuses on the role of women's autonomy in the relationship between IPV and CU. The key questions here are:

1. Does women's autonomy serve as a mediator in the relationship between IPV and contraceptive use?

    a. Does healthcare decision-making explain the relationship between IPV and CU?

Prior work has found that women's autonomy may be impacted by IPV but may also impact IPV. Women's autonomy may serve as a mechanism through which contraceptive use is achieved with the experience of IPV. In situations with high levels of IPV women's general autonomy status may be eroded. Therefore, her ability to make decisions that would precipitate contraceptive use is impeded. This concept is tested by using healthcare decision making as the central autonomy construct to be tested.

Chapters 5, 6, and 7 present the hypotheses, rationale for the hypotheses, results, and discussion for each of the three studies discussed above. The data used for all three studies, the variables, the description of the samples, and ethics of data collection and IRB are presented in chapter 4. The overall conclusions, general limitations, strengths, implications, recommendations, and conclusions are presented in chapter 8. In the next two chapters, I present the background literature (chapter 2) and theoretical models (chapter 3) guiding this work.

Chapter Two: Background

2.1 Intimate Partner Violence in Developing Contexts

Intimate partner violence (IPV) is one of the most common forms of violence against women worldwide (Ellsberg & Heise, 2005; Heise, Ellsberg & Gottemoeller, 1999; Krug et al. 2002; Tjaden & Thoennes, 1998, 2000; WHO, 2013), and describes a range of physical and psychologically assaultive or coercive behaviors used within a relationship (Holden, 2003; WHO, 2013). Most commonly, but not exclusively, it involves perpetration by current male romantic partners (Rennison & Planty, 2003; Schwartz 2005). In a 2005 WHO study on IPV in ten low and middle-income countries, 15-71% of women reported ever experiencing either physical or sexual IPV or both, and 4-54% of women reported experiencing any type of IPV within the previous year[2]. In 2016, the prevalence of IPV for women in sub-Saharan Africa was an estimated 36% with more than 45.6% experiencing lifetime partner violence (McCloskey, Boonzaier, Steinbrenner, & Hunter, 2016).

There is an extensive literature examining the determinants of women's IPV experience, particularly within developing country contexts (McCloskey et al., 2016). Numerous studies have examined the demographic, social, and structural factors that associated with gender-based violence in developing countries. Within Africa, the findings of these studies suggest that those lower on the social gradient are often at higher risk of IPV experience: lower educational attainment, underemployment and unemployment, extreme poverty, and rural residence have

[2] The *World Health Organization (WHO) Multi-Country* Study[2] found among women who had ever been in a partnership, the lifetime prevalence of physical violence by a partner ranged from 13–61% (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006; World Health Organization (WHO), 2005). In the ten low and middle-income countries surveyed, 6–59% of women also reported sexual violence by a partner at some point in their life, and 20–75% reported experiencing at least one emotionally abusive act from a partner in their lifetime (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006).

been associated with a higher likelihood of tolerating and experiencing physical and sexual IPV (Lawoko, 2006, 2008; Gonzáles-Brenes, 2004; Yllo, 1984).

Central to understanding the perpetration and experience of IPV are theoretical frameworks that focus on female disadvantage relative to men (Heise, 1998; Johnson & Ferraro, 2000). Large proportions of men and women in African contexts justify IPV as a sanction for transgressing accepted gender roles (Hindin, 2003; Lawoko, 2008; Kazungu & Chewe, 2003; Khasakhala-Mwenesi et al., 2004; Koenig et al., 2003; Rani, Bonu, & Diop-Sidibe, 2004), insolence or disobedience (Haj-Yahia, 2003).

Significant work has linked IPV with adverse reproductive health outcomes. These include greater frequency of STIs, rapid repeat pregnancy, greater number of abortions, low birth weight infants, and pre-term births (Coker, 2007; Sarkar, 2008).

2.2 The Relationship Between IPV and CU

Research on IPV and CU has primarily centered on the experiences of adult women, primarily due to data limitations, and has indicated that IPV may make it more difficult to control fertility (Bacchus et al. 2006, Charles & Perreira 2007, Gazmararian et al. 1995, Miller, Jordan, Levenson, & Silverman, 2010, Pallitto, Campbell, & O'Campo, 2005, Pallitto & O'Campo, 2004, Pearson et al., (2016) Prior empirical work has indicated that IPV experience and contraceptive use are significantly associated; however, studies have yielded mixed results with three distinct patterns: 1) IPV is negatively associated with contraceptive use, 2) IPV is positively associated with contraceptive use, and 3) the relationship varies by type of IPV. Explanations vary regarding the direction, timing, and causal mechanisms of these relationships indicating that patterns are highly context-specific and yield differing results (Pallitto, Campbell, & O'Campo, 2005; Rahman et al., 2013; Tsai, Cappa, & Petrowski, 2016).

First, research suggests mechanisms by which IPV is negatively associated with CU. Prior work has shown two mechanisms through which this association might manifest, undermining of self-efficacy and male reproductive control. Studies from North America, the Middle East, and South Asia indicate that IPV is a strong contributing factor to women's inability to access or use contraceptives; therefore, women experiencing IPV are less likely to use contraception (Fanslow et al., 2008; Heise et al., 2002; Martin et al., 1999; Silverman et al., 2007; Williams et al., 2008). Studies from the United States and Colombia show that violent partnerships are associated with an inability to use preferred methods of contraception and difficulties negotiating safe sex, specifically use of condoms (Coggins & Bullock, 2003; Pallitto et al., 2005; Pallitto & O'Campo, 2004; Raj et al., 2004; Tsai et al., 2016; Williams et al., 2008; Wingood et al., 2001). In rural India, Stephenson et al. (2008) used a prospective, cohort study to examine the association between IPV experience in the last year and current contraceptive use of 3,234 married women. The researchers found that women who had experienced IPV at baseline had 15% lower odds of adopting contraception ($OR = 0.85$, $p \leq 0.05$). This study showed that husbands used dominance in contraceptive decision-making as a means of exercising greater control over wives. Williams et al. (2008) found that fear of reprisal or uncertainty about contraceptive approval was enough to discourage contraceptive use.

Reproductive control by a male partner has also been shown to result in a negative association between IPV and CU. First, reproductive coercion in which IPV victimization results in greater male control over contraceptive methods has been found in several studies. In Jordan, Clark et al. (2008) found that women who have experienced IPV were more likely to have partners who have interfered with or sabotaged their efforts to avoid pregnancy as a means of control of their partners. The forms of sabotage ranged from covert, for example, throwing away

or tampering with methods, to sexual aggression with the end goal of pregnancy. Women whose partners sabotage their attempts at family planning are particularly vulnerable to unintended pregnancy and STI exposure because of their inability to negotiate fertility control or protection by barrier methods (Moore, Frohwirth, & Miller, 2010; Tsai et al., 2016).

Second, some evidence indicates a positive association between IPV experience and CU in several studies (Fanslow et al., 2008; Okenwa, Lawoko, & Jansson, 2011). A cross-sectional study with married adult women in Cebu, Philippines found that ever having used modern contraception was positively associated with ever-experience of physical IPV among adult women (Hindin & Adair, 2002). This relationship is also prominent in studies in Sub-Saharan Africa. Alio and colleagues (2009), using data from Cameroon, Kenya, Rwanda, Malawi, Uganda, and Zimbabwe, found that women experiencing IPV had a significantly higher rate of contraceptive use than their non-abused peers. Researchers found that women who reported any experience of IPV had significantly higher odds of using modern and traditional methods of contraception, after accounting for socioeconomic and demographic factors (OR=1.30; 95% confidence interval [CI]: 1.22, 1.38). A study done using the 2003 Kenya DHS found that women who experienced physical (OR=1.24; 95% CI: 1.09-1.4), emotional (1.7; 95% CI: 1.4-2.0), or emotional (1.4; 95% CI: 1.2-1.7) violence had a greater likelihood of contraceptive use than those who did not experience IPV adjusting for age variation (Emenike et al., 2008)[3]. The explanation for these findings, which I term the "uncertain futures hypothesis" is that women do not perceive the partnership a positive environment to raise a child so women in abusive relationships may attempt to prevent pregnancy because they do not want to bring a child into a violent family setting (Alio et al., 2009; Bacchus, Mezey, & Bewley, 2006, Baird, Creedy, &

[3] The study done by Emenike et al. conducted logistic regression models adjusting for age as a covariate.

Mitchell, 2016, Coggins & Bullock, 2003, Egnes, Liden, & Lundgren, 2012, Libbus et al., 2006, Hindin & Adair, 2002, Rank, 1989). Several qualitative studies have indicated that women make a calculation about the best scenario for their unborn child and therefore, may engage in strategies to counteract pregnancy promoting behaviors by their partners (Bacchus, Mezey, & Bewley, 2006, Baird, Creedy, & Mitchell, 2016, Coggins & Bullock, 2003, Egnes, Liden, & Lundgren, 2012, Libbus et al., 2006). Some studies have posited a few mechanisms, including women's differential fertility preference from her husband, which might move a woman to try to protect her fertility in a covert manner through the use of injectable contraceptives and IUDs (Fanslow, Silva, Whitehead, & Robinson, 2008, Kaye et al., 2006, Moore, Frohwirth, & Miller, 2010). In addition, other studies have suggested that women may use female-initiated barrier methods to protect themselves from STIs (Mantell et al., 2006).

Third, some studies have indicated the association between IPV and contraceptive use is highly dependent on violence type. Studies in both developed and developing countries found that violence type affects the relationship to contraceptive use. A study analyzing ever-married adult women in the Jordan DHS revealed that those who reported ever experiencing severe physical IPV were significantly less likely to use contraception. However, in examination of violence sub-type- women who reported ever experiencing any type of physical or sexual IPV were more likely to use contraception, and emotional violence showed no relationship to contraception use (O'Hara, Tsai, Carlson, & Haidar, 2013). In contrast, a case-control study of women in Boston by Williams et al. (2008) found physical and emotional IPV to be negatively associated with contraception use. In addition, among women who had experienced recent physical and emotional abuse, they found they were twice as likely to use a method they did not prefer. This finding implies that despite exposure to IPV women may be using contraceptives to

protect themselves; however, a positive relationship to contraceptive use may also coincide with an inability to use a preferred method of contraception (Williams et al., 2008)

2.3 The Role of Fertility Intentions: A Gap in the Literature on IPV and CU

One area that has been neglected in the IPV and contraceptive use research is the role of individual fertility intentions. Most research in the area examines the effect of IPV in reducing women's likelihood of wanting children, yet few studies have empirically proven this. Evidence on couple decision-making suggests that when husbands and wives disagree on fertility preferences contraceptive use is lower. An older study using the 1993 Kenya DHS reported that the percentage of couples using contraception nearly doubled (from 23.2% to 39.2%) when both spouses wanted to stop having children compared to couples in which only the wife wanted to stop childbearing while the husband preferred to space (Akinrinola, & Sasheela, 1998). These results suggest that husband-wife perceived and actual agreement on fertility intentions may influence contraceptive use and fertility (DaVanzo, 2003; Gipson & Hindin, 2003; Pearson et al., 2016; Tumlinson et al., 2013). In Kenya, a common reason cited for contraceptive non-use is a woman's desire to become pregnant (26%) (KNBS & ICF Macro, 2015). It is plausible that some women discontinue contraceptives to have another child, with no impact of IPV on their contraceptive decision-making. However, the nature of fertility preference in the relationship between IPV and CU is often overlooked. Therefore, this dissertation will use it as a variable to capture the motivation to use contraceptives. For example, a woman who reports a desire for an additional pregnancy, may not use contraceptives compared to someone who feels they have achieved their ideal family size.

2.4 Fertility Intentions in Prediction of Reproductive Behavior

Contraceptives are used essentially by women who would like to postpone the next pregnancy (unmet need for spacing) or do not want any more children (unmet need for limiting) (Westoff 1988). Thus, a woman's motivations, or fertility intentions, are an integral part of understanding their motivation for avoiding pregnancy. In examining fertility intentions or demand for fertility control, deciding the measurement to use is a central issue (Bulatao & Lee, 1983). Fertility intentions are captured in a range of ways through survey data. These include asking about ideal/desired family size, whether recent births were wanted or unwanted, and whether the respondent wants to continue with childbearing (Bongaarts 1990). Among these, questions on desire for additional births are considered to be the least biased and was chosen as the measurement in this dissertation (Pritchett 1994; Ojakaa, 2008).

Fertility intentions are not a perfect predictor of reproductive behavior. However, it has been established that they are a significant indicator of future fertility planning (Bumpass, 1987, Rindfuss, Morgan, & Swicegood, 1988, Thomson, 1997, Westoff & Ryder, 1977, Schoen et al., 1999). There has been some debate if they accurately represent the timeline of when women want children or if they align with fertility behavior (Westoff, 1988). In addition, Agadjanian (2005) asserts that intentions to space and limit may be concretely meaningless to women whose social role is to bear children (Watkins, 1994). Work in Kenya has shown that although individual fertility intentions and contraceptive use are linked conceptually, the mechanisms guiding them may be different resulting in contradictory intentions versus true behavior (Agadjanian, 1998a, Watkins, 1994, 2000, Agadjanian, 2005). However, despite these limitations previous work done in Uganda, Nigeria, and Kenya have shown that the planning

aspect of women's intentions are an integral part of the decision-making that leads to contraceptive use and should continue to be considered (Kabiganye, 2015).

2.5 The Role of Women's Autonomy in Contraceptive Use

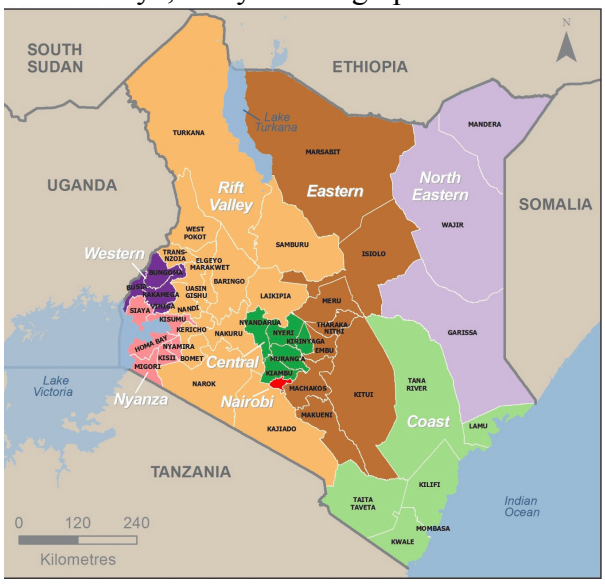
To understand the relationships between IPV, fertility intentions, and CU it is critical to examine the role of women's autonomy. Autonomy is a central dimension of the broader concept of women's empowerment, which is described as the expansion of woman's ability to make strategic life choices in a context where this ability was previously denied to them. Where empowerment is considered a dynamic concept, autonomy is considered static, and thereby easier to measure (Kabeer, 2002, Mishra & Tripathi, 2011, Malhothra & Schuler, 2005). Autonomy describes behaviors where a woman may exercise control, such as ability to control income, make house-hold or family decisions (Bloom et al., 2001, Jejeebhoy, 1991, 1995; Malhotra & Schuler, 2005). This dissertation will measure autonomy using questions about healthcare decision-making.

Numerous studies have discussed the role of autonomy in relation to contraceptive use, with the most common measurements being the joint or dominant household decision-making or control over economic resources (Upahayay et al., 2014). Prior evidence examining autonomy and contraceptive use has shown that women who participate in decisions more often are also more likely to use contraceptives (Hogan et al., 1999; Jejeebhoy, 1991; Presser & Sen, 2000). Household decision-making can indicate power-sharing between husband and wife in the relationship; women who participate more freely in household decisions are thought to have more egalitarian relationships with partners (Hindin & Adair, 2002). Greater autonomy report has in turn been has been inversely related to IPV experience. In addition, economic decision-making is a strong predictor of contraceptive use. Women who have more control over economic

decision-making are more likely to use any method, as well as female-only methods, compared with women who have less power. These women are also more likely to involve their husbands in family planning and therefore, more likely to use couple-initiated methods (Do & Kurimoto, 2012). In addition, although the role of male dominance has been implicated in undermining women's fertility choices few studies have looked at the impact of spousal domination of decision-making on women's health (Hindin & Adair, 2002). Most studies related to both IPV and contraceptive use examine partner characteristic asymmetry, for example objective differences in education level or income for a woman and her spouse (Ackerson & Subramanian, 2008, Anderson, 1997, Flake, 2005, Gage, 2005, Jones & Fergueson, 2009). As a result, the current research related to contraceptive use neglects other areas where women may report agency. In this work I will examine an understudied autonomy proxy, personal healthcare-decision making, which might impede access to and ability to choose to use contraceptives.

2.6 The Kenya Context

Figure 2.1. Map of Regions of Kenya, Kenya Demographic and Health Surveys 2014



Kenya has experienced dramatic social change since the 1980's including a major fertility decline due to the introduction of contraceptive programs (Watkins, 2000). At time Kenya had one of the highest total fertility rates (TFR) in the world, at eight children per woman, and only 7% of married women of reproductive age used a family planning method; however, by 1998 that figure grew to nearly 40% (TFR 5 children per woman) (KNBS & ICF Macro, 1999). In 2013, Kenya's contraceptive prevalence among married women was stagnated at 46%, and the TFR is approximately 4–5 children (World Bank, 2014; MEASURE Learning and Evaluation Project, 2012). In addition, Kenya contains major heterogeneity based on regional residence, rural/urban locale, and ethnic difference. Kenya is a highly-polarized based on ethnic differences. Ethnic differences are largely linked with regional residence (Musalia, 2017). Therefore, specific regions of Kenya may have a preponderance of one ethnic group, resulting in ethnic clustering. Therefore, in this dissertation a variable was created to capture both ethnic group and urban/rural residence.

The early decline was associated many social changes including the widespread promotion and adoption of a new smaller family norms and simultaneous increase in national-level family planning programs. These programs promoted more effective methods to limit fertility. Although perceptions of desired family size had begun to change before the introduction of family planning programs, it was only after the government, at the urging of the international population movement, aggressively promoted modern methods of family planning that fertility began to fall (Berhman, Kohler, & Watkins, 2002; Watkins & Hodgson 1998).

In Kenya, 53% of women are using modern contraceptive methods (KNBS and ICF Macro 2015). The most commonly used methods are injectables (26.0%), implants (10%) and pills (8%). Male condoms account for only 2% of the method mix. The distribution of

contraceptive use and method mix varies between regions and urban rural locality (KNBS & ICF Macro, 2015). Despite this prevalence of use, 18% of married women have an unmet need for contraception; 9% for spacing purposes and 8% for limiting. Unmet need is higher in rural areas compared to urban areas ((KNBS & ICF Macro 2015).

Sixty percent of current contraceptive users obtain their method of choice from the public sector. Within the public sector, 24% of users obtain their methods from government dispensaries, 20% from government hospitals, and 16% from government health centers. The private medical sector provides 34% of the modern contraceptives Kenyan women use. This includes 21% from private hospitals/clinics and 10% from pharmacies. Injectables are primarily provided by the public sector, while pills and male condoms are obtained from the private sector. The majority of women who use the pill obtain it from the private sector (57 percent), and nearly half of women who use male condoms obtain them from other sources, largely from shops (39 percent). This underscores the importance of the public sector in continued contraceptive provision in Kenya (KNBS and ICF Macro 2015).

Traditionally, Kenya is a patriarchal society where men are the major decision-makers. Women are often dependent on men for their livelihood. However, in the 1990's increases in education, and participation in the labor market began to make in-roads in positively changing women's status. This change coincided with an increase in women's movements demanding rights in the public sphere (Musalia, 2017). However, the vestiges of gender inequity continue to have impacts on contraceptive use. Husband's approval of contraception remains crucial for successful family planning use and adherence (Tuloro, Deressa, Ali, & Davey, 2006, Green & Biddlecom, 2000, Nashid, 2000). Studies have shown that family planning is more readily adopted by women when men are supportive of their decisions (Blacker et al., 2005, Bui,

Jayasuriya & Owen, 2003, Shattuck et al., 2011, Terefe & Charles, 1993). In Kenya, Blacker et al. (2005) found that husbands often compelled compliance or submission from their wives and held the greater share of decision-making power in relationships. Therefore, other strategies, referred to collectively as covert use, are often employed in situations where husbands do not approve of family planning (Harrington et al., 2016). is clandestine or covert use of contraceptives, described as contraceptive use without the knowledge of her partner (Castle, Konate, Ulin, & Martin., 1999, Biddlecom & Fapohunda, 1998). Clandestine contraceptive use is high in places where men perceive contraceptives a threat to their authority or masculinity, which fits some scenarios in which abuse occurs, particularly in highly gendered societies. This strategy has been well documented in previous studies in sub-Saharan Africa (Moore, Frowirth, & Miller, 2010, Miller et al., 2007). Covert use in Kenya is further bolstered by the method mix of contraceptives, primarily injectables, which allows women to use contraceptives without partner participation (Harrington et al., 2017).

Chapter Three: Theory and Conceptual Framework

The conceptual framework for this dissertation integrates two main theories: the social-ecological model and the theory of gender and power. These are social-structural theories which capture constructs and characteristics of the individual and in the environment shaping the lives of women. These contexts may put women at risk for IPV experience and are also likely to shape their contraceptive use (or non-use) behaviors. Integration of these theories explains the relationships between the constructs of IPV, contraceptive use, fertility intentions, and women's autonomy. The first part of this chapter will explain the social ecological model and theory of gender and power. The final section presents and explains a conceptual model created for the study from which testable hypotheses are drawn for each part of the study.

3.1 Social-Ecological Model: General Structure

Bronfenbrenner's ecological model, originally proposed in 1958 (adapted in 1977, 1979 and 1986) was originally conceptualized to examine the growth of children within the context of their environments. However, it has been adapted to consider a wide range of health and psychosocial outcomes (Bronfenbrenner, 1977, 1986; Heise, 1998, Hess & Bronfenbrenner, 1981). The original ecological model consists of four main concepts: process, person, context, and time, which effect the development of an individual. The components of the ecological framework are commonly represented as a series of nested concentric circles consisting of interdependent and interacting systems analogous to a Russian nesting doll or "matryoshka" (Bronfenbrenner, 1999).

The Heise social-ecological model has four domains: individual, relationships, community, and society (Figure 3.1). The model suggests that behavior is shaped through interaction between individuals and their social surroundings and development of behavior

results from the interaction at various levels of social organization (Bronfenbrenner, 1994, Dasgupta, 2001; Dobash & Dobash, 2004, Heise, 1998).

3.1.1 Individual Domain of the Social-Ecological Model

The first domain includes the characteristics of the individual and the interaction of those characteristics with the environment in which they reside (Bronfenbrenner, 1994; 1999). For women experiencing IPV' the individual domain includes sociodemographic characteristics, i.e. age, gender, education, income, and substance abuse that may affect their risk for entering abusive partnerships (Ali & Naylor, 2013). For example, young age, particularly young age at marriage, has been examined as a key characteristic influencing entry into and endurance in abusive relationships (Glass et al., 2003). Conditions at the individual level cannot be considered in a vacuum; instead they are influenced by higher levels of the social structure. For example, a woman's ability to report experiences of abuse to family, trusted peers, or law enforcement must consider norms around violence in families, communities, and laws that may protect perpetrators from prosecution for domestic abuse (Heise, 1998; Tudge, Mokrova, Hatfield, & Karnik, 2009). Therefore, the phenomena of underreporting of domestic violence stems from micro-level choices as well as macro-level forces unique to societal context.

3.1.2 Relationship Domain of the Social-Ecological Model

The next domain, relationships, includes persons with whom a woman may interact in the family or community. In couples, inequality between women and their partners is a key factor in IPV risk. Factors including male control over family resources, unequal decision-making autonomy, and a husband or partner who attempts to control behavior may increase women's chances of exposure to violence (Antai, 2011, Blanc, 2001, Johnson, 2006, Krantz & Vung, 2009). A large portion of studies measure relationship inequality as differences in the

characteristics of the couple -- for example, relative partner differences in earnings, education and age (Blanc, 2001, Choi & Ting, 2008). Studies have found that these differentials influence the risk of abuse in certain societal contexts. For instance, women who earn more than their husband or are more educated than their husband may be more vulnerable to control and abusive acts in some settings (Devries et al., 2013).

Although many studies have found that relationships involving egalitarian decision-making and equal division of power often report low levels of conflict, control, and abuse there has also been contradictory evidence that women with greater decision-making autonomy may be perceived as defying societal gender roles and challenging their partner's masculinity, and thus, increasing partner violence (Antai, 2011; Gage & Hutchinson, 2006, Haj-Yahia, M., 1998; 2003, Kaukinen, 2004).

I will consider only characteristics that might capture a woman's fertility intentions relative to her partner and her perception of her autonomy in decision-making around health-care access.

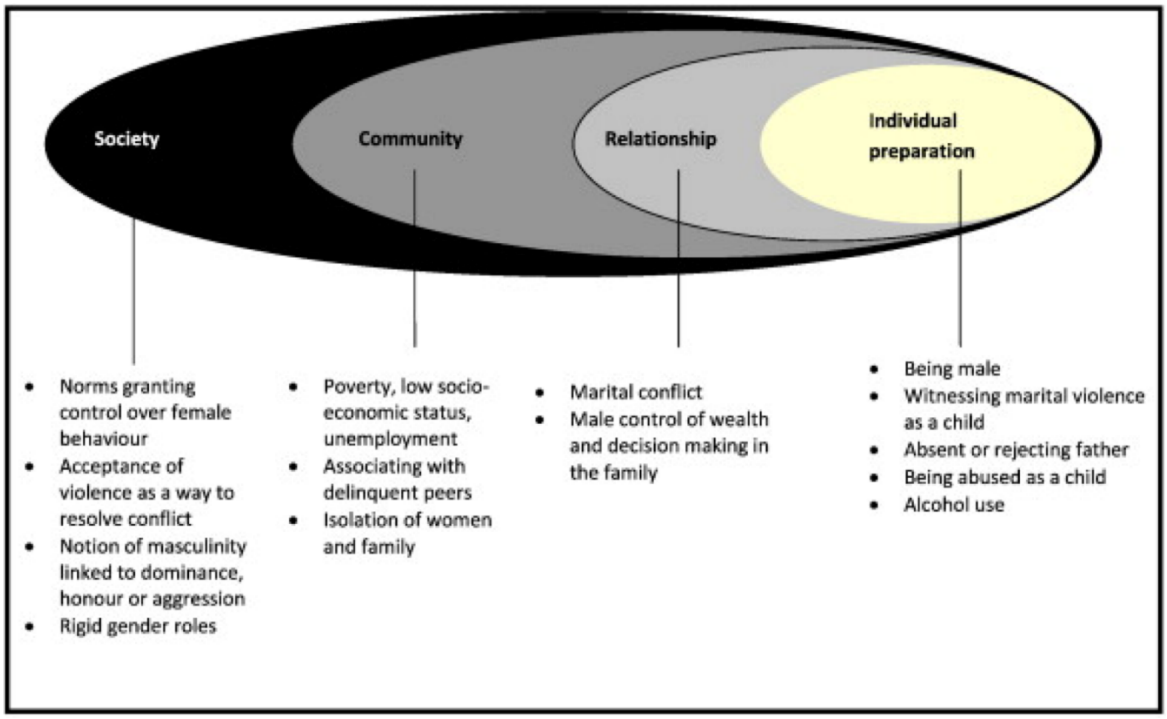
3.1.3 Community Domain and Society Domain of the Social-Ecological Model

The next domain investigates the role of community where the person lives, develops relationships and interacts with peers. The community level includes the accepted traditions and values of members in aggregate (Heise, 1998). This domain includes the factors that could increase a person's vulnerability to commit or tolerate violent acts (Ali & Naylor, 2013). The interaction between norms and values may impact sexual or fertility behaviors, such as use of condoms or other contraceptives (Tudge, Mokrova, Hatfield & Karnik, 2009).

The ecological framework has advantages in modeling IPV. First, it recognizes that IPV has multiple causes that may operate at in different levels. Second, the framework encourages

consideration of the interplay between factors in each domain. In 1999, Heise and colleagues showed that sexual IPV can result in poor reproductive health outcomes, such as unintended pregnancies, STD's, induced abortions, and high parities. Other types of IPV may indirectly influence a woman's fertility control, particularly negatively affecting use of contraceptives thus increasing her fertility. This study will focus on the role of individual and couple characteristics in the relationship between IPV and contraceptive use. The addition of determinants of both individuals and couples will capture enrich the analysis of the effects of IPV on contraceptive use.

Figure 3.1. Adapted Social-Ecological Model for Intimate Partner Violence (Heise, 1998)



This dissertation will use the adapted social-ecological model by Heise (1998) to examine the determinants from two domains, individual and relationship, in the relationship between IPV and contraceptive use.

3.2 Theory of Gender and Power

The Theory of Gender and Power (TGP) is a social-structural theory developed by Robert Connell (1987) to articulate gender-based inequities in the operations and practices within societies' structures and institutions (Connell, 1987). TGP posits that individuals face limits and constraints because of their gender. It assumes that the gender division of society is so pervasive that it operates on levels beyond individual conscious actions. In addition, in all contexts, the theory assumes subordination of women in favor of men (Connell, 1987).

TGP explains the role of patriarchal control in society. Many scholars consider the perpetration of IPV an aspect of patriarchy, i.e. male control, and hypothesize that some men use violence to control their partners (Ellsberg & Heise 2005). Burazeri et al. (2005) and Johnson and Ferraro (2000), underscore this point by describing how intimate partner violence is integrally linked to ideas of male superiority over women. This subordination of women manifests in multiple ways in society, but violence is usually used to create and enforce gender hierarchy and punish transgressions (Smith, Tessaro, & Earp, 1995).

According to TGP, there are three constructs that explain gendered relationships between men and women: 1) sexual division of labor, i.e. economic inequities, 2) the sexual division of power, i.e., inequities and abuses of authority and control in relationships and institutions, and 3) cathexis, i.e., social norms and affective attachments within society and inter-institutional relationships (Connell, 1987; Wingood & DiClemente, 2000).

3.2.1 Sexual Division of Labor and Power in the Theory of Gender and Power

The sexual division of labor refers to the allocation of specific types of work to persons based on gender perpetuating social inequality. Due to the uncompensated, lower-compensated,

or lower prestige nature of much of women's labor, the economic divide favors men over women (Connell, 1987; Aneshensel, 2012; Wingood & DiClemente, 2000).

The sexual division of power is manifested as imbalances of control that produce inequities in power for women versus men at the societal level. This power imbalance is often used as an explanation for partner abuse (Wingood, Camp, Dunkle, Cooper, & DiClemente, 2009; Wingood & DiClemente, 2000). The sexual division of power underscores that authority and choice is associated with masculinity. For example, the non-recognition of marital rape as a crime in Kenya and other countries is an example of this structure. At the individual level, a women's inability to refuse her husband's sexual advances are captured in this domain. At the institutional level, the Kenyan *Sexual Offense Act* prohibits rape of women, but *Section 43* excludes marital rape. Under customary law, marriage is considered perpetual consent to sex (Sampson, 2010). Beyond simply sexual acts, the inability for women to have equal participation in decision-making is also an artifact of this structure.

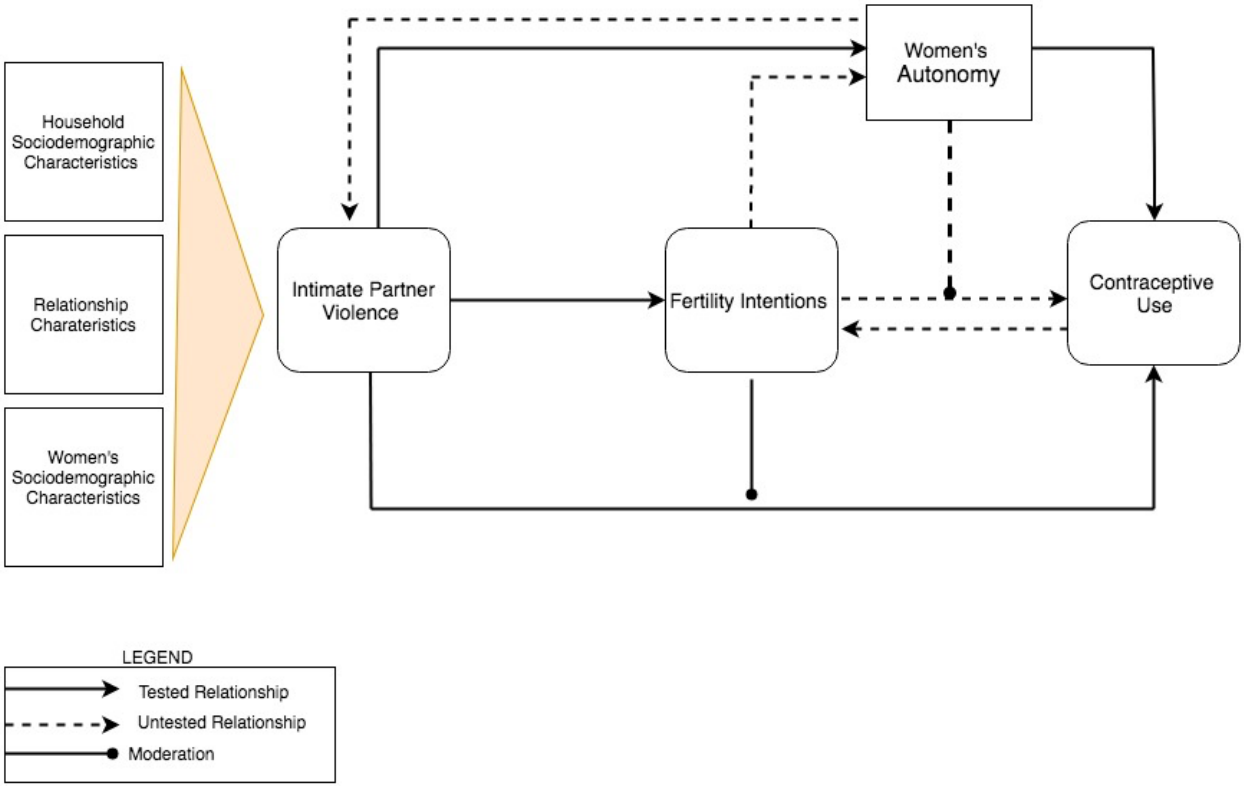
3.2.2 Cathexis in the Theory of Gender and Power

The structure of cathexis is described as the constraints on people emotionally and/or attached to one another (Wingood & DiClemente, 2000). At the institutional level, this structure is the culturally normative roles for men and women. In this context, women's sexual practices are often dictated by societal norms and expectations (Connell, 1987; Raj, Silverman, Wingood, & DiClemente, 1999). For example, women in Kenya have reported not carrying or using condoms because if they did, it would create a perception of being sexually available. In addition, women carrying condoms can be accused by spouses of infidelity (Fullilove, Fullilove, Haynes, & Gross, 1990; Ochako et al., 2015). The structure of cathexis outlines laws, social norms, and prohibitions that shape what is 'normal' within relationships. As discussed by

Wingood and DiClemente (2000), social exposures (i.e., having an older partner, a desire to conceive, having conservative cultural and gender norms, having a religious affiliation that forbids the use of contraception) restrains women from making desired sexual decisions.

3.3. Conceptual Framework for Dissertation

Figure 3.2. Conceptual Framework for Relationships between IPV Experience and Contraceptive Use



In this section, I describe my conceptual framework for intimate partner violence, women's autonomy, and contraceptive use for the proposed study as shown in Figure 3.2. The solid arrows indicate relationships that are being tested by this study, while dotted arrows indicate relationships that are drawn from the literature but not being tested within the dissertation.

Intimate partner violence is the main independent variable in the dissertation and the construct I theorize has primary impact on contraceptive use. Contraceptive use, the dependent variable of interest is a way of actualizing fertility intentions. A woman's autonomy may be affected by IPV exposure, but, in addition to fertility intentions, may affect the ability to use contraceptives. Therefore, the relationship between IPV and CU may be contingent on the level of a woman's autonomy.

IPV plays a dual role, it moderates the relationship between fertility intentions and contraceptive use (not shown) and also may directly impact fertility intentions. Therefore, an underlying assumption of this dissertation is that contraceptive use is a way to enact fertility intentions. Therefore, the first analysis will examine the relationship between IPV and fertility intentions testing whether IPV has an effect on a woman's desire to have additional children. The next analysis then examines IPV and contraceptive use considering differences in fertility intentions. Finally, the third study focuses on the mediating role of women's autonomy.

IPV impacts fertility intentions in several hypothesized ways. First, IPV exposure may increase a woman's desire to either limit her additional children (birth limiter scenario) or wait until a later time to have them (birth spacing scenario). Second, if a woman's fertility intentions are dependent on her partner's expectations, then divergent opinions and the climate of control that exposure to abuse creates may lead her to converge with her partner's wishes, or possibly enact the husband's fertility preference rather than her own. This need to fulfil her partner's wishes could lead to her deciding to have more children than she would prefer. Third, a woman may not change her intentions and may figure out a covert way to enact them in the presence of abuse. Finally, a woman may actually hope to have children soon, despite exposure to abuse, in an attempt to improve the stability of the relationship. I hypothesize that abuse in this context

will increase a woman's desire to space or limit her children. If true, we would expect these preferences to increase contraceptive use.

The next relationship in the model illustrates that IPV may affect use of contraception through the fertility intentions. Fertility intentions may moderate this relationship in three ways. First, in the case of women wanting to limit births this may increase motivation and thus those persons will be likely to use contraception despite IPV experience. Another possibility is that a woman is interested in having children soon. In this scenario, women will be less motivated to use contraceptives despite IPV experience and the IPV and contraceptive use in this group may not be related. Finally, women who are interested in having children later will also have increased motivation to use contraceptives. These women may also experience a greater use of contraceptives despite partner abuse. There are several cases where a woman's fertility intentions may not moderate the IPV and CU relationship. If a woman is discordant in fertility preferences from her husband, where one partner desires children and the other does not may result in several scenarios. First, the husband's preference can prevail through several means including intimidation, sexual aggression, contraceptive sabotage, or continued threats of violence, or simply assent on the part of the woman resulting in negative relationship with contraceptive use. Second, the wife may prevail through covert use of contraceptives, or use despite violence resulting in a positive relationship between IPV and contraceptive use. Finally, a woman's experience of IPV may not have a strong enough association with contraceptive use resulting in no discernable effect. I hypothesize that women who want to become pregnant despite experience of IPV may not use contraception and thereby exhibit no relationship between IPV and contraceptive use. In contrast, women who want to limit their fertility (possibly due to IPV experience) may be motivated to use contraceptives and IPV and contraceptive use will be

associated. For these women, I hypothesize the IPV will result in a positive relationship with contraceptive use.

The relationship between IPV experience and contraceptive use is affected by characteristics drawn from the individual and couple domains of the social-ecological model. In the first part of the study I will examine the individual covariates associated with the relationship between IPV and contraceptive use in this context. I hypothesize that individual women's characteristics which affect contraceptive use include age, education, and religious background. Relationship measures affecting contraceptive use is captured by desired family size concordance. Women's status is measured as participation in healthcare decision-making. Household characteristics such as household wealth may affect a woman's autonomy or ability to use contraceptives.

In this model, the construct of women's autonomy captures different aspects of women's roles and participation in decision-making behavior. This study uses the theory of gender and power by looking at different areas in which women are potentially exercising agency and their implications for fertility control. Division of power is defined as "the power to act or change or having power over others" (Wingood & DiClemente, 2000). In the model, sexual division of power is approximated by the dimensions of women's joint or dominant participation in healthcare decision-making. I hypothesize that women with greater healthcare decision-making capabilities will have greater ability to control fertility and thus increased likelihood of contraceptive use despite exposure to IPV.

In the face of IPV, the power differential between husbands and wives may affect autonomy and a woman may exhibit autonomy in two ways including maintaining autonomy, either by covert or overt use of contraceptives despite husband's opposition, or not maintaining

autonomy and not using contraceptives. Therefore, IPV in most cases will not directly impact IPV through a man being a barrier to contraceptive use, rather the disempowering of the woman through experience of IPV will demotivate a woman from being able to exercise her choices. IPV may have a direct impact on women's autonomy through the mechanism of disempowerment, therefore women experiencing IPV may express lower autonomy. In this case, IPV acts as a barrier to fulfilling intentions, but that more autonomous women may be able to overcome this barrier and fulfill their fertility preferences anyway through use or non-use of contraception dependent on their fertility intention at the time.

Covariates from the first part of the analysis will be kept in the models when examining the examining whether IPV and CU are mediated by women's autonomy. Finally, specific dimensions of women's autonomy can affect contraceptive method use and choice, perhaps in conflicting ways. Additionally, women may not have high participation on in all spheres of autonomy equally. For example, a woman may have control over household-decisions, but ultimately be unable to decide her own healthcare choices. In this instance, a woman may be unable to get help for IPV or access contraceptives due to this barrier.

The structure of cathexis is most often expressed through normative social behaviors enforced upon women and men. This includes appropriate ways to engage in relationships and appropriate behaviors governing sexuality (Wingood & DiClemente, 2000). This structure will be captured by the sexual autonomy question regarding ability to refuse sex. I hypothesize that women who report the ability to refuse sex will be more likely to use contraceptives despite exposure to IPV.

Dimensions not included in this model but important to understand are those proxies for the sexual division of labor. This construct could be represented by control over resources,

including ownership of land or a home. For example, Kenya has customary laws regarding property ownership that favor males over females. For example, any property that women acquired prior to marriage is legally controlled by her husband once she enters a marriage (Ellis, 2007; Wingood & DiClemente, 2000). The only proximate variable used for a woman's economic status is household wealth index.

There are several caveats to this model, first, fertility intentions are imperfect measurements in several ways. There has been some debate if they accurately represent the timeline of when women want children or if they align with fertility behavior (Westoff, 1988). However, previous work done in African contexts shows that women's intentions are an integral part of the decision-making that leads to contraceptive use (Kabiganye, 2015). Second, people may not have numeric or concrete fertility intentions. Their choices may be based on other factors, which may change over time. Finally, the literature cites many distinct reasons that women may have a desire to limit fertility but do not fulfil them that are beyond unmet need including perceptions that pregnancy is unlikely, past problems with contraceptive methods, and fear of side effects (Fisher et al., 2005). Assessing all these reasons are beyond the scope of this dissertation.

Chapter Four: Research Design and Methods

4.1 Introduction

This chapter presents the research methods, descriptions of data, and study procedures used in this dissertation to examine the relationship between intimate partner violence and contraceptive use. This dissertation is based on data from the 2003, 2008-09, and 2014 Kenya Demographic and Health Surveys (DHS). These data were chosen because they are representative of the national population and contain variables measuring intimate partner violence exposure, contraceptive use, and women's autonomy. DHS uses standardized sampling procedures, administration protocols, questionnaire design, and variable definitions, which allowed for appropriate pooling of survey data over different years and provided enough statistical power for this analysis.

In the first section, I briefly describe the DHS program. Next, I describe the 2003, 2008-09, and 2014 Kenya DHS surveys, including the sampling procedures, questionnaire administration, response rates, and subject protection procedures for the domestic violence module respondents. I also provide a description of the analytic sample used, the measures used, and the rationale for statistical methodology used in the dissertation. Finally, the data analysis plans for each aim and corresponding hypotheses that were tested are outlined.

4.2 Data Used for Dissertation

4.2.1 Demographic and Health Survey Overview. The Demographic and Health Survey program was established by the United States Agency for International Development (USAID) in 1984 as a follow-up to the World Fertility Survey and the Contraceptive Prevalence Survey projects. Currently, it is part of the MEASURE DHS project. Since 1984, more than 300

nationally representative household-based surveys have been completed under the DHS in over 90 countries (KNBS & ICF Macro, 2015).

MEASURE DHS focuses on capacity building to assist countries to implement and manage DHS surveys through national organizations. DHS collects a wide range of survey data focusing on indicators of fertility, reproductive health, maternal and child health, mortality, nutrition and self-reported health behaviors among adults and has been validated through pre-testing during each phase of survey administration (KNBS & ICF Macro, 2015).

Key advantages of the DHS include high response rates, national coverage, high quality interviewer training, standardized data collection procedures across countries and consistent content over time, allowing comparability across populations and over time periods (Rutstein & Rojas, 2006).

4.2.2 Datasets: Kenya 2003-2014. The following paragraphs describe the sampling procedures for the Kenya DHS (KDHS) for the years 2003, 2008-09, and 2014.

Kenya DHS 2003, 2008-09 sampling procedures. Sampling procedures for the KDHS 2003 and KDHS 2008-09 were virtually identical. First, a representative probability sample of 10,000 households was selected for each survey from a national master sample of enumeration areas maintained by Central Bureau of Statistics Nairobi (the fourth National Sample Survey and Evaluation Program. This sample was constructed to allow for separate estimates for key indicators for eight provinces and for separate estimates of urban and rural areas. Urban areas were oversampled, and underpopulated areas had a smaller selection of households. As a result of these differing sample proportions, the KDHS 2003 and 2008-09 samples are not self-weighting at the national level.

The KDHS 2003 and 2008-09 utilized a two-stage sample design. In the first stage clusters (sample points) from a national master sample of a total of 400 clusters (KDHS 2003:129 urban and 271 rural, KDHS 2008-09: 133 urban and 267 rural) were selected from the master frame. The second stage of selection involved the systematic sampling of households from a list of all households that had been prepared for NASSEP IV in 2002, these constituted households visited for administration of the Household Questionnaire.

Within these reported households all women aged 15-49 years who were either usual residents of the households or visitors present at the time of interview? were eligible to be interviewed in the Women's Questionnaire. In addition, in every second household selected for the survey, all men aged 15-54 years who were permanent residents or visitors the night prior to survey administration were eligible to be interviewed with the Men's Questionnaire. This dissertation is limited to data from the Women's Questionnaire.

Kenya DHS 2014 sampling procedures. The purpose of the KDHS 2014 was to produce representative estimates for most of the survey indicators at the national, regional, and county levels, for urban and rural areas. In order to meet these objectives, the sample was increased, and the sampling procedures differed compared to previous surveys. The sample procedure for the KDHS 2014 was drawn from the Fifth National Sample Survey and Evaluation Program (NASSEP V). The NASSEP V contained 5360 clusters split into four equal subsamples and most up-to-date sample frame used by the Kenya National Bureau of Statistics. In contrast to previous years, these clusters were drawn using a stratified sample with probability of selection proportional to population size from 96251 enumeration areas in the 2009 Kenya Population and Housing Census.

The KDHS 2014 was designed to have 40,300 households from 1,612 clusters spread across the country, with 995 clusters in rural areas and 617 in urban areas. Samples were selected independently in each sampling stratum, using a two-stage sample design. In the first stage, the 1,612 enumeration areas were selected with equal probability from the NASSEP V frame. The households from listing operations served as the sampling frame for the second stage of selection, in which 25 households were selected from each cluster. The interviewers visited only the preselected households, and no replacement of the preselected households were allowed during data collection. Because of the non-proportional allocation to the sampling strata and the fixed sample size per cluster, the survey was not self-weighting. The resulting data have, therefore, been weighted to be representative at the national, regional, and county levels.

The full Household Questionnaire, Women's Questionnaire, and Men's Questionnaire were administered to half of all households, while the other half received a short version of the Household and Women's Questionnaire. All women aged 15-49 years who were either usual residents of the households in the sample or visitors present in the household on the night before the survey were eligible to be interviewed in the Women's Questionnaire. The domestic violence module was included for only those women chosen to participate in the full questionnaire.

4.2.3 Kenya DHS questionnaire procedures. The Women's Questionnaire was administered in all three survey years. These questionnaires were administered in Kiswahili and eleven other local languages (Embu, Kalenjin, Kamba, Kikuyu, Kisii, Luhya, Luo, Maasai, Meru, Mijikenda, and Somali). The Women's Questionnaire covered a breadth of topics including but not limited to:

- Background characteristics such as education
- Reproductive history
- Knowledge and use of family planning methods
- Fertility intentions and preferences

• Marriage and sexual activity

The Women's Questionnaire also included a series of questions to obtain information on women's experience of domestic violence. These questions were administered to one woman per household. In households with two or more eligible women random selection was used to interview only one eligible woman.

4.2.4 Kenya DHS response rates. Table 4.1 shows response rates for the surveys. In 2003, a total of 9,865 households were selected in the sample, of which 8,889 were occupied and therefore eligible for interviews. Those households where structures were vacant or destroyed constituted a majority of household sample loss. 8,561 (of 8889 eligible households) were successfully interviewed, yielding a household response rate of 96%. In the households 8,717 eligible women were identified and 8,195 of these women completed interviews, yielding a response rate of 94%. The response rates are higher in rural areas compared with urban areas. Women who interviewers failed to find after repeated attempts to home or workplace sites constituted a majority of the nonresponse.

In 2008-09 a total of 9,936 households were selected in the sample, of which 9,268 were occupied at the time of fieldwork and thus eligible for interviews (Table 4.1). Of the eligible households, 9,057 households were successfully interviewed (96% response rate). Again, structures found to be vacant or destroyed constituted household nonresponse. The women's survey response rate was 96% with 8,767 selected and 8,444 interviewed.

In the 2014 KDHS sample the household response rate for the full Household Questionnaire was 99%, 39,679 households were selected for the sample, of which 36,812 were found occupied and eligible. Of these households, 36,430 were successfully interviewed. Household level non-response was primarily due to structures that were found to be vacant or destroyed and households whose members were absent for an extended period of time. In the

households selected for and interviewed using the full questionnaires, a total of 15,317 women were identified as eligible for the Woman's Questionnaire, of whom 14,741 were interviewed, generating a response rate of 96%. Response rates are lower in the urban sample than in the rural sample. The main reason for non-response among eligible women was failure to find them at home despite repeated visits to the household.

4.2.5. Kenya DHS ethical considerations for domestic violence module.

As mentioned above the domestic violence module was only administered to a group already designated to receive the full KDHS questionnaire. Special training was given to interviewers administering the domestic violence module in all survey years. This training focused specifically on sensitivity, confidentiality and maintaining privacy during the interview. Several protections were also built into the survey in keeping with the World Health Organization's ethical and safety recommendations for research on domestic violence (WHO, 2001). First, to maintain confidentiality, only one women or man per household were administered questions on violence. If more than one woman or man was eligible, only one was randomly selected among those eligible, using a procedure based on the Kish grid, which was built into the Household Questionnaire (Kish, 1965). Second, an additional informed consent was obtained prior to the start of the domestic violence module. Third, the violence module was skipped or interrupted if privacy could not be maintained. Finally, all respondents received a brochure on domestic violence with services contacts information upon interview completion whether they were selected for domestic violence module or not. Distribution of the brochure to everyone safeguarded against identifying those selected for the module and ensured all persons had equal access to information on services for domestic violence events.

4.3 Sample for the Proposed Dissertation

The sample for this study includes all female respondents of reproductive age (15 to 49 years of age), who provided information on reproductive behavior and intentions, contraception, breastfeeding, gender attitudes, and partner's background through the full version of the Women's Questionnaire. The analytical sample for women is constrained to those selected and interviewed for the domestic violence module, who were not currently pregnant at the time of survey, not sterilized, or infecund/menopausal. Women who reported being currently pregnant, infecund, or menopausal were excluded because are not at risk of pregnancy and are unlikely to use contraception. Sterilized women were excluded because among that group decisions about sterilization were made prior to survey administration.

All women who were residents or visitors at the sampled household at the time of the survey were eligible for participation in all three of the Kenyan surveys included in this analysis... The full respondent sample included 8,195 eligible women in 2003, 8,444 eligible women in 2008-09, and 31,079 eligible women in 2014 (a total of 47,718 women).

The domestic violence module, however, was only administered to one randomly-chosen person in each sampled household. Thus, data on domestic violence were obtained from 17,853 women (37.4% of the total sample). Response rates for all years were 94-96% (Appendix Table 4.1), indicating high representation of the target population. All parts of this analysis constrain the sample to women selected and interviewed for the domestic violence module, who were not currently pregnant at the time of survey, not sterilized, not reported infecund or menopausal, and currently married or in-union, N=10,098. Flow chart diagrams (Figure 4.1) in Appendix indicate the sample for each chapter examining IPV and fertility intentions, IPV and contraceptive use, and the mediation effect of women's autonomy.

4.4 Study Measures for Dissertation

The goal of the dissertation is to examine the impact of intimate partner violence on contraceptive use. The main study variables in the first study are intimate partner violence experience and fertility preference, which are associated with the decision about whether or not to use contraceptives. The second study examines the relationship between intimate partner violence and contraceptive use separately in those desiring (more) children and those who do not. This aim studies whether violence undermines or bolsters a woman's ability to fulfill her fertility preferences through the utilization of contraceptives. Finally, a woman's level of autonomy, or her ability to carry out life choices unfettered, is connected with her ability to make reproductive decisions. The final study examines autonomy as a mediator in the relationship between intimate partner violence experience and contraceptive use. In all three studies a constant set of covariates drawn from the literature and thought to confound the main relationships was included. Appendix Table 4.2 outlines the original questions and responses that comprise the variables examined in the dissertation.

4.4.1 Exposure Variables. The primary exposure variables for all studies was experience of violence by a current partner. Intimate partner violence experience was operationalized through four dichotomous variables indicating (1) any type of violence experience, including all physical, sexual and emotional violence from a current partner, (2) physical violence, (3) sexual violence, and (4) emotional violence. Any violence is a summary of experiencing any of the specific types of IPV and is coded as a dichotomous variable with '1', indicating any experience of physical, sexual or emotional violence reported, and '0', indicating no experience reported. Physical, sexual, and emotional violence are mutually exclusive categories. These variables are

coded as dichotomous with '1' indicating any experience of violence and '0', indicating no experience.

A second variable was created to capture the simultaneous experience of violence types. The variable included four categories indicating number of violence types. Response categories '0' indicating no violence experience '1' indicating one subtype of violence experience '2' indicating two subtypes of violence experience, and '3' indicating experience of all three violence subtypes.

4.4.2 Outcome Variables. There are two primary outcome variables for this dissertation, fertility preferences and contraceptive use.

Fertility intentions Fertility intentions are operationalized through two measures. First, a dichotomous outcome was coded as '1' for those who reported they "wanted to have another child in the future" or were "undecided/don't know" and '0' for those who reported "no more/none". Undecided/don't know respondents were hypothesized to similarly to those who wanted additional children. A second fertility intention variable was operationalized with three categories. First, '0' was does not want additional children, '1' was wants children within two years, "wants but unsure timing" and "undecided" and '2' wants children after two years.

Current contraceptive use. Two variables to capture contraceptive use were used. The first is contraceptive use within the twelve months preceding the interview was operationalized as dichotomous '0', indicating no contraceptive use and '1' indicating use of any contraceptive type.

Current contraception methods. The second variable was categorized into three categories: (1) modern (i.e. the pill, intrauterine device [IUD], injections, male and female condoms, and Norplant); (2) traditional (i.e. periodic abstinence, lactational amenorrhea, and

withdrawal); and (3) no method including report of non-use or use of herbal or plant methods (i.e., not using or other). The variable was analyzed as categorical.

4.4.3 Covariates. Several independent variables were used to capture characteristics that might confound the relationship between violence exposure, fertility intentions, and contraceptive use. These covariates, as explained in the Background section, are drawn from the fertility literature. They include the woman's age, education, household wealth, ethnicity, residence, religion, and number of living children, and her husband's fertility preference concordance. These covariates outlined below were the same for all three studies.

Age. Woman's age is a continuous variable measured as age in years at the time of the interview with a range of 15-49 years.

Education. A woman's education was coded as categorical with four levels. It was measured by categorizing the last completed grade level where '0' was never attended school (no education), '1' for primary, '2' Secondary, and post-secondary, '3' includes University or higher.

Household wealth.[4] The variable is treated as categorical with five levels representing the *poorest, poorer, middle, richer,* and *richest* households in terms of wealth. A series of items was asked of each participant and each the items was recoded and used in a principal components analysis. The score from the principal components analysis was then reclassified into quintiles representing poorest (lowest quintile), poorer (lower quintile), middle (middle quintile), richer (higher quintile), and richest (highest quintile) by wealth in households.

[4] Wealth is categorized using the DHS wealth index. The index is based on prior work of Filmer and Pritchett (1999) where a score (already created) for household wealth was developed from responses to questions about the assets and amenities of each respondent's household. These categorical questions about assets asked the head of household whether he/she owned each of the following items: fridge, freezer, dishwasher, TV, video, air conditioning, microwave, cooker/stove, electric fan, water heater, heater, sewing machine, iron, radio, washing machine, camera, bicycle, motorcycle, private car, taxi, truck, computer, cell phone, and satellite dish. Questions about amenities asked about the availability of electricity, type of flooring, number of rooms, sources of water, waste disposal, and type of toilet.

Ethnicity and residence[5]**.** In Kenya, ethnic groups are concentrated in different parts of the country, creating a preponderance of certain groups in specific geographical areas (Iyer & Weeks, 2009). Therefore, there is a high correlation between area of the country and ethnicity. Therefore, a composite categorical variable of ethnicity and urban/rural residence with five categories was coded as '1' Kikuyu, '2' Luhya, '3' Luo, were represented then separate categories for rural others '4' and urban others '5'.

Religion. Religious affiliation is a categorical variable with four groups, '1' Roman Catholic, '2' Protestant, '3' Muslim or '4' No Religion or Other. The variable is treated as categorical with four groups. Those who responded, "no religion" and those who answered "other" constituted less than 2.5% of the sample (N=261), therefore those groups were collapsed into one category[6].

Number of living children. This is a continuous variable capturing the total number of living children a woman had at the time of interview. The variable had a range from 0-15 children.

Family size concordance. This is a woman's perception of her husband's ideal number of children compared to hers. The variable has four categories: husband wants more children, husband wants fewer children, husband wants the same number of children, or woman is unsure of her husband's preference.

4.5 Autonomy Dimension: Healthcare Decision-making

This section will describe the variable used to capture autonomy related to intimate partner violence and contraceptive use: healthcare decision-making

[5] Several other configurations of ethnicity/ residence were tried: Note them here and describe rational for choosing this particular one.

[6] Describe statistical test done that shows no real difference in separating these groups.

Healthcare decision-making. Women are asked one question about who primarily makes decisions about their health care. In this analysis, this variable is coded '1' to indicate exclusive decision-making (specifically: respondent alone), '2' to indicate joint involvement in decision making (specifically respondent and husband, respondent and someone else), or '0' non-involvement in decision making (specifically: husband, someone else, other). The variable will be analyzed as a dummy variable with three response categories.

4.6 Data Analysis Plans

This section describes a general overview of data analysis procedures used for each study in the dissertation. Detailed information about each analysis and corresponding hypotheses are located in each study section (Chapters 5, 6, and 7). For all studies l used binary and multivariate logistic regression analysis on the cross-sectional pooled dataset. Logistic regression was the appropriate mathematical modeling approach due to the need to describe the relationship of several independent variables to a dichotomous or categorical outcome. All analyses were conducted in Stata Version 14.2.

For each study the use of binomial and logistic regression analyses were executed depending on the nature of the dependent variable. In all sections, I examined outcome variables as dichotomous and multi-category.

The general analysis procedure for Chapters 5 and 6 is as follows: After presenting distributions of all of the variables in the analysis, I begin by examining the effects of IPV experience on fertility intentions (Chapter 5) or contraceptive use (Chapter 6) using both the dichotomous and multi-category variables (described above). All models for each type of violence are run separately due to multicollinearity of violence types. All models include covariates to control for factors which may affect the association between the dependent and

independent variables (described above). This procedure is carried through for all chapters. Therefore, five binomial models are estimated, and five multinomial models are estimated for each analysis section.

Next, I investigate the effects of IPV of contraceptive use on subgroups of the sample distinguished by their difference in fertility intentions. Here my goal is to effects of IPV on contraceptive use separately for women who: (1) want no more children, (2) want more children later, and (3) want more children soon. By stratifying the sample by fertility desires, I compare women experiencing IPV with others who have the same fertility desires, thus eliminating any potential confounding effect of fertility desires themselves.

In the final part of the analysis (Chapter 7), I examine whether women's autonomy accounts for at least part of the association between IPV and contraceptive use. To do so, I again stratify the sample into three separate fertility intentions groups, women who: (1) want no more children, (2) want more children later, and (3) want more children soon. As before, this stratification eliminates any potential confounding of the results by differences in fertility preferences by women experiencing IPV and those who are not. Within each group, I estimate a model including women's autonomy measures and compare the results to the model estimated earlier for the same stratum without autonomy measure to determine whether inclusion of the autonomy measures reduces the effects of IPV on contraceptive use.

4.7 Protection of Human Subjects

This work was submitted and accepted for exemption review through the UCLA South IRB in June 2017 prior to undertaking dissertation work. Permission to use and analyze data was obtained from the MEASURE DHS Program through an online data use agreement.

4.8 Summary

This dissertation aims to further contextualize the relationship between IPV and CU. It aims to examine the impacts of fertility intention, an important but often overlooked variable that acts as a motivator for contraceptive use. Finally, it aims to examine the role of women's autonomy as a mediator, an important arena for intervention to improve contraceptive use.

Prior work has included Kenya in cross-national comparisons on IPV and contraceptive use but few studies have been done in the recently in the country examining the relationship using cross-sectional studies from multiple years. In addition, most of the work done integrating women's autonomy constructs have been tested in South-Asian contexts but little work has been done to understand the cross-cultural value of these factors in African contexts (Alio et al., 2009). In addition, most studies commonly use three measures 1) participation in household decision-making, 2) participation in large purchase decision-making and 3) ability to decide visits to family.

The first paper aims to understand the important role of woman's fertility intentions, in the data, a concept that has thus been absent from IPV and contraceptive work in African contexts. The second paper will integrate the concept of fertility intentions when examining the relationship between IPV and contraceptive use. The final paper will further contextualize the role of women's autonomy measures in the relationship between experience of IPV and contraceptive use in Kenya. Prior work has looked at the women's autonomy as both a predictor and outcome in the relation to contraceptive use and IPV experience, but none have examined a moderation hypothesis employing several dimensions of autonomy (Pearson, 2016). In Kenya, where lifetime experience of IPV is as high as 41%, prior work has examined autonomy in relation to proximate measures including education and employment (Hindin & Adair, 2002).

However, this work will fill in the gap examining the heterogeneity of experiences that might contribute to examining if exercising agency in certain facets of one's life, for example, being able to participate in household decision-making but being unable to exercise autonomy with respect to healthcare decisions (Hindin & Adair, 2002).

4.9. Appendices: Tables and Figures

Appendix Table 4.1. Selection, Sampling, and Response Rates for the Household and Women's Questionnaires in the Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

Survey Year	Households Eligible	Households Interviewed	Household Response Rate	Women Eligible	Women Interviewed	Women Response Rate
2003	8889	8561	96%	8717	8195	94%
2008-09	9268	9057	98%	8767	8444	96%
2014	36812	36430	99%	15317	14741	96%

Appendix Table 4.2. Original Questions and Dissertation Variable Constructions from the Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

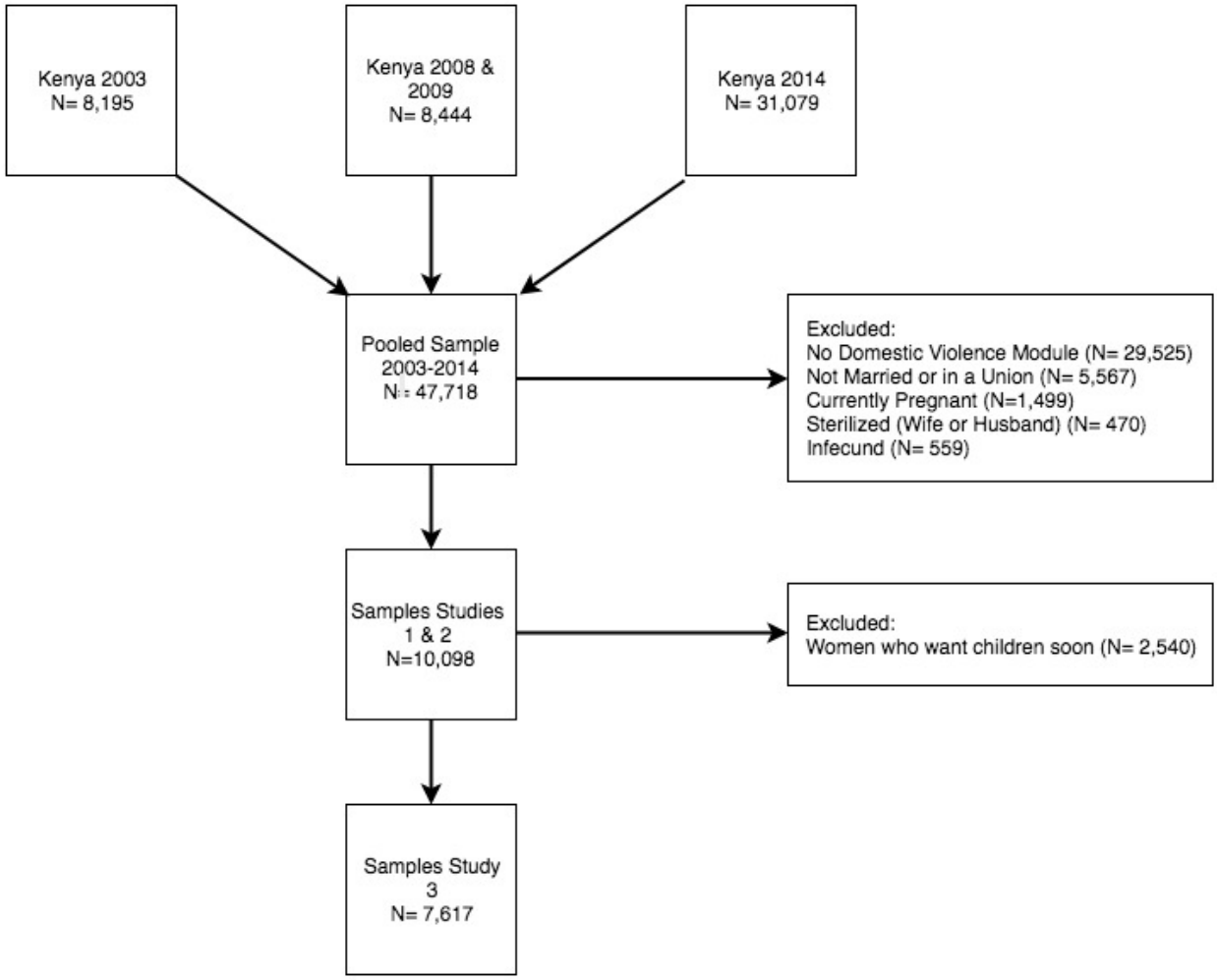
KDHS Original Question	KDHS Original Response Items	KDHS Original Variable Type	Coding for Dissertation Analyses
Exposure Questions			
Intimate Partner Violence: Does your (current) spouse/partner ever: **Physical (a-g):** (a) Push you, shake you, or throw something at you? (b) Slap you? (c) Twist your arm or pull your hair? (d) Punch you with his/her fist or with something that could hurt you? (e) Kick you, drag you, or beat you up? (f) Try to choke you or burn you on purpose? (g) Threaten or attack you with a knife, gun, or any other weapon? **Sexual (h-j):** (h) Physically force you to have sexual intercourse with him/her even when you did not want to? (i) Physically force you to perform any other sexual acts you did not want to? (j) Force you with threats or in any other way to perform sexual acts you did not want to? **Emotional (k-m):** (k) Say or do something to humiliate you in front of others?	No Yes, sometimes Yes, often Yes, but not in the last year	Categorical	**Any Violence:** No (0) Yes (1) **Physical:** No (0) Yes (1) **Sexual:** No (0) Yes (1) **Emotional:** No (0) Yes (1)

(l) Threaten to hurt or harm you or someone close to you? (m) Insult you or make you feel bad about yourself?			
Outcome Questions			
Fertility Preference: Q1. Now I have some questions about the future. Would you like to have (a/another) child, or would you prefer not to have any (more) children?	No more/none (Move to Q2) Says she can't get pregnant Undecided/Don't Know (Move to Q2)	Categorical	**Wants More Children:** No (0) Yes (1)
Q2. When would you like to have more children?	wants within 2 years wants after 2+ years wants, unsure timing undecided wants no more	Categorical	**Fertility Preference**: Does Not Want (0) Wants Children Soon (1) Wants Children Later (2)
Contraceptive Use: Q1. Are you currently doing something or using any method to delay or avoid getting pregnant?	No Yes (Move to Q2)	Dichotomous	**Current Contraceptive Use:** No (0) Yes (1)
Q2. Which method are you using?[7]	a) Not Using b) pill c) IUD d) Injections e) male condom f) periodic abstinence g) withdrawal h) other i) norplant j) lactational amenorrhea k) female condom	Categorical	**Contraceptive Use Method:** None (a, h) Modern (b-e, i, k) Traditional (f,g, j)
Covariates			
Age: How old were you at your last birthday?	Age Completed in Years	Continuous	Age in years range 15-49
Education: Q1. Have you ever attended school?	No Yes (Move to Q2)	Dichotomous	**Education:** No Education (0) Primary (1)
Q2. What is the highest level of school you attended: primary, secondary, or higher?	None Primary Secondary University or Higher	Categorical	Secondary (2) Post-Secondary (3)
Household Wealth: Series of asset questions re-categorized into quintiles	Lowest Lower Middle Fourth Highest	Categorical	**Household Wealth:** Poorest Poorer Middle Higher Highest

[7] As noted in the analytic sample section, those who responded they were sterilized were not included in the sample.

Residence: Place of usual residence (de facto). **Ethnicity:** What is your ethnic group / tribe?	Urban Rural Embu Kalenjin Kamba Kikuyu Kisii Luhya Luo Maasai Meru Mijikenda/Swahili Somali Taita/Taveta Other	Categorical Categorical	**Ethnicity and residence:** Kikuyu (1) Luhya (2) Luo (3) Rural Others (4) Urban Others (5)
Religion: What is your religion?	Roman Catholic Protestant/Other Christian Muslim No Religion Other (Specify)	Categorical	**Religion:** Roman Catholic (1) Protestant (2) Muslim (3) Other (4)
Number of Living Children: Total number of living children at time of interview	Total number of living children	Continuous	Total children range 0-15
Family Size Concordance: This is a woman's perception of her husband's ideal number of children compared to hers.	The variable has four categories: husband wants more children, husband wants fewer children, husband wants the same number of children, or woman is unsure of her husband's preference.	Categorical	**Family size concordance:** Same (0) More (1) Fewer (2) Unsure (3)
Women's Autonomy Questions			
Healthcare decision-making: Who usually makes decisions about health care for yourself? you and your (husband/partner) jointly, or someone else?	Respondent Husband/Partner Respondent and Husband/Partner Jointly Someone Else Other	Categorical	**Healthcare decision-making:** Respondent Alone (1) Joint (2) Husband Alone (0)

Appendix *Figure 4.1*. Analytic Sample Derivation and Exclusion Criteria for All Studies for In-Union Women, Kenya Demographic and Health Surveys 2003, 2008, 2009 & 2014.



Chapter Five: The Impact of Intimate Partner Violence Experience on Fertility Intentions in Kenya

5.1 Introduction

Evidence examining IPV experience and fertility intentions is scarce. However, the impact of intimate partner violence on unintended pregnancy[8] is frequently examined. The prevailing narrative is women in abusive partnerships lack autonomy and self-efficacy, which extends to their reproductive behaviors. Inability to control specific aspects of their sexual lives, including choice about sexual activity and ability to use contraceptives, increases the likelihood of experiencing unintended pregnancies (Bacchus et al. 2006, Charles & Perreira 2007, Gazmararian et al. 1995, Goodwin et al., 2000, Millar et al. 2010, 2010, Pallitto et al. 2005, Peralas et al. 2009, Peterson et al., 1997) Studies focusing on IPV and unintended pregnancy in sub-Saharan Africa have found women suffer disproportionately from negative reproductive outcomes (Gazmararian et al. 1995, Goodwin et al. 2000, Kishor & Johnson, 2004, Saltzman et al. 2003, Pallitto et al. 2005, Williams, 1991).

Women's fertility intentions are considered tied contraceptive use behavior, though not an exact indictor. Dodoo & Seal (1994) found that in relationships where couples disagreed desire for more children, contraceptive use was heavily linked with a woman's desire to limit her fertility. In addition, 26% of women in the KDHS describe wanting another pregnancy as one of

[8] Unintended pregnancies are defined by Miller and Jordan et al. (2010) as pregnancies that are mistimed or unwanted. Mistimed pregnancies are those pregnancies that are wanted at a later date than conception and unwanted pregnancies are those that are not wanted at conception or at any time thereafter. It is important to note that the attitude toward the pregnancy at the time of conception is what is used to classify pregnancies as mistimed versus unwanted. (Campbell, Pugh, Campbell & Visscher, 1995).

the top reasons for contraceptive discontinuation. However, in the literature linking IPV and contraceptive use, few studies have considered the impact of fertility intentions.

Much of the information about women's fertility intentions[9] in abusive partnerships has come from a handful of qualitative studies, primarily executed in the United States and Europe, during the pregnancy and post-partum periods. In these studies, women described mixed and contradictory feelings about having children resulting in several scenarios. First, IPV experience discourages desire for additional children (negative association) in some women. This situation that I term the "uncertain futures hypothesis" stems primarily from the unpredictable nature of these unions and women's calculation that they do not want to bring children into the abusive partnership (Bacchus, Mezey, & Bewley, 2006, Baird, Creedy, & Mitchell, 2016, Coggins & Bullock, 2003, Egnes, Liden, & Lundgren, 2012, Libbus et al., 2006, Rank, 1989). Coggins and Bullock (2013) found women regarded pregnancy as a medium of control exerted by their partners. Behaviorally, this sometimes resulted in women openly fighting back against abusers to keep from getting pregnant, often resulting in greater abuse. However, more often women will act covertly in their interests, often procuring contraceptives without their partner knowledge. Several studies in African contexts show that this tactic is common for women (Moore, Frohwirth, & Miller, 2010; Tsai et al., 2016).

In a second situation, women suffering abuse are robbed of agency and thus may not be able to make choices which would help control her fertility. Some studies have shown that women in this situation often cultivate their realities to align with the creation of a happier and more stable partnership. A qualitative study in Norway found that women would report wanting a child if they saw the child as being a catalyst for change. In these in-depth interviews women

[9] Sometimes referred to as pregnancy intentions

were likely to perceive the new child as opening the door for a loving relationship and cementing of the bond between her and her partner (Baird, Creedy, & Mitchell, 2016, Egnes, Liden, & Lundgren, 2012). Therefore, she might report wanting to have children despite relationship abuse (positive association or no association) Libbus et al. (2006) study found that some women considered what the best economic strategy was for their unborn child, thus reporting desire for pregnancy despite IPV. Finally, a woman may have a child within an abusive union because she feels that that is the normative behavior (positive association or no association).

No work has examined the relationship between IPV and fertility intentions focusing instead on reproductive outcomes such as induced abortion and unintended pregnancy (Kaye et al., 2006, Okenwo, Lawoko, & Janssen, 2011, Pulerwitz et al., 2015, Sprague et al., 2017, Watts, & Mayhew, 2004). Some work in sub-Saharan Africa, shows that violence in relationships is regarded in two ways. First, abuse is normalized into a loving and stable partnership. The desire to solidify the relationship makes women desire additional children (Uthman, Lawoko, & Moradi, 2009, Wood Maforah, & Jewkes, 1998) In contrast, Singh and Myende (2017) found that women are savvy to this narrative and reject this notion of IPV behavior as a loving act, finding instead that women recognize that acceptance of partner violence experience puts them at a disadvantage.

This study will test the *uncertain futures hypothesis*, which posits that in IPV environments women will be less likely to want to bring children into abusive partnerships. Therefore, when given the option of having additional children IPV will push women to limit their births. Women will also be less likely to say they would like to space their births, a more socially desirable attitude in situations where childbearing is encouraged and expected

(Adjanian, 2000). Finally, despite many women desiring pregnancy soon, abuse patterns will result in women being less likely to desire births soon.

5.2 Hypotheses

The primary hypotheses I test in this section are:

Hypothesis 5a. Experience of IPV reduces the likelihood of wanting additional children.

Hypothesis 5b. Experience of IPV reduces likelihood of wanting to space additional births as opposed to limit them.

Hypothesis 5c: Experience of IPV decreases the likelihood of wanting children soon rather than limiting additional children. .

5.3 Analytic Approach

5.3.1 Data and Sample

This study used a pooled[10] sample of the Kenya Demographic and Health Surveys (KDHS), a nationally representative household survey, given to all eligible women and girls aged 15-49 years. Data from four survey years, 2003, 2008, 2009, and 2014 were pooled to increase the statistical power of the analyses. The sample selection methodology for the Women's Questionnaire was based on a stratified two-stage sample design, utilizing the 2002 and 2009 Kenya Population and Housing Census (CPH) as sampling frames.

The sample for this study (N=10,098) included all female respondents of reproductive age (15 to 49 years) from the 2003, 2008-09, and 2014 Kenya Demographic and Health Surveys who were administered the domestic violence module (N=17,853, 34% total sample). Response rates were an average of 96%, indicating adequate and accurate representation of the target

[10] Violence prevalence was examined for each survey 2003, 2008, 2009, and 2014. There were no significant differences in violence percentages across timepoints. The percentages of women experiencing any violence across timepoints are 2003, 44.5%, 2008, 42.1%, 2009, 41.2%, 2014, 42.3%.

population. The analytical sample was further restricted to those women who were in-union (married or living with a partner), not currently pregnant at the time of survey, not infecund due to menopause or other reasons, and not sterilized at the time of questionnaire administration.

5.3.2 Study Measures

Independent variables included experiences of any, physical, sexual and emotional intimate partner violence in the past 12 months (recent IPV). In the DHS survey, IPV questions were based on the Revised Conflict Tactics Scale (Straus et al., 1996). Physical violence included experiences of both severe and less severe acts. Less severe violence consisted of pushing, shaking, throwing something at subject, slapping, twisting arm. More severe physical acts included punching or hitting with fist or something that could hurt, kicking, dragging, beating up, choking, burning, and threatening and attacking with a knife, gun or other weapon. Sexual violence included acts such as physically forcing girl/woman to engage in sexual intercourse or other sexual acts she did not want to engage in, forcing with threats or in any other way to engage in unwanted sexual intercourse or other unwanted sexual acts, and trying or attempting to force, persuade, or threaten girl/woman to engage in sexual intercourse or other sexual acts against her will. Emotional violence included humiliating girl/woman in front of others, threatening harm to self or someone the girl/woman cared about and insulting the subject to make them feel bad about themselves. The any violence measure indicates whether a respondent said yes to any one of the violence sub-types. A final variable was created to capture the overlap of IPV experience. This composite variable captured whether a woman experienced no IPV, only one type of IPV, two types of IPV, or all three types of IPV. Models were treated independently due to the multicollinearity between violence types.

Fertility intentions, a question which asked about future desire for additional children, served as the dependent variables for this analysis. First, a dichotomous variable (yes, wants more children vs. no, does not want additional children) was used in logistic models. Those who were undecided or didn't know were classified as wanting another child. A second fertility intentions variable was constructed with three categories (wants no more children, wants children soon, wants children later). Wanting children soon was defined as wanting to have another child within two years. Wanting children later was defined as wanting another child more than two years from the time of survey administration. Those who reported wanting additional children were divided into soon and later categories with the assumption those who are interested in becoming pregnant sooner would be less motivated to use contraceptives.

Several independent variables were used to capture characteristics that might confound the relationship between violence exposure and fertility intentions. Covariates included age categories in years, categories of living children at time of interview (0, 1-2, 3-4, and 5 or greater), education (no education, primary, secondary and university or higher), household wealth[11] (poor, poorer, middle, richer, richest), ethnicity and rural residence[12], religion (Roman Catholic, Protestant, Muslim, and no religion), and a fixed effect for year of interview.

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11 11 For wealth I use the DHS wealth index. The variable is treated as categorical with five levels representing the *poorest, poorer, middle, richer,* and *richest* households. A series of items was asked of each participant and each of the items was recoded and included in a principal components analysis. The score from the principal components analysis was then divided into quintiles representing poorest (lowest quintile), poorer (lower quintile), middle (middle quintile), richer (higher quintile), and richest (highest quintile) by wealth in households. The index is based on prior work of Filmer and Pritchett (1999) where a score (already created) for household wealth was developed from responses to questions about the assets and amenities of each respondent's household. These categorical questions about assets asked the head of household whether he/she owned each of the following items: fridge, freezer, dishwasher, TV, video, air conditioning, microwave, cooker/stove, electric fan, water heater, heater, sewing machine, iron, radio, washing machine, camera, bicycle, motorcycle, private car, taxi, truck, computer, cell phone, and satellite dish. Questions about amenities asked about the availability of electricity, type of flooring, number of rooms, sources of water, waste disposal, and type of toilet.

12 A composite variable was created due to the high multicollinearity between urban/rural residence and ethnicity. Several options were considered with the current version (Kikuyu, Luo, Luhya, Urban Others, and Rural Others) being most parsimonious.

5.3.3 Statistical Analysis Methods Used

The analysis was conducted using Stata/IC Version 14.2. I used chi-squared tests of independence to compare the fertility intentions groups (wants no more children, wants children soon, wants children later) by relevant socio-demographic characteristics and recent violence experience. All groups included women who experienced multiple forms of violence, therefore, the likelihood of multicollinearity led to models estimating each violence type separately. I then estimated five binomial logistic regression models to test the association between IPV and fertility intentions, and IPV and experiences of violence, controlling only for age. After establishing that an association existed between each type of violence and fertility intentions I estimated five binomial logistic regression models to explore the relationship between fertility intentions, any recent IPV, recent physical IPV, recent sexual IPV, and recent emotional IPV, and experience of number of types of violence among women in unions controlling for age, living children, education, household wealth, religion, ethnicity and residence, and a fixed effect for year of interview. Finally, I estimated five multinomial regression models to explore the relationship between fertility intentions recent IPV of any type, recent physical IPV, recent sexual IPV, and recent emotional IPV, and violence types adjusting for the same covariates.

5.4 Results of Analyses

5.4.1 Sociodemographic Characteristics of Study Sample.

Table 5.1 presents select sociodemographic characteristics across fertility intentions groups within the sample of in-union women of reproductive age. As age increases so does the percentage of women who report desire for no more children. The majority of women in the 35-39 years group report wanting no additional children. Women who reported wanting children later were younger than the other groups with the majority between 20-25 years old (35.7%). In

contrast, of women who reported wanting no more children the majority were between ages 25-29 (26.1%) while women who reported wanting no more children were the oldest group, with the majority of respondents between ages 30-34 (22.1%).

Number of living children is closely tied to fertility intentions. The majority of women report wanting to limit childbearing in all groups. Women reporting wanting additional children had greater than three children. The majority of women with no children (86.5%) desired additional children soon. Women with 1-2 children reported wanting to have more children later, which indicates they had not achieved their desired family size. Desire to limit or space births increased with household wealth. The majority of those in the poorer or greater wealth quintiles reported wanting to limit or space births. Women who reported wanting children soon were concentrated in the poorest wealth quintile.

Religion showed differentials in desire for additional children. Protestants were the majority in the sample and had the majority of women reporting desire to limit (49.6%) or space (30.1%). Roman Catholics followed this same pattern, with 49% reporting wanting to limit births. Only 18% of Muslim women reported wanting to limit births, with half of the group desiring children soon.

Desire to limit births had a increased with education. Conversely, desire to have children soon decreased with education level, with 45.7% of women with no education reporting wanting children soon. Desire to space additional births was evenly distributed across education categories.

Table 5.1. Distribution of Demographic Characteristics within Each Fertility Intentions Group and X^2 Tests Across Fertility Intention Groups (N=10,098), in Kenya Demographic and Health Surveys 2003, 2008, 2009, 2014.

	Wants No More Children (N=4495)		**Wants More Children Soon (N=2540)**		**Wants More Children Later (N=3122)**			
	N	%	N	%	N	%	Total	X^2
Age (years)								2600.0***
15-19	35	7.4	184	38.82	255	53.80	474	
20-24	329	16.7	529	26.8	1,113	56.47	1,971	
25-29	835	32.8	663	26.1	1,047	41.1	2,545	
30-34	991	49.9	530	26.7	466	23.5	1,987	
35-39	925	61.9	371	24.8	198	13.25	1,494	
40-44	758	77.5	185	18.9	35	3.6	978	
45-49	622	87.85	78	11.0	8	1.1	708	
Household Wealth								273.8***
Poorest	769	32.7	785	33.3	797	33.9	2,351	
Poorer	920	51.1	339	18.8	541	30.1	1,800	
Middle	931	52.9	355	20.2	473	26.9	1,759	
Richer	897	48.1	402	21.6	565	30.3	1,864	
Richest	978	41.0	659	27.7	746	31.3	2,383	
Ethnicity and Residence								196.7***
Kikuyu	1,008	54.6	359	19.4	481	26.0	1,848	
Luhya	642	48.0	246	18.4	450	33.6	1,338	
Luo	503	44.1	230	20.2	407	35.7	1,140	
Urban Others	236	40.2	163	27.9	187	31.9	587	
Number of Living Children								2800.0***
No Children	7	1.4	424	86.5	59	12.0	490	
1-2 Children	864	22.6	1,098	28.7	1,867	48.7	3,829	
3-4 Children	1,863	55.6	600	17.9	888	26.5	3,351	
5 or More Children	1,761	70.8	418	16.8	308	12.4	2,487	
Religion								765.7***
Protestant	3,099	49.6	1,266	20.3	1,822	30.1	6,247	
Roman Catholic	997	48.9	404	19.8	638	31.3	2,039	
Muslim	278	17.9	772	49.7	502	32.4	1,552	
Education								611.7***
None	466	25.2	844	45.7	536	29.0	1,846	
Primary	2,678	49.2	1,026	18.8	1,745	32.0	5,449	
Secondary	1,068	48.7	471	21.6	648	29.7	2,180	
University	290	42.5	199	29.2	193	28.3	682	
Interview Year								
2003	1,395	42.8	864	26.5	997	30.6	3,256	24.1***
2008	756	46.1	404	24.6	481	29.3	1,641	
2009	835	43.1	527	27.2	575	29.7	1,937	
2014	1,509	45.4	745	22.4	1,069	32.2	3,323	

*p<0.05 **p<0.01 ***p<0.001;
Wanting More Children soon is classified as within 2 years;
Wanting More Children Later is classified as after 2 years.

Figure 5.1 presents the incidence of IPV experiences (any, physical, sexual, and emotional) across fertility intentions within the sample of in-union reproductive aged women. The greatest amount of violence experience of all types was concentrated in women reporting wanting no more children. Notably, those who wanted no more children experience sexual violence at a greater percentage (16.8% versus, 11.3% for wants children soon, and 12.3% for wants children later). Women who reported wanting children soon experienced the lowest recent physical and emotional violence experiences, 29.0% and 20.9% respectively.

Figure 5.2 illustrates the experience of multiple violence types by fertility intention group. Women who report wanting children later also report experiencing the greatest percentage of experiences of multiple violence types compared to those wanting more children soon or later. Eleven percent of women report experiencing three types of violence compared to 7% for other groups. All groups experienced about 20% of one type of violence.

Figure 5.1. Incidence of Recent IPV Across Fertility Intentions Groups, Wants No More Children, Wants More Children Soon, and Wants More Children Later, in Kenya Demographic and Health Surveys 2003, 2008-09, and 2014.

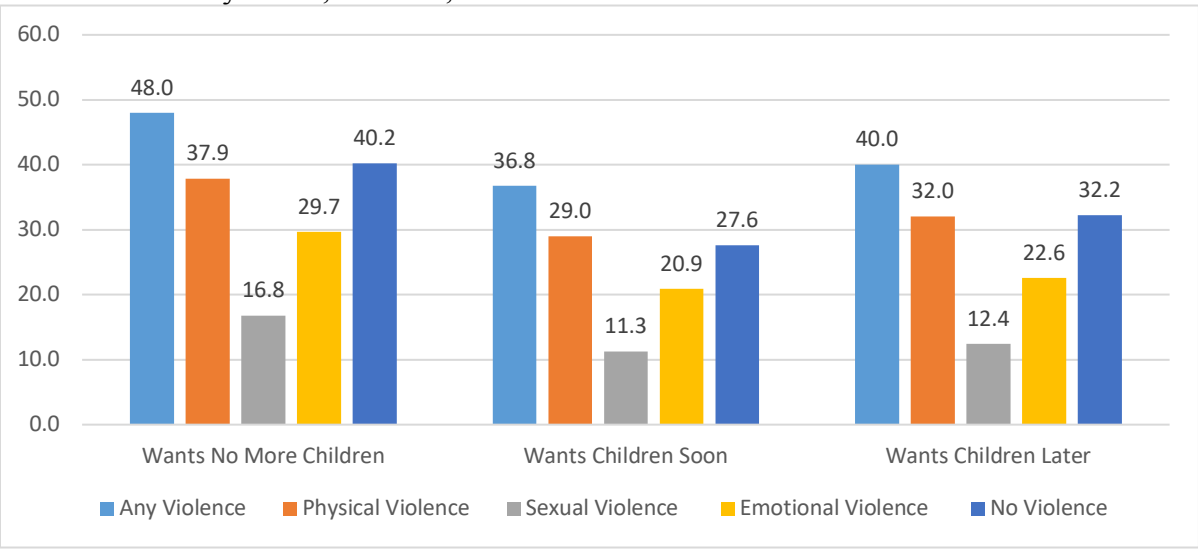
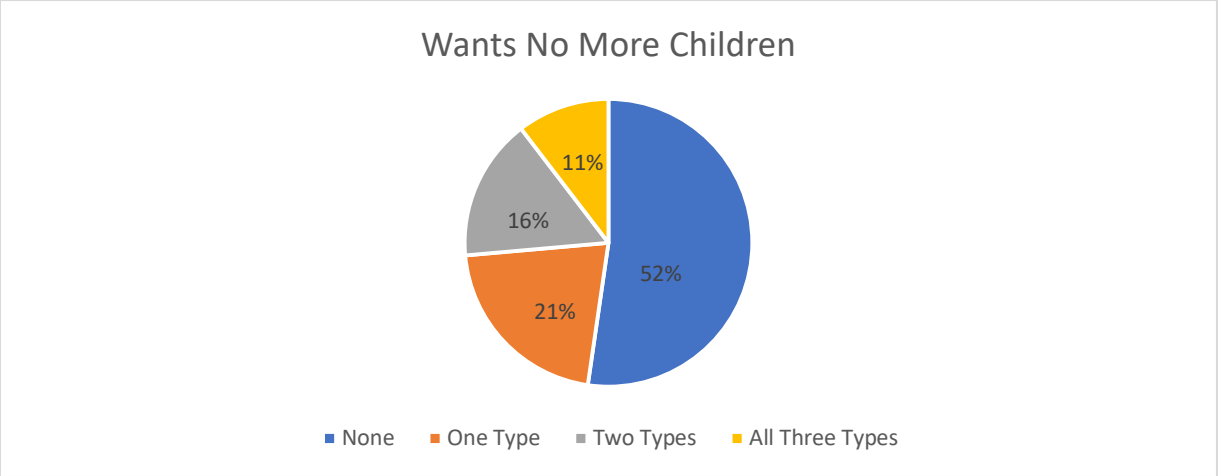
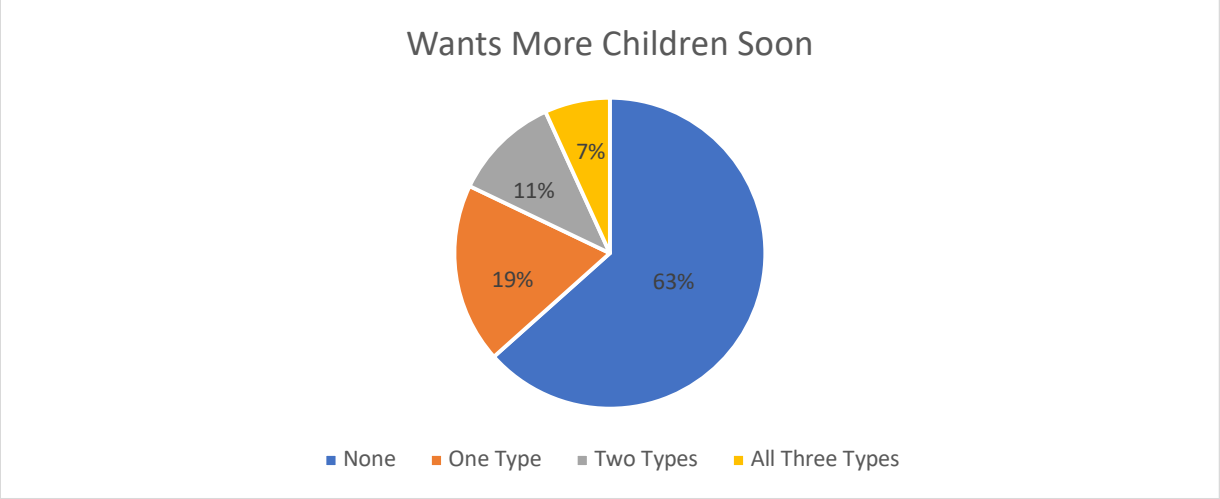
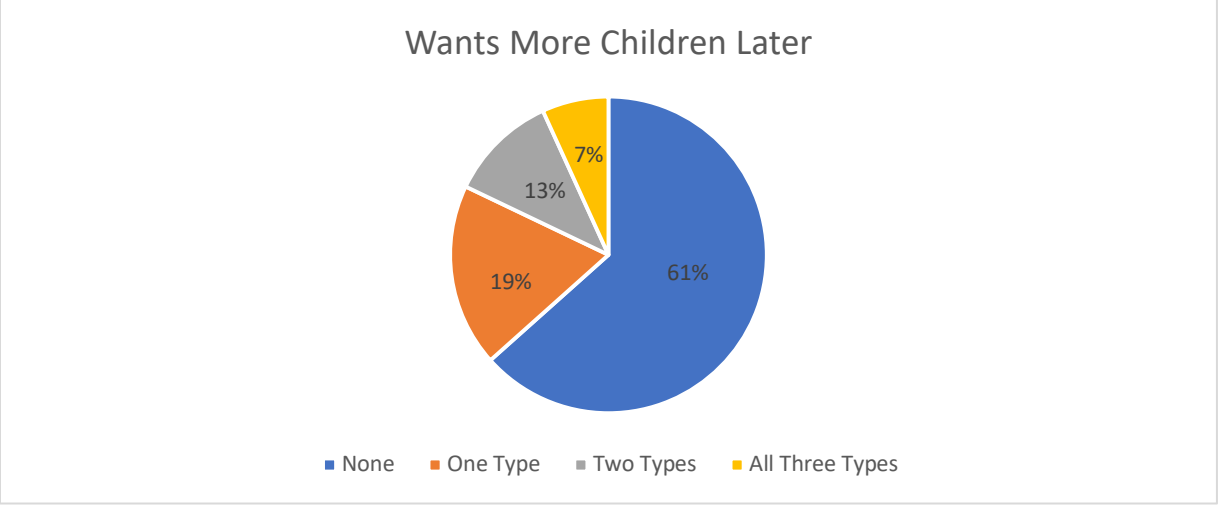


Figure 5.2. Comparison Chart of Experience of IPV Types Across Fertility Intentions Groups, Wants No More Children Group, Wants More Children Soon, and Wants More Children Later, in Kenya Demographic and Health Surveys 2003, 2008-09, and 2014.







5.4.2 Results of Logistic Regression Models IPV and Fertility Intentions.

Table 5.2 (Appendix 1) presents the descriptive characteristics of IPV for each fertility intention group and bivariate multinomial regression results for IPV and fertility intentions and IPV types and fertility intentions. Violence experience was negatively associated with fertility intentions. IPV experience increased the likelihood of wanting to delay children by 10-20% compared to wanting children soon controlling for age. Violence experience also increased the likelihood of wanting no more children by 40-70% compared to wanting children soon controlling for age.

Table 5.3 (Abridged). Binomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors wi Fertility Intentions (Wanting Additional Children Compared to Wanting No Additional Children) as the Depen Variable, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014**.**

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Recent Violence										
None	---	---	---	---	---	---	---	---	---	---
Any Type	0.87*	0.05	---	---	---	---	---	---	---	---
Physical	---	---	0.93	0.05	---	---	---	---	---	---
Sexual	---	---	---	---	0.84*	0.06	---	---	---	---
Emotional	---	---	---	---	---	---	0.84**	0.05	---	---
Violence Types Experienced										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	0.90	0.06
Two Types	---	---	---	---	---	---	---	---	0.89	0.07
Three Types	---	---	---	---	---	---	---	---	0.78*	0.07

Table 5.3 presents the adjusted odds ratios for the IPV and other variables of women wanting to have more children (regardless of the timing) (full table in Appendix 1). When socioeconomic and demographic covariates are included in the model the association between physical violence and fertility intentions is no longer significant. However, experience of any, sexual, and emotional violence continues to affect desire for more children. Those experiencing sexual violence were 16% ($p<0.05$) less likely to want additional children holding covariates

constant. Those experiencing emotional violence were also 16% ($p<0.05$) less likely to want additional children, holding covariates constant.

Age, number of living children, educational attainment, and wealth are all significantly associated with desire for more children. Younger women and those with fewer living children are more likely to want more children. More educated and wealthier women are less likely to want more children. Each additional year increase in age resulted in 9% ($p<0.001$) lower odds of wanting additional children net other effects. Each living child lowered the odds of desiring another child by 44% ($p<0.001$) controlling for other covariates.

In the case of religion and ethnicity/region, the results are more complex. Muslim women are significantly more likely to want more children than Protestants, but the differences for other religious groups are not significant. For ethnicity/region, Luhya women had a 42% ($p<0.001$) higher odds of desiring another child compared to Kikuyu, controlling for covariates. Luo women had 44% ($p<0.001$) higher odds of desiring another child compared to Kikuyus controlling for covariates. Those who were in the rural other category had a 27% ($p<0.001$) higher odds of wanting another child compared to Kikuyus controlling for covariates. Being in the urban other category had no significant association with desire for another child.

5.4.3 Multinomial Logistic Regression Results

Table 5.4a (Abridged). Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors with Fertility Intentions (Wanting Children Later (>2 Years) Compared to Wanting No More Children Compared) as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Recent Violence Experience										
None	---	---	---	---	---	---	---	---	---	---
Any Violence	0.85**	0.05	---	---	---	---	---	---	---	---
Physical Violence	---	---	0.90	0.06	---	---	---	---	---	---

Table 5.4a Continued…

Sexual Violence	---	---	---	---	0.81**	0.07	---	---	---	---
Emotional Violence	---	---	---	---	---	---	0.82**	0.05	---	---
Number of Violence Types Experienced										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	0.86*	0.06
Two Types	---	---	---	---	---	---	---	---	0.90	0.08
Three Types	---	---	---	---	---	---	---	---	0.72**	0.08

Tables 5.4a and 5.4b are an abridged version of a single set of multinomial logistic regression models of the association between IPV experience and fertility intentions. The full model is shown in Appendix Tables 5.4a and 5.4b. Multinomial logistic regression models extend the binomial logistic regression model to comparison of multicategory outcomes. To interpret the model, the results of each set of coefficients refers to a comparison between two of the categories of the multicategory dependent variable. Table 5.4a shows the results for the comparison of wanting additional children later to wanting no more children.

Overall, experience of IPV decreases the relative risk of wanting children later compared to not wanting additional children net of covariates. For women who possess the same demographic characteristics, the experience of any type of violence decreases the relative risk of wanting children later by 15% (SE=0.07, $p<0.01$) compared to wanting no additional children. The experience of sexual violence decreases the relative risk of wanting to space children by 19% (SE=0.17, $p<0.01$) and experience of emotional violence decreases the relative risk of wanting children later compared to the reference group by 18% (SE=0.05, $p<0.01$) controlling for covariates. Notably, experience of physical violence is not associated with a significant change in the adjusted relative risk of fertility intentions.

Simultaneous experience of violence types also increases the relative risk of not wanting additional children compared to wanting children later. Women who experience physical, sexual, and emotional violence jointly compared to those who do not experience violence have a lower adjusted relative risk of wanting children later (RR=0.72, SE=0.05, p<0.01) compared to the reference group.

Advanced age and increased number of children result in greater likelihood of wanting no more children. Although age has a positive relationship with wanting no more children compared to wanting children soon. However, respondents younger than the mean age of the sample (30.8 years) are less likely to report they want additional children compared to wanting children soon. Women over the mean age of the sample, are more likely to report wanting no more children compared to wanting children later. As the number of living children increases so does the relative risk of wanting no more children compared to wanting children soon.

Muslim women were 69% (SE=0.03, p<001) less likely than Protestants to report wanting no children compared to wanting children soon. Women with no education compared to primary school education and the poorest women (compared to women with middle wealth) were less likely to report wanting no more children compared to wanting children soon. Finally, Luo and Luhya women were less likely than Kikuyus to report wanting no more children compared to wanting children soon.

Table 5.4b (Abridged). Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors with Fertility Intentions (Wanting Children Soon (<2 Years) Compared to Wanting No More Children) as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Recent Violence Experience										
None	---	---	---	---	---	---	---	---	---	---
Any Violence	0.91	0.06	---	---	---	---	---	---	---	---

Physical Violence	---	---	0.97	0.06	---	---	---	---	---	---
Sexual Violence	---	---	---	---	0.88	0.08	---	---	---	---
Emotional Violence	---	---	---	---	---	---	0.88	0.06	---	---
Number of Violence Types										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	0.95	0.08
Two Types	---	---	---	---	---	---	---	---	0.88	0.08
Three Types	---	---	---	---	---	---	---	---	0.89	0.10

Table 5.4b (full in Appendix 1) is a continuation of Table 5.4a and presents the results for the contrast between wanting more children soon and wanting more children later. IPV was not statistically significantly associated with whether or not women wanted more children sooner vs. later, net of covariates.

Women under age 30 compared to those 30-34 years had a lower relative risk of reporting wanting more children sooner than later. Women over aged 35 compared to those 30-34 years had a greater relative risk of reporting wanting children soon compared to wanting children later. Increased numbers of living children resulted in a reduced relative risk of wanting more children soon compared to wanting more children later.

Muslim women and those who had no education were significantly associated with wanting more children soon compared to later. Muslim women compared to Protestants were at a 67% (SE=0.15, $p<0.001$) increased relative risk of wanting more children soon as compared to wanting more children later. Women having no education as opposed to primary education had a 93% (SE=0.21, $p<0.001$) increased relative risk of wanting more children soon as later, net of covariates. No other educational levels, household wealth categories, or ethnicity and rural categorization were significantly associated with the fertility intentions.

5.5 Discussion

This analysis examined the impact of IPV on fertility intentions in Kenya using a sample of women in partnerships. The key question was whether experience of IPV decreases women's likelihood of wanting additional children when adjusting for demographic characteristics. This research found that recent experience of sexual and emotional violence significantly decreased the desire for additional children. Women were also less likely to want to space births in this study. This supports previous qualitative work which has indicated that women would be less likely to want to raise children in an environment they are unsure is safe or supportive, a concept I call the *uncertain futures* hypothesis (Alio et al., 2009, Emineke, Lawoko, & Dalal, 2008, Hinidin & Adair, 2002, Engnes et al., 2012)[13]. To my knowledge this is the first work in the region to quantitatively examine the impact of IPV on fertility intentions, rather than a specific reproductive outcome (e.g. unintended pregnancy).

Although ascertaining reasons women why would want to limit their childbearing is out of the scope of this analysis, research from North America provides some insights to concerns women experiencing IPV face when they weigh decisions about future pregnancies. First, even in situations where women place a high value on motherhood and the believe in the importance of children for emotional satisfaction, they describe that the daily stresses created by additional children keep them in in abusive partnerships (Loutfy, Hart, & Mohammed, 2009). Some see additional children as an extension of their partner's controlling behaviors citing that they constrain their future choices within the partnership. Another common theme is that men exhibit high rates of jealousy and mistrust behaviors, which require women to increase their emotional

[13] The uncertain futures hypothesis was created through may conversations with Jessica D. Gipson. In addition, the theory draws from the works of Barber J. Bird, C.E., Edin, K., Pallitto, C., and Yount, K.

investment to please them, thus, leaving less energy to consider a future pregnancy (Baird, Mezey, & Bewley, 2006).

Kenyan society maintains patriarchal gender norms, which underscores women's subordination (Alio et al., 2009). In Kenya men place a high value on children, however, the gendered tasks of childcare responsibility fall primarily to women (Ikamari, Izugbara, & Ochako, 2013). The dynamics of male-to-female IPV is also characterized by a greater emphasis by the male partner on the need for dominance in the women's decision-making (Okenwa, Lawoko, & Jansson, 2011). So, abuse experience may actually motivate a woman to exercise strategic choices that subvert the male partner's control. One strategy is clandestine or covert use of contraceptives, described as contraceptive use without the knowledge of her partner (Castle, Konate, Ulin, & Martin., 1999, Biddlecom & Fapohunda, 1998). Clandestine contraceptive use is high in places where men perceive contraceptives a threat to their authority or masculinity, which fits some scenarios in which abuse occurs, particularly in highly gendered societies. This strategy has been well documented in previous studies in sub-Saharan Africa (Moore, Frowirth, & Miller, 2010, Miller et al., 2007). However, it was difficult to ascertain clandestine contraceptive use in this work due to data limitations.[14]

It is important to point out that not all abuse experience impacted fertility intentions. Within this study sexual and emotional abuse were significantly associated with woman's desire to limit childbearing. The burden of sexual violence on Kenyan women is high. The prevalence widely accepted rape myths[15] in Kenyan society provides evidence for the normalization of

[14] The 2014 KDHS asked a question "Husband knows respondent used contraception" 88.3% responded "yes", 10.6% responded "no" and 1% responded "don't know or unsure" this indicates a very small percentage of the sample may feel the need to hide contraceptive use from their partner. In addition, the contraceptive type being most widely used in the pooled sample is injection (23%), which is already considered a covert method.

[15] Rape myths are defined as gendered cultural beliefs about rape (Tavrow et al., 2013).

sexual violence against women (Tavrow, Withers, Obbuyi, Omollo, Wu, 2013).). For example, several qualitative studies in Kenya have found that both men and women dispute that rape can occur in marital contexts (Burt, 1980). Another common myth is the need for a victim to fight her attacker in order to constitute rape (Buss, Davidson, Kalin, & Goldsmith, 2004, Tavrow, et al., 2013). Another large quantitative study among Kenyans aged 10-24 years found that 21% of women experienced coerced sex within the past year, a higher percentage than found in this study (Erulkar, 2004). Nevertheless, this work puts into context the high burden sexual violence poses to Kenyan women, particularly when pregnancy planning.

The impact of emotional IPV on reproductive behavior has been largely ignored in African studies (Alio et al. 2009, Emenike et al., 2008). This is an oversight as several studies have documented that physical IPV and emotional abuse often occur simultaneously (Ellsberg, et al., 2000, Gage, 2005, Exechi et al., 2004, Karaoglu, 2006). Cultural factors may moderate the extent to which emotional abuse is identified, reported and intervened on. In addition, emotional IPV often goes undetected by victims (Glaser, Prior, & Lynch, 2001, Gough 1996). To date, much emotional abuse work in African contexts has focused on teachers and parents, indicating that normalization of emotional abuse occurs in childhood, though only one study by Goodman et al. (2017) was set in Kenya (Clacherty, Donal, & Clacherty, 2005, Madu, 2003). Researchers found that emotional abuse in childhood led to higher rates of IPV in adulthood, explaining that women may believe that the emotional abuse suffered in relationships is a normal part of relationship functioning (Anda, Butchart, Felitti, & Brown, 2010, Goodman et al.). Women often consider the impact of emotional abuse to be more debilitating than physical IPV. A study of 127 Irish the three most frequent responses to the question ‘What was the worst aspect of the battering experience?’ were: mental torture, living in fear and terror and the physical violence

itself (Casey, 1994). The psychological factors were frequently described as the 'worst' aspect of the experience and had physical and mental consequences even after women left the partnership (Hesie et al, 1994). The far-reaching health consequences of emotional IPV warrant further study between emotional violence and pregnancy decision-making.

Physical violence was not significantly associated with fertility intentions. Experience of physical IPV decreased likelihood of wanting additional children in bivariate relationships, but there was no effect with the addition of demographic characteristics. This may indicate that the association between physical violence experience and fertility intentions is largely explained by the demographic characteristics of the respondent.

Finally, women who simultaneously experience all three categories of IPV simultaneously were most likely to want to limit childbearing. Evidence indicates that this group of women are under the highest risk for compromised decision-making. Specifically, they may face limited ability to enact contraceptive use or negotiate condom use. Their lack of control could elevate their risk of unintended pregnancy, despite desire to limit fertility (Miller et al., 2010, Gazmararian, 1995, Stephenson, 2008).

Violence experience was a common occurrence for Kenyan women. Experience of all recent violence categories was high in all fertility intentions groups with the majority of women reporting physical violence experience. In almost 20% reported experiencing at least one type of violence recently.

These results should be considered in light of some limitations. First, the study design (cross-sectional) does not let me ascertain whether fertility intentions were formed prior to IPV experience or as a consequence of it. However, the data does give light that we should continue to consider the impact of IPV on fertility intentions as we consider research on related

reproductive outcomes and aim to incorporate IPV sensitive policies into the improvement of women's reproductive health. Second, there were limited questions asking about acts of sexual and emotional violence. These questions inadequately capture the range of behaviors which might constitute more diffuse forms of violence. Questions covering a wider variety or range of coercive or controlling behaviors should be included in surveys.

Another shortcoming was all data was based on the woman's self-report, therefore, both IPV experience and fertility intentions were considered from the perspective of only one partner. Due to the sampling procedure, only one person per household was interviewed for the domestic violence module, therefore, there was a lack of partner report on IPV incidence. This has been standard procedure in most studies in order to protect the anonymity of the respondent. Previous work has shown gendered reporting in IPV and that men, particularly when they are perpetrators, underreport IPV, creating an inaccurate picture of ongoing IPV behaviors.

In addition, there is no way to know the reasons for fertility intentions or whether they were subject to change as a result of IPV. Qualitative research in this area would shed light on the true reasons women may want to limit childbearing. It would also help public health interventionists understand the strategies employed by women to limit their pregnancies or negotiate strategies of fertility (if they exist) with their partners in abusive situations.

This study was strengthened by the use of a the pooled KDHS, which are large nationally representative datasets. This dataset contained a large proportion of women in their childbearing years, and women who had not yet reached their family size preferences. Thus, the questions about fertility intentions were pertinent and able to be examined. Second, the KDHS has standardized interviewing and data collection procedures to ensure safety and anonymity of the respondent. This may have reduced respondent bias during survey administration. In addition,

violence was captured using the Revised Conflict Tactics Scale, which has been cross-culturally validated. This scale asks about specific acts rather than just the definition of abuse or violence, which may have compelled more women to answer and reduced cultural bias. Finally, the study focused on all categories of IPV and simultaneous experience of IPV.

This is the first work in Kenya that focuses on the association between IPV and fertility intentions. Abuse experience has been shown to impact the reproductive health of a woman, however, this quantitative work highlights that abuse experience may also take a toll on pregnancy decisions. Findings from this study support my decision to account for fertility intentions in my next study examining the association between IPV and contraceptive use.

5.5 Appendices: Tables and Figures

Appendix Table 5.2. Distribution of Violence Outcomes within each Fertility Intentions Group and X2 Tests Across Fertility Intentions Groups (10,098) Kenya Demographic and Health Surveys 2003, 2008-09, and 2014.

	Wants No More Children (N=4495)		**Wants More Children Soon (N=2540)**		**Wants More Children Later (N=3122)**			
	N	%	N	%	N	%	Total	X^2
Recent Violence Experienced								
Any Type	2,157	49.7	934	21.5	1,249	28.8	4,340	97.1***
Physical	1,702	49.5	742	21.6	998	29.0	3,442	61.6***
Sexual	754	52.8	288	20.2	387	27.1	1,429	50.1***
Emotional	1,336	51.9	531	20.6	706	27.44	2,573	84.3***
Types of Violence Experienced	925	61.9	371	24.8	198	13.25	1,494	110.9***
None	2,353	40.2	1,610	27.5	1,885	32.2	5,848	
One	958	47.1	474	23.3	603	29.6	2,035	
Two	718	50.8	281	19.9	414	29.3	1,413	
All Three	466	54.1	175	20.33	220	25.6	861	

Appendix Table 5.2a. Bivariate Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors with Fertility Intentions (Wanting Additional Children Soon (<2 Years) or Wanting Additional Children Later Compared to Wanting No Additional Children) as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	Wants More Children Soon (N=2540)		**Wants More Children Later (N=3122)**	
	RRR	SE	RRR	SE
Recent Violence Experienced				
Any Type	0.65***	0.04	0.79***	0.003
Physical	0.70***	0.04	0.82**	0.05
Sexual	0.64***	0.05	0.73***	0.00
Emotional	0.66***	0.04	0.78***	0.05
Types of Violence Experienced				
None	---	---	---	---

One	0.73***	0.05	0.81**	0.06
Two	0.61***	0.05	0.82*	0.07
All Three	0.57***	0.06	0.64***	0.06

Appendix Table 5.2b. Bivariate Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors with Fertility Intentions (Wanting Additional Children Soon (<2 Years) or Wanting Additional Children Later Compared to Wanting No Additional Children) as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	Wants More Children Soon (N=2540)		Wants More Children Later (N=3122)	
	RRR	SE	RRR	SE
Recent Violence Experienced				
Any Type	0.65***	0.04	0.79***	0.003
Physical	0.70***	0.04	0.82**	0.05
Sexual	0.64***	0.05	0.73***	0.00
Emotional	0.66***	0.04	0.78***	0.05
Types of Violence Experienced				
None	---	---	---	---
One	0.73***	0.05	0.81**	0.06
Two	0.61***	0.05	0.82*	0.07
All Three	0.57***	0.06	0.64***	0.06

† Bivariate Models were adjusted for age years only, N=10,098 for all models

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

Appendix Table 5.3. Binomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors with Fertility Intentions (Wanting Additional Children Compared to Wanting No Additional Children) as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Recent Violence Experienced										
None	---	---	---	---	---	---	---	---	---	---

Any Violence	0.87*	0.05	---	---	---	---	---	---	---	---
Physical Violence	---	---	0.93	0.05	---	---	---	---	---	---
Sexual Violence	---	---	---	---	0.84*	0.06	---	---	---	---
Emotional Violence	---	---	---	---	---	---	0.84**	0.05	---	---
Number of Violence Types Experienced										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	0.90	0.06
Two Types	---	---	---	---	---	---	---	---	0.89	0.07
All Three Types	---	---	---	---	---	---	---	---	0.78*	0.07
Age (years)										
15-19	2.59***	0.51	2.61***	0.51	2.60***	0.51	2.58***	0.51	2.58***	0.51
20-24	2.03***	0.18	2.03***	0.18	2.03**	0.18	2.03***	0.18	2.03***	0.18
25-29	1.38***	0.10	1.38***	0.10	1.38***	0.10	1.37***	0.10	1.38***	0.10
30-34	---	---	---	---	---	---	---	---	---	---
35-39	0.62***	0.05	0.62***	0.05	0.62***	0.05	0.62***	0.05	0.62***	0.05
40-44	0.25***	0.03	0.25***	0.03	0.25***	0.03	0.25***	0.03	0.25***	0.03
45-49	0.11***	0.02	0.11***	0.02	0.11***	0.02	0.11***	0.02	0.11***	0.02
Number of Living Children										
No Children	---	---	---	---	---	---	---	---	---	---
1-2 Children	0.04***	0.02	0.04***	0.02	0.04***	0.02	0.04***	0.02	0.04***	0.02
3-4 Children	0.01***	0.003	0.01***	0.003	0.01***	0.003	0.01***	0.003	0.01***	0.003
5 or More Children	0.003***	0.001	0.004***	0.001	0.004***	0.001	0.004***	0.001	0.004***	0.001
Religion										
Protestant	---	---	---	---	---	---	---	---	---	---
Catholic	0.97	0.06	0.97	0.06	0.97	0.06	0.97	0.06	0.97	0.06
Muslim	4.31***	0.42	4.3***	0.42	4.3***	0.42	4.3***	0.42	4.3***	0.42
Other	1.37	0.23	1.36	0.23	1.36	0.23	1.37	0.23	1.36	0.23
Education Level										
None	---	---	---	---	---	---	---	---	---	---

Primary	0.28***	0.03	0.28***	0.03	0.29***	0.03	0.28***	0.03	0.28***	0.03
Secondary	0.25***	0.28	0.25***	0.28	0.25***	0.03	0.25***	0.03	0.25***	0.03
University	0.29***	0.04	0.29***	0.04	0.30***	0.04	0.29***	0.04	0.29***	0.04
Household Wealth										
Poorest	---	---	---	---	---	---	---	---	---	---
Poorer	0.64***	0.06	0.64***	0.06	0.64***	0.06	0.64***	0.06	0.64***	0.06
Middle	0.54***	0.05	0.55***	0.05	0.55***	0.05	0.55***	0.05	0.55***	0.05
Richer	0.58***	0.05	0.58***	0.05	0.58***	0.05	0.57***	0.09	0.58***	0.05
Richest	0.49***	0.05	0.49***	0.05	0.49***	0.05	0.49***	0.05	0.49***	0.05
Ethnicity and Place of Residence										
Kikuyu	---	---	---	---	---	---	---	---	---	---
Luhya	1.43***	0.13	1.41***	0.13	1.42***	0.13	1.43***	0.13	1.43***	0.13
Luo	1.51***	0.15	1.49***	0.15	1.50***	0.15	1.51***	0.15	1.51***	0.15
Urban Others	1.24	0.15	1.23	0.15	1.24	0.15	1.24	0.15	1.25	0.15
Rural Others	1.35***	0.10	1.35***	0.10	1.35***	0.10	1.35***	0.10	1.35***	0.10
Interview Year										
2004	---	---	---	---	---	---	---	---	---	---
2008[16]	0.73***	0.06	0.72***	0.06	0.73***	0.06	0.74***	0.06	0.73***	0.06
2009	0.93	0.07	0.93	0.07	0.94	0.07	0.94	0.07	0.94	0.07
2014	0.92	0.06	0.92	0.05	0.93	0.06	0.93	0.06	0.92	0.06

*p<0.05 **p<0.01
***p<0.001
Note: N=10,098 for all models

[16] I checked the 2008-09 KDHS Final Report and original documentation for questionnaires to see if questioning procedure for asking about fertility intentions differed in this year. I did not find any difference in the way the question was asked, nor in the answer choices provided to the respondent in 2008 compared to other survey years.

Appendix Table 5.4a. Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors with Fertility Intentions (Wanting Children Later (>2 Years) Compared to Wanting No More Children) as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Recent Violence Experience										
None	---	---	---	---	---	---	---	---	---	---
Any Violence	0.85**	0.05	---	---	---	---	---	---	---	---
Physical Violence	---	---	0.90	0.05	---	---	---	---	---	---
Sexual Violence	---	---	---	---	0.81**	0.07	---	---	---	---
Emotional Violence	---	---	---	---	---	---	0.82**	0.05	---	---
Number of Violence Types										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	0.86*	0.06
Two Types	---	---	---	---	---	---	---	---	0.90	0.08
All Three Types	---	---	---	---	---	---	---	---	0.72**	0.08
Age (years)										
15-19	4.44***	0.89	4.48***	0.90	4.45***	0.89	4.42***	0.89	4.42***	0.89
20-24	3.24***	0.31	3.25***	0.31	3.24***	0.31	3.23***	0.31	3.24***	0.31
25-29	1.84***	0.15	1.84***	0.15	1.84***	0.15	1.83***	0.14	1.84***	0.14
30-34	---	---	---	---	---	---	---	---	---	---
35-39	0.48***	0.05	0.48***	0.05	0.48***	0.05	0.48***	0.05	0.48***	0.05
40-44	0.10***	0.10	0.10***	0.02	0.10***	0.02	0.10***	0.02	0.10***	0.02
45-49	0.03***	0.01	0.03***	0.009	0.03***	0.009	0.03***	0.01	0.03***	0.01
Number of Living Children										
No Children	---	---	---	---	---	---	---	---	---	---
1-2 Children	0.26**	0.12	0.26**	0.12	0.26**	0.12	0.26**	0.12	0.26**	0.12

3-4 Children	0.07***	0.03	0.07***	0.03	0.07***	0.03	0.07***	0.03	0.07***	0.03
5 or More Children	0.03***	0.02	0.03***	0.02	0.03***	0.02	0.03***	0.02	0.03***	0.02
Religion										
Protestant	---	---	---	---	---	---	---	---	---	---
Catholic	1.02	0.07	1.02	0.07	1.02	0.07	1.02	0.07	1.02	0.07
Muslim	3.19***	0.35	3.22***	0.35	3.22***	0.35	3.20***	0.35	3.19***	0.35
Other	1.31	0.25	1.30	0.25	1.31	0.25	1.32	0.25	1.32	0.25
Education Level										
None	---	---	---	---	---	---	---	---	---	---
Primary	0.41***	0.04	0.41***	0.04	0.41***	0.04	0.41***	0.04	0.41***	0.04
Secondary	0.35***	0.05	0.36***	0.05	0.36***	0.05	0.36***	0.05	0.36***	0.05
University	0.44***	0.07	0.44***	0.07	0.45***	0.07	0.45***	0.07	0.44***	0.07
Household Wealth										
Poorest	0.64***	0.06	---	---	---	---	---	---	---	---
Poorer	0.53***	0.05	0.64***	0.06	0.64***	0.06	0.64***	0.06	0.64***	0.06
Middle	0.58***	0.06	0.53***	0.05	0.53***	0.05	0.53***	0.05	0.53***	0.05
Richer	0.58***	0.06	0.59***	0.06	0.59***	0.06	0.58***	0.06	0.58***	0.06
Richest	0.48***	0.05	0.48***	0.05	0.48***	0.05	0.48***	0.05	0.48***	0.05
Ethnicity and Residence										
Kikuyu	---	---	---	---	---	---	---	---	---	---
Luhya	1.51***	0.16	1.49***	0.16	1.50***	0.16	1.52***	0.16	1.52***	0.16
Luo	1.54***	0.17	1.53***	0.17	1.53***	0.17	1.54***	0.18	1.55***	0.17
Urban Others	1.22	0.17	1.21	0.17	1.21	0.17	1.22	0.17	1.22	0.17
Rural Others	1.29**	0.11	1.29**	0.11	1.30**	0.11	1.29**	0.11	1.29**	0.11
Interview Year										
2004	---	---	---	---	---	---	---	---	---	---
2008	0.76**	0.07	0.76**	0.07	0.77**	0.07	0.77**	0.07	0.77**	0.07

2009	0.95	0.08	0.95	0.08	0.96	0.08	0.96	0.08	0.96	0.08
2014	1.04	0.08	1.04	0.08	1.05	0.07	1.06	0.08	1.05	0.07

Note: N=10,098 for all models; Reference Group: Wants Children Later

Significance Levels *p<0.05 **p<0.01 ***p<0.001

Appendix Table 5.4b. Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors with Fertility Intentions (Wanting Children Soon (<2 Years) Compared to Wanting No More Children) as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Recent Violence Experience										
None	---	---	---	---	---	---	---	---	---	---
Any Violence	0.91	0.06	---	---	---	---	---	---	---	---
Physical Violence	---	---	0.97	0.06	---	---	---	---	---	---
Sexual Violence	---	---	---	---	0.88	0.08	---	---	---	---
Emotional Violence	---	---	---	---	---	---	0.88	0.06	---	---
Number of Violence Types										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	0.95	0.08
Two Types	---	---	---	---	---	---	---	---	0.88	0.08
All Three Types	---	---	---	---	---	---	---	---	0.89	0.10
Age (years)										
15-19	1.00	0.22	1.01	0.22	1.00	0.22	1.00	0.22	1.00	0.22
20-24	0.85	0.09	0.85	0.09	0.85	0.09	0.85	0.09	0.85	0.09
25-29	0.88	0.08	0.88	0.08	0.88	0.08	0.88	0.08	0.88	0.08
30-34	---	---	---	---	---	---	---	---	---	---
35-39	0.78**	0.08	0.78**	0.08	0.77**	0.08	0.78**	0.07	0.78**	0.07
40-44	0.41***	0.05	0.41***	0.05	0.41***	0.05	0.41***	0.05	0.41***	0.05
45-49	0.19***	0.03	0.19***	0.03	0.19***	0.03	0.18***	0.03	0.19***	0.03

Number of Living Children										
No Children	---	---	---	---	---	---	---	---	---	---
1-2 Children	0.02***	0.01	0.02***	0.01	0.02***	0.01	0.02***	0.01	0.02***	0.01
3-4 Children	0.002***	0.00	0.002***	0.00	0.002***	0.00	0.002***	0.00	0.002***	0.00
5 or More Children	0.001***	0.00	0.001***	0.00	0.001***	0.00	0.001***	0.00	0.001***	0.00
Religion										
Protestant	---	---	---	---	---	---	---	---	---	---
Catholic	0.91	0.07	0.90	0.07	0.90	0.07	0.90	0.07	0.90	0.07
Muslim	5.33***	0.56	5.38***	0.57	5.35***	0.56	5.33***	0.56	5.31***	0.56
Other	1.42	0.27	1.42	0.27	1.42	0.27	1.42	0.27	1.43	0.27
Education Level										
None	---	---	---	---	---	---	---	---	---	---
Primary	0.21***	0.02	0.21***	0.02	0.21***	0.02	0.21***	0.02	0.21***	0.02
Secondary	0.18***	0.02	0.19***	0.02	0.19***	0.02	0.19***	0.02	0.18***	0.02
University	0.20***	0.03	0.20***	0.03	0.21***	0.03	0.20***	0.03	0.20***	0.03
Household Wealth										
Poorest	---	---	---	---	---	---	---	---	---	---
Poorer	0.63***	0.07	0.63***	0.07	0.63***	0.07	0.63***	0.07	0.63***	0.07
Middle	0.58***	0.06	0.58***	0.06	0.58***	0.06	0.58***	0.06	0.58***	0.06
Richer	0.58***	0.06	0.58***	0.06	0.58***	0.06	0.58***	0.06	0.58***	0.06
Richest	0.51***	0.06	0.51***	0.59	0.51***	0.59	0.51***	0.59	0.51***	0.58
Ethnicity and Residence										
Kikuyu	---	---	---	---	---	---	---	---	---	---
Luhya	1.26	0.15	1.24	0.15	1.25	0.15	1.26	0.15	1.26	0.15
Luo	1.38**	0.17	1.37**	0.17	1.37**	0.17	1.38**	0.17	1.38**	0.17
Urban Others	1.26	0.18	1.26	0.19	1.27	0.19	1.27	0.19	1.27	0.19
Rural Others	1.42***	0.13	1.43***	0.13	1.43***	0.13	1.43***	0.13	1.43***	0.13

Interview Year										
2004	---	---	---	---	---	---	---	---	---	---
2008	0.68***	0.08	0.67***	0.06	0.69***	0.06	0.68***	0.06	0.68***	0.06
2009	0.90	0.08	0.90	0.08	0.90	0.08	0.90	0.08	0.90	0.08
2014	0.78**	0.06	0.78	0.06	0.78**	0.06	0.79***	0.06	0.78***	0.06

Note: N=10,098 for all models; Reference Group: Wants Children Later
Significance Levels *p<0.05 **p<0.01 ***p<0.001

Appendix Table 5.5. Original Fertility Intentions Variable from the Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	N	**%**
Wants Children Soon (Within 2 Years)	1,988	19.57
Wants Children Later (After 2 Years)	3,122	30.74
Wants Children, unsure timing	224	2.21
Undecided	3.28	3.23
Wants no more children	4,495	44.26

Chapter Six: The Impact of Intimate Partner Violence Experience on Contraceptive Use Using the Kenyan Demographic and Health Surveys

6.1 Introduction

This chapter examines the association between recent IPV experience of several types-physical, sexual, emotional, and their association with current contraceptive use in married in-union women in the KDHS 2003, 2008, 2009, and 2014 datasets. The models I estimate include measures of fertility intentions to account for the possibility that some women will have greater motivation to use contraceptives. The chapter has two goals: (1) to test the hypothesis that recent IPV experience will have a reduce contraceptive use and (2) then to build on the study in chapter five, which established an association between sexual, and emotional violence type and decreased likelihood of wanting more children.

6.2 Hypotheses

The primary hypotheses I test in this section are:

Hypothesis 6a. Experience of IPV reduces the likelihood of contraceptive use compared to women who have not experienced IPV, when controlling for fertility intentions.

Hypothesis 6b. Experience of IPV reduces likelihood of contraceptive use for women who want no children.

Hypothesis 6c: Experience of IPV has no effect on contraceptive use for women who want children soon.

Hypothesis 6d: Experience of IPV reduces the likelihood of contraceptive use for women who want children later.

6.3 Analytic Approach

6.3.1 Data and Sample.

The Kenya Demographic and Health Surveys (KDHS) is a nationally representative household survey given to all eligible women and girls aged 15-49 years. Data from four survey years, 2003, 2008, 2009, and 2014 were pooled to increase sample size for power purposes. The sample selection methodology was based on a stratified two-stage sample design, utilizing the 2002 and 2009 Kenya Population and Housing Census (CPH) as frames.

The sample for this study (N=10,065) included all female respondents of reproductive age 15 to 49 years of age) who were administered the domestic violence module (N=17,853, 34% total sample), a module given to only to one woman in every other household. Response rates were an average of 96%, indicating adequate and accurate representation of the target population. The analytical sample was further restricted to those women who were in-union (married or living with a partner), not currently pregnant at the time of survey, not infecund due to menopause or other reasons, and not sterilized. Exclusion criteria were chosen because of they make women unlikeliness to use contraception.

6.3.2 Study Measures.

Independent variables included experiences of physical, sexual and emotional partner violence in the past 12 months (recent IPV). The IPV questions were based on the Revised Conflict Tactics Scale (Straus et al., 1996). Physical violence included experiences of both severe and less severe acts. Less severe violence consisted of pushing, shaking, throwing something at subject, slapping, and twisting arm. More severe physical acts included punching or hitting with fist or something that could hurt, kicking, dragging, beating up, choking, burning, and threatening and attacking with a knife, gun or other weapon. Sexual violence included acts such as physically forcing the woman to engage in sexual intercourse or other sexual acts she did not want to engage in, forcing with threats or in any other way to engage in sexual intercourse or

other unwanted sexual acts, and trying or attempting to force, persuade, or threaten a woman to engage in sexual intercourse or other sexual acts against her will. Emotional violence included humiliating a woman in front of others, threatening harm to the woman herself or someone the woman cares about and insulting the women to make her feel bad about herself.

Since singular forms or violence are unlikely to occur in isolation a final variable was created to capture the possibility of women experiencing multiple forms of violence simultaneously. A violence overlap variable captured if women experienced no violence, one form of violence, two forms, or all forms.

Another set of independent variables captured fertility intentions or future preference for additional children. The first variable was dichotomous (yes, wants more children, no, does not want more children). Those who said they were undecided or didn't know were classified as wanting another child. A second set of independent variables categorized fertility intention with a dimension of time. This response categories included wants no more children, wants more children soon (within two years) and wants more children later (after two years).

The dependent variable in this study was current contraceptive use by method group, with responses of no method, traditional method, and modern method. Women did not report using more than one method at the same time, therefore, it was unlikely a woman reported using traditional and modern methods at the same time.

Several independent variables were used to capture characteristics that might confound the relationship between violence exposure and contraceptive use. Covariates included age in

years[17], total living children at time of interview[18], education (no education, primary, secondary and university or higher), household wealth[19] (poor, poorer, middle, richer, richest), ethnicity and rural residence[20] (Kikuyu, Luhya, Luo, rural others, urban others), religion (Roman Catholic, Protestant, Muslim, and other), and a dummy variable for year of interview. Family size concordance was captured a woman's perception of her husband's fertility preferences compared to her own (more children, fewer children, same number of children, or unsure). Finally, a dummy variable for interview year was included in all models.

Reference categories for most sociodemographic characteristics were groups that were least advantaged, for example, those who had no education or were in the lowest wealth quintile. For other variables, I chose the numerically largest group as the reference category. For example, the majority of respondents were Kikuyu; therefore, Kikuyu was chosen as the reference category for the ethnicity/rural residence in models.

6.3.4 Statistical Analysis Methods Used.

I conducted this analysis with Stata/IC Version 14.2 using binomial and multinomial logistic regression modeling as the primary statistical methodology, a choice necessitated by the categorical nature of the outcome variable. The analysis technique I employed was similar to the

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[17] Sensitivity analysis was conducted including a categorical age covariate. Model fit did not differ significantly, therefore, a continuous covariate was chosen for ease of interpretation.

[18] Sensitivity analysis was conducted including a categorical variable for number of living children at the time of interview (no children, 1-2 children, 3-4 children, and 5+ children). The model fit did not differ significantly, therefore a continuous covariate was chosen for ease of interpretation.

[19] Wealth is categorized using the DHS wealth index. The variable is treated as categorical with five levels representing the *poorest, poorer, middle, richer,* and *richest* households in terms of wealth. A series of items was asked of each participant and each the items was recoded and used in a principal components analysis. The score from the principal components analysis was then reclassified into quintiles representing poorest (lowest quintile), poorer (lower quintile), middle (middle quintile), richer (higher quintile), and richest (highest quintile) by wealth in households. The index is based on prior work of Filmer and Pritchett (1999) where a score (already created) for household wealth was developed from responses to questions about the assets and amenities of each respondent's household. These categorical questions about assets asked the head of household whether he/she owned each of the following items: fridge, freezer, dishwasher, TV, video, air conditioning, microwave, cooker/stove, electric fan, water heater, heater, sewing machine, iron, radio, washing machine, camera, bicycle, motorcycle, private car, taxi, truck, computer, cell phone, and satellite dish. Questions about amenities asked about the availability of electricity, type of flooring, number of rooms, sources of water, waste disposal, and type of toilet.

[20] A composite variable was created due to the high multicollinearity between urban/rural residence and ethnicity. Several

work conducted in Chapter 5. First, assumption tests were conducted to evaluate each variable for proportions of missing data. Less than 1% of data in all categories was missing in the sample, therefore, no imputation techniques were used.

The percent of missing values for categorical variables – religion, education, household wealth, ethnicity/rural residence, and fertility intentions – was very low (<1%), therefore, I did not employ any imputation techniques. Tabulations and chi square coefficients were computed. Residence and ethnicity are highly intercorrelated. For this reason, I used a composite variable for regression analysis. Three options were considered, and the option I chose included the three largest ethnic groups (Kikuyu, Luo, and Luhya) and for other ethnic groups, categories of rural and urban residence (labeled "urban others" and "rural others").

These demographic characteristics are reported by type of contraceptive method used (no method, traditional method, and modern method). Then, I conducted chi-squared analysis (X^2) to examine differences in the categorical variables across the three groups (Treiman 2009). The results demonstrated significant difference between the three groups ($p<.05$). In addition, all demographic characteristics met the criteria for independence from the outcome variable.

I conducted a cross-tabulation across intimate partner violence type in order to assess if women were experiencing multiple types of violence. The results showed that women who had experienced physical violence were also likely to experience emotional violence and women who had experienced sexual violence were likely to experience emotional violence. Because experiences of different types of IPV were intercorrelated, I also created a separate variable to measure whether respondents experienced of any violence experience. Finally, in order to capture the experience of multiple simultaneous violence experiences, a separate variable was

created to capture the experience of only one type, two types, and three types of violence which was tested in a separate model from specific violence types.

To begin with, I estimated five unadjusted binomial logistic regression models to establish whether there was a statistically significant and meaningful association between recent intimate partner violence experience and contraceptive use. The models for any violence, physical violence, and sexual violence, and emotional violence all had significant effects of IPV on contraceptive use.

I then estimated five additional binomial logistic regression models, this time adjusting for possible confounding of women's demographic characteristics. The covariates included in this set of models were education and household wealth, age, religion, ethnicity/residence, number of living children, fertility intentions and family size concordance were subsequently added to the model with a fixed effect for interview year.

The next part of the analysis utilized multinomial logistic regression to estimate five separate models. The predictor variable was the same as in the binomial logistic regression, however, contraceptive use was captured by a multi-category variable (no method, traditional method, modern method). All covariates were described above were included in the model as well.

The final part of the analysis employed multinomial logistic regression to estimate models in which the sample was stratified by fertility intentions. For each fertility intention group, wants no additional children, wants children soon, or wants children later, I estimated five separate violence models employing the same technique as above. This resulted in 15 total models, which adjusted for all previously mentioned demographic covariates except number of living children, which was left out of the model because of the high intercorrelation with fertility

intentions variable and therefore, stratification of the sample by fertility intentions also stratified the sample by living children.

6.4 Descriptive and Bivariate Results

6.4.1 Demographic and Fertility Characteristics of the Sample

Appendix Table 6.1 describes the sociodemographic characteristics of the sample by contraceptive method use. Non-users (*N*=5,424) and modern method users (*N*=4,148) were largest groups compared to traditional method users (*N*=597). Women not using contraception were younger, less wealthy, and less educated than contraceptive users. The majority of contraceptive non-users were 20 to 29 years of age (44.1%), while those using traditional methods were 25 to 39 years (59.59%), and modern users were between 25 to 35 years (51.8%). The majority of respondents in all groups reported at least primary school education; however, 30.8% of non-users reported no education compared to contraceptive users. In addition, 30.0% traditional and 29.6% modern method users reported secondary school education, while only 14.3% of the no method group did so. The household wealth of no method users was poor (17.7%) or poorest (34.6%), while users reported being of middle economic status or higher.

Contraceptive users were more likely to be Protestants and Catholics than Muslims and other religious groups. Although Kikuyus, Luos, and Luyhas are the largest ethnic groups in Kenya, women not using contraception are more likely to be rural women from other ethnic groups.

Fertility characteristics differed between contraceptive users and non-users. Although numbers of living children were similar across all groups, a greater percentage of no method and traditional method users reported having five or more children. A majority of women reported wanting additional children in the no method and traditional method use groups, compared to

modern method users. No method users had more discordant family size preferences with their husbands compared to contraceptive users. In the no method group a greater percentage of women reported being unsure of their husband's preference (27.2%) or they believed their husband preferred more children (24.4%). Only 11.5% of traditional and modern method users reported being unsure of husband's family size preferences, with a majority reporting the same fertility size preferences (62.0 traditional method users, 61.1% modern method users). Chi-square tests of independence revealed that all covariates, except marital status, were significantly associated with contraceptive use. Therefore, marital status was omitted from further model building.

6.4.2 Violence Characteristics of Sample.

Table 6.2a. IPV Characteristics and X^2 Tests across Contraceptive Use Groups, No Methods, Traditional Methods, and Modern Methods, Kenya Demographic and Health Survey 2003, 2008-09, and 2014.

	No Methods (N=5,424)		Traditional Methods (N=597)		Modern Methods (N=4,148)		
	N	%	N	%	N	%	X^2
Recent Violence							
Any	2,300	42.4	222	37.2	1,825	44.0	10.5**
Physical	1,882	34.7	170	28.5	1,396	33.7	9.5**
Sexual	742	13.7	71	11.9	621	15.0	5.8
Emotional	1,313	24.2	126	21.1	1,141	27.5	19.6***
Violence Types							15.7*
None	3,142	57.9	376	63.0	2,335	56.3	
One	1,067	19.7	115	19.3	853	20.6	
Two	775	14.3	66	11.1	575	13.9	
All Three	440	8.1	40	6.7	385	9.3	

† Bivariate Models were adjusted for age in years
Reference Group: No Method Users
*p<0.05 **p<0.01 ***p<0.001

Table 6.2a presents the descriptive characteristics for recent violence experience and number of violence types by contraceptive method groups. In addition, the table reports X^2

associations. Experience of recent violence of any type in groups ranged from 37.2% to 44.0%. No methods users and modern methods users experienced more violence of all types than traditional method users. Modern method users experienced the highest percentages of physical (33.7%) and sexual (15.0%) and emotional (27.5%) violence compared to both traditional method users and non-users. Across all groups women were most likely to experience one type of violence (19.7% non-users, 19.3% traditional users, 20.1% modern users). Non-users had a slightly greater percentage of women experiencing two types of violence, 14.3%, compared to 11.1% in traditional users, and 13.9% in modern method users. However, modern method users had the greatest percentage (9.3%) of women who had recent experience of physical, sexual and emotional violence followed closely by non-users (8%), and traditional method users (6.7%). Chi-square tests of independence revealed that all independent violence variables, except sexual violence experience, were significantly associated with contraceptive use.

Figure 6.1. Contraceptive Use by Fertility Intentions Group, Wants No More Children, Wants Children Soon, and Wants Children Later, Kenya Demographic and Health Survey 2003, 2008-09, and 2014.

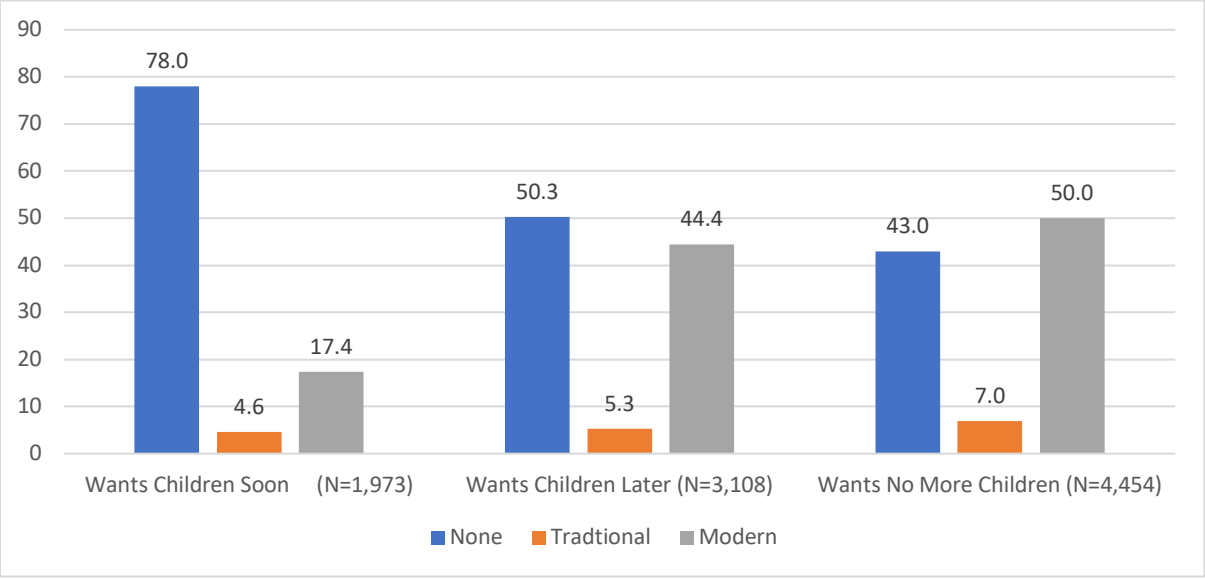
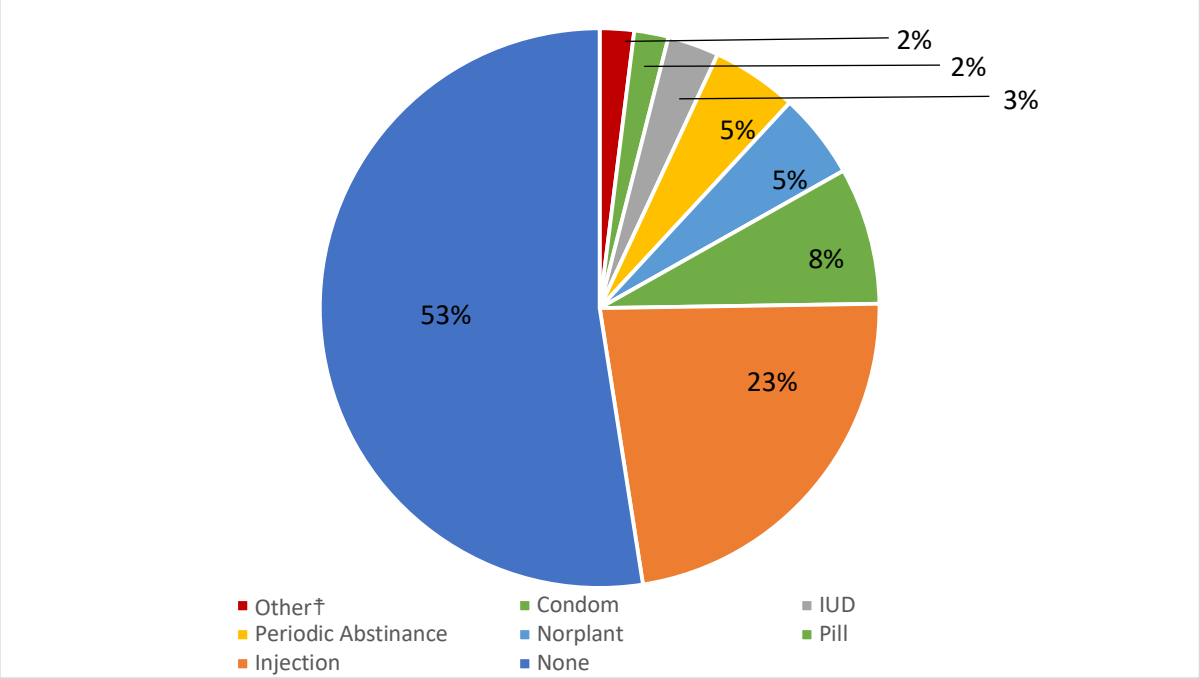


Figure 6.1 illustrates contraceptive use by method type across fertility intention groups. Non-use of contraception was the most common category across all groups, with modern contraceptive use a close second for those who want more children and those who want children later. Traditional contraceptives were used by less than 10% of women in all groups. Women who wanted no more children and those who wanted more children later had similar contraceptive use patterns. Among those wanting no more children, 43% of women were not using contraceptives of any type, while 50% used modern contraceptives. Nearly three-quarters of women who wanted children soon did not use any form of contraceptives, and 17.3% used modern contraceptives.

Figure 6.2. Method Mix of Contraceptive Contraceptives Among In-Union Women 15-49 in the Sample, Kenya Demographic and Health Survey 2003, 2008-09, and 2014.



Other† includes female condom, withdrawal, lactational amenorrhea (LAM), and unspecified other types.
Pie chart is 101% due to rounding.

Figure 6.2 illustrates the contraceptive method mix within the sample. The most common form of contraceptive was injectable (23%), followed distantly by the pill. Other long-acting contraceptives such as Norplant or IUD were used by very few people. Five percent of women

cited periodic abstinence as their recent form of contraception. Condoms only accounted for 2% of method use. In addition, due to the large percentage using either injectables or no contraceptives, concurrent modern contraceptive use was deemed unnecessary to examine. A breakdown of contraceptive use by fertility intention group is contained in Appendix 6.8.

6.4.3 Bivariate Multinomial Regression of IPV and Contraceptive Use.

I examined bivariate multinomial logistic regression tests (Appendix Table 6.2b) to establish a focal association between recent IPV experience and contraceptive use. Recent IPV experience has a negative association with traditional method use compared to no method use and a positive association with modern method use compared to no method use. Those who reported any recent violence are at lower risk of using traditional contraceptive methods (RRR=0.80, SE=0.07, $p<0.05$). In addition, women who experienced recent physical violence had a 27% lower risk of traditional contraceptive use compared to no method use (SE=0.07, $p<0.01$). Recent emotional violence reduced risk of use of traditional methods by 15% (SE=0.09, $p<0.05$). In contrast, women who experience recent emotional IPV have a 20% higher risk of using modern contraception. Recent experience of any, physical, and sexual violence, did not result in a significant association with modern contraceptive use.

6.5 Binomial Logistic Regression Results

6.5.1 Recent Violence and Recent Contraceptive Use.

Table 6.4 (Abridged). Binomial Logistic Regression Estimates of Adjusted Relative Risk Ratios and Standard Errors with Contraceptive Use (No Method Vs. Any Method) as Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Violence Experience in Last 12 Months										
None (ref.)	---	---	---	---	---	---	---	---	---	---
Any	1.10*	0.05	---	---	---	---	---	---	---	---

Physical	---	---	1.06	0.05	---	---	---	---	---	---
Sexual	---	---	---	---	1.09	0.07	---	---	---	---
Emotional	---	---	---	---	---	---	1.14*	0.06	---	---
Number of Violence Types Experienced										
None (ref.)	---	---	---	---	---	---	---	---	---	---
One	---	---	---	---	---	---	---	---	1.11	0.07
Two	---	---	---	---	---	---	---	---	1.03	0.07
All Three	---	---	---	---	---	---	---	---	1.21*	0.10

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

Note: N=10,098 for all models

Table 6.4 provides abridged results from models estimating the relationship between recent violence experience and any contraceptive use (full table in Appendix II). Recent experience of any type of violence increases the adjusted odds of using contraception by 10% (SE= 0.05, $p<0.05$). In addition, women who experience recent emotional violence are 14% (SE=0.06, $p<0.05$) more likely to use contraception net covariates. Although both recent physical and sexual violence experience increases the likelihood of any contraceptive use by 6% (SE=0.05) and 9% (SE=0.07) respectively, inclusion of demographic and fertility characteristics renders the relationship non-significant. In addition, when considering women's simultaneous experience of violence sub-types, women who experience physical, sexual, and emotional violence, a high-risk group, have 21% (SE=0.10, $p<0.05$) greater adjusted odds of any contraceptive use.

Women who were older, Muslim or in the other religious group, or not Kikuyu were less likely to use contraceptives. Increase in age resulted in a 3% decrease in adjusted odds of using any contraceptives for all violence types. Muslims and women Other religions were less likely to use any contraceptives (OR=0.47, SE=0.04, $p<0.001$; OR=0.53, SE=0.10, $p<0.001$ respectively). In addition, Luhya women had a lower likelihood of using any contraceptives by 52% (SE=0.04, $p<0.001$) and Luos also had lower contraceptive use (72% compared to Kikuyus) for all violence

types (SE=0.02, p<0.001). Women in the urban/other ethnicities group were 38% (SE=0.07, p<0.001) less likely, and those in the rural/other ethnicities group were 49% less likely, to use contraceptives than Kikuyu women (SE=0.04, p<0.001).

Kenyan women who wanted more children were less likely to use contraceptives. For example, women who wanted additional children (OR=0.54, SE=0.03, p<0.001) and had discordant family size preferences from their husband were less likely to use any contraceptives. Women who believed their husbands preferred more children had 26% lower odds of using any contraceptive use compared to those with the same family size preference (SE=0.05, p<0.001). In addition, uncertainty in a husband's preference also diminished contraceptive use. Women who were unsure of their husband's family size preference had a lower likelihood of contraceptive use than those with the same preferences (OR=0.54, SE=0.04, p<0.001).

Increases in education, household wealth, and number of children had dramatic positive impacts on any contraceptive use. Women with a primary school education had a 375% higher likelihood of contraceptive use compared to those with no education (SE=0.36, p<0.001). This was even more striking in the university education group who had a 907% higher likelihood of using contraceptives (SE=1.28, p<0.001) compared to those with no education. Compared to the poorest women those in the middle income or higher categories had a greater than 200% higher likelihood of any contraceptive use (Middle OR=2.13 SE=0.18, p<0.001; Richer OR=2.24, SE=0.19, p<0.001; Richest OR=2.30, SE=0.20, p<0.001). Finally, the presence of at least one child increased the likelihood of using contraceptives by at least 500%. Women who had 3-4 children compared to no children had 726% higher adjusted odds of using contraception (SE=1.05, p<0.001).

6.6 Multinomial Logistic Regression Results

Table 6.5 (Abridged to show Modern Method Group Only). Multinomial Logistic Regression Estimates of Adjusted Relative Risk Ratios and Standard Errors of the Association Between Intimate Partner Violence Experience and Contraceptive Use as the Dependent Variable - No Method Compared to Traditional Method or Modern Method, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

Modern Method										
	Model 1		Model 2		Model 3		Model 4		Model 5	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Violence Experience in Last 12 Months										
None (ref.)	---	---	---	---	---	---	---	---	---	---
Any	1.15**	0.06	---	---	---	---	---	---	---	---
Physical	---	---	1.10	0.06	---	---	---	---	---	---
Sexual	---	---	---	---	1.14	0.08	---	---	---	---
Emotional	---	---	---	---	---	---	1.19**	0.07	---	---
Number of Violence Types Experienced										
None (ref.)	---	---	---	---	---	---	---	---	---	---
One	---	---	---	---	---	---	---	---	1.15	0.07
Two	---	---	---	---	---	---	---	---	1.08	0.08
All Three	---	---	---	---	---	---	---	---	1.30**	0.11

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

Note: N=10,098 for all models

Table 6.5 highlights the association between recent IPV experience and use of modern contraceptive methods (Full Table 6.5 in Appendix). Only certain types of violence were associated with increased modern contraceptive use compared to no use. Women experiencing recent IPV of any type have a 15% higher adjusted relative risk of using modern contraception. This pattern was also present with experience of recent emotional violence, which resulted in a 19% increase in modern contraceptive use compared to no method use. Highest risk women, those experiencing physical, sexual, and emotional violence had a 30% higher adjusted relative risk of modern contraceptive use compared to no method use.

Age, religion, and ethnicity/region were all associated with modern contraceptive use adjusted for recent IPV. Older women had a 4% lower adjusted relative risk of using modern contraceptives compared to no contraceptives. In addition, Muslim women and other women had a 52% and 53% lower relative risk of modern contraceptive use compared to no use, respectively. Luhya women were 52% less likely compared to Kikuyu women to use modern contraceptives compared to no contraceptives. Luo women (compared to Kikuyu women) had an even lower relative risk of using modern methods compared to no method (RR=0.27, SE=0.03, $p<0.001$). Notably, urban minority women compared to Kikuyu women had a 40% lower relative risk of using modern contraceptives compared to no contraceptives, being a rural woman also reduced the relative risk of modern contraceptive use compared to no contraceptive use (OR=0.47, SE=0.03, $p<0.001$).

Differences in spousal concordance on family size and desire for more children had a negative association with modern contraceptive use. Women who intended to have more children had a 49% lower relative risk of using modern contraceptives compared to no contraceptives (RRR=0.51, SE=0.03, $p<0.001$). In addition, women who believed their husband wanted more children or were unsure of their husband's preference were at lower risk of using modern contraceptives compared to no contraceptives (0.76, SE=0.05, $p<0.001$; 0.58, SE=0.04, $p<0.001$, respectively).

More education, household wealth, and number of living children were associated with greater contraceptive use controlling for recent violence. Women who had a primary school education compared to those who had no education were had four times the relative risk of using modern contraceptives compared to no contraceptives (SE=0.43, $p<0.001$). This became more pronounced when examining secondary and university education compared to no education.

Women with university education compared to no education had nine times the relative risk of using modern contraceptives compared to no contraceptives (SE= 0.73, p<0.001). Finally, a greater number of living children resulted in a higher relative risk of using modern contraceptives. Women who had 3-4 children had the highest relative risk of using modern contraceptives compared to no contraceptives (RRR=9.27, SE= 1.51, p<0.001).

Factors associated with traditional contraceptive use differed from those associated with modern contraceptive use. Recent experience of violence was not significantly associated with traditional method use compared to no method use (Appendix Table 6.5). In addition, age had no adjusted effect on traditional vs. no method use controlling for any type of IPV, sexual IPV, or emotional IPV. However, each additional year of age decreased the relative risk of using traditional contraceptives by 4% for those experiencing physical IPV. In all models in Appendix Table 6.5 Muslim women compared to Protestant women had a 56% lower adjusted relative risk of using traditional methods of contraceptives compared to no method if they experienced recent violence. Discordant fertility preferences and desire for more children between spouses also resulted in a negative adjusted association with traditional contraceptive use compared to no contraceptive use. Finally, higher education and household wealth had a significant positive association with traditional contraceptive use compared to no contraceptive use, however, the relative risk ratios were not as large as those seen with modern contraceptive use.

Table 6.6 (Abridged). Multinomial Logistic Regression Estimates of Adjusted Relative Risk Ratios and Standard Errors of the Association Between Intimate Partner Violence Experience and Contraceptive Use as Dependent Variable- Traditional Method or Modern Method Compared to No Method Use (Reference) Stratified by Fertility Intentions Group- Wants No More Children, Wants Children Soon, Wants Children Later, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	Wants No More Children (N=4,454)	Wants Children Soon (N=1,973)	Wants Children Later (N=3,108)

	Traditional Method		Modern Method		Traditional Method		Modern Method		Traditional Method		Modern Method	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Model 1: Any	0.82	0.11	1.09	0.08	1.20	0.16	1.32 *	0.17	0.99	0.18	1.39 ***	0.13
Model 2: Physical	0.84	0.12	1.04	0.08	1.19	0.16	1.24	0.17	0.93	0.18	1.34 **	0.13
Model 3: Sexual	0.85	0.16	1.14	0.11	0.17	0.21	1.33	0.24	1.05	0.28	1.29	0.17
Model 4: Emotional	0.77	0.12	1.10	0.08	1.29	0.19	1.42 *	0.21	1.23	0.26	1.49 ***	0.16

*p<0.05 **p<0.01 ***p<0.001; Reference: None

Table 6.6 summarizes twelve models estimated for recent violence types and contraceptive use, traditional and modern methods compared to no methods, stratified by fertility intention group. Separate statistical models were estimated for each group.

Significant positive associations between violence experience and modern contraceptive use are seen for women who want more children soon and those who want more children later. Specifically, among women who want more children soon, defined as within 2 years, those experiencing any type of violence have a 32% higher adjusted relative risk of using modern contraceptives compared to non-use, a pattern which is absent in traditional contraceptive use (SE=017, $p<0.05$). In addition, women who experience recent emotional violence have a 42% higher relative risk of using modern contraceptives compared to no contraceptives (SE=0.21, $p<0.05$). Women who reporting wanting children later have similar relative risk of increased contraceptive use when faced with any IPV (RRR=1.39, SE=0.13, $p<0.001$) or with emotional violence (RRR=1.49, SE=0.16, $p<0.001$). However, they also have a significant positive association between recent physical violence and modern contraceptive use, women in this group have 34% higher adjusted relative risk of using modern contraceptives compared to no contraceptives. In addition, experience of sexual violence is marginally significant in this group (RRR=1.29, SE=0.07, $p=0.051$). Notably, violence is not significantly associated with either

traditional or modern contraceptive use compared to no contraceptive use in the group that wants no more children.

Table 6.7 (Abridged). Association Between Violence Types Experienced and Contraceptive Use

Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors of the Association Between Experience of Intimate Partner Violence Types and Contraceptive Use as Dependent Variable - Traditional Method or Modern Method Compared to No Method Use (Reference) Stratified by Fertility Intention- Wants No More Children, Wants Children Soon, Wants Children Late, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	Wants No More Children (N=4,454)				Wants Children Soon (N=1,973)				Wants Children Later (N=3,108)			
	Traditional Method		Modern Method		Traditional Method		Modern Method		Traditional Method		Modern Method	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Violence Types												
None	---	---	---	---	---	---	---	---	---	---	---	---
One	0.97	0.16	1.10	0.10	1.04	0.31	1.32	0.23	0.89	0.21	1.32*	0.15
Two	0.58*	0.12	1.03	0.1	0.8	0.34	1.07	0.24	1.14	0.3	1.26	0.18
All Three	0.89	0.20	1.20	0.14	0.00	0.00	1.29	0.31	1.07	0.41	1.89***	0.33

Table 6.7 summarizes the association between violence types experienced and contraceptive use by method stratified by fertility intentions groups. The results come from three separate models estimated separately for each fertility intention group.

For women who want more children later, women who experience one single type of violence have a 32% higher adjusted relative risk of using modern contraceptives compared to non-use (SE=0.15, $p<0.05$). The magnitude of this association increases for women who want more children later and experience all violence types: their adjusted relative risk of using modern contraception compared to non-use is 89% (SE=0.33, $p<0.001$). In contrast, associations between number of violence types and method use is not present in women wanting more children soon or wanting no more children. Finally, there is a significant association between experience of two

types of violence and lower relative risk of using traditional contraceptives in women reporting not wanting more children (RRR= 0.58, SE=0.12, $p<0.05$).

6.7 Discussion

This study examined whether exposure to IPV reduced contraceptive use in married women of reproductive age in a pooled sample of the Kenyan Demographic and Health Surveys. I hypothesized that IPV experience of all types would reduce current contraceptive use. However, contrary to my hypothesis, IPV did not uniformly reduce contraceptive use. Instead, IPV exposure reduced the likelihood of *traditional* contraceptive use but *increased* the likelihood of modern contraceptive use. This result is similar to findings in other African contexts where violence resulted in greater use of modern contraceptives (Alio et al., 2009, Emenike, Lawoko, & Dalal, 2008). Traditional methods, which include periodic abstinence, generally require the engagement of a woman's partner. Therefore, it seems rational that negotiation of these types of contraceptives would be limited in abusive relationships where power inequalities may reduce a woman's ability to express and subsequently fulfill her fertility desires (Williams, Larsen, & McCloskey, 2008; Williams et al., 2008).

Exposure to emotional IPV resulted in increased use of modern contraceptives. Exposure to physical and sexual violence resulted in no significant associations with contraceptive use, contradicting several studies which found that presence of physical and sexual violence resulted in increased contraceptive use (Alio et al., 2009; Dalal, Andrews, & Dawad, 2011; Fanslow et al., 2008; O'Hara et al., 2013). These results suggest that patterns of violence may yield unique effects by country context.

Most research has primarily focused on physical and sexual IPV experience with emotional IPV being under studied in the reproductive health literature. In this sample, around 25% of women reported recent emotional IPV. The frequency and high impact of emotional IPV on contraceptive use demonstrated in this study underscores that further measures of emotional IPV experience should be studied in Kenya.

Unique to this study was that I took fertility intentions into consideration in the analysis because they are linked with women's contraceptive use patterns (Babaloa et al., 2017). Although some debate exists on the predictive nature of intentions on behavior, a woman's intention to have a child is understandably a strong indicator of contraceptive use. In this study, when models were adjusted for fertility intentions, we see persistent patterns in the any violence and emotional violence types indicating that violence types may not undermine all women's fertility intentions or contraceptive use. Specifically, when models were stratified by fertility intentions, those who intend to have children within the next two years were more likely to use contraceptives. These women are the least motivated to use contraception. Therefore, IPV seems to subvert their fertility desires. This is consistent with my previous discussion in Chapter 5 of the uncertain futures hypothesis which asserts that even women who are motivated to have children may delay or limit because of the instability of the relationship.

Several limitations of this study exist. First, this analysis is cross-sectional, which for associations but not causal inference. One reason is that responses are collected only at one time point at administration of the survey, which creates limited understanding of the temporal relationship between abuse experience and contraceptive use in a woman's life. A longitudinal dataset, which would collect both violence experience and contraceptive use at multiple time

points in the life of a respondent would allow for temporal ordering. Use of longitudinal datasets should be considered as they may reduce the likelihood of reverse causality in analysis.

In addition, the KDHS has limited measures for sexual and emotional IPV. Further work needs to rely on more expansive measures that capture a wider range of sexual and emotional violence behaviors. In addition, since prior studies have found links between sexual violence and contraceptive use, this study may be underestimating the effect of this form of violence. Sexual violence has been previously posited as the form of IPV with the greatest potential to impact a woman's desire to use contraception. Therefore, the finding here of no association warrants caution in interpretation. Further, research should continue to examine sexual violence in other demographic groups including younger women and pregnant women in the Kenyan context given that pregnancy may result in an escalation of violence (Coker, 2007; Hindin & Adair, 2002; Diop-Sidibé, Campbell, & Becker, 2006; Moore, Frohwirth, & Miller, 2010; O'Hara et al. 2013).

In addition, findings for traditional methods use must be interpreted with caution due to the smaller sample size of women in the traditional method group (N=597). Further research must be done on the impact of IPV exposure on traditional methods which require partner participation. A richer dataset focusing on traditional methods may yield insights for groups that have historically low use of modern contraception including religious and ethnic minorities.

Finally, focusing on the overlap of ethnicity and rural residence should be a priority for future work in Kenya as this seems to be related to contraceptive non-use. Muslim women had lower use of modern and traditional methods of contraception.

The impact of this work is particularly relevant when we consider integration of IPV screening and prevention in family planning clinics and programming. Interventions should

consider a holistic picture of a woman's fertility goals. In addition, public health interventions must strive for culturally relevant ways of preventing IPV.

6.8 Appendices: Tables and Figures

Appendix Table 6.1. Demographic Characteristics and X^2 Tests By Contraceptive Use (No Methods, Traditional Methods, and Modern Methods), in Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	No Methods (N=5,424)		**Traditional Methods (N=597)**		**Modern Methods (N=4,148)**		
	N	%	N	%	N	%	X^2
Age (years)							276.3***
15-19	339	6.3	18	3.0	118	2.8	
20-24	1,144	21.1	98	16.4	730	17.6	
25-29	1,248	23.0	124	20.8	1,175	28.3	
30-34	901	16.6	115	19.3	947	23.5	
35-39	774	14.3	118	19.8	603	14.5	
40-44	532	9.0	62	10.4	386	9.3	
45-49	486	9.0	62	10.4	162	3.9	
Marital Status							
Married	5,015	92.5	552	92.5	3,800	91.6	2.4
Living Together	409	7.5	45	7.5	348	8.4	
Religion							
Protestant	2,880	53.4	397	67.1	2,979	72.2	833.2***
Catholic	993	18.4	149	25.2	900	21.8	
Muslim	1,311	24.3	34	5.7	207	5.0	
Other	207	3.8	12	2.0	42	1.0	
Education							1500.0***
No Education	1,673	30.8	40	6.7	137	3.3	
Primary	2,777	51.5	307	51.4	2,368	57.1	
Secondary	776	14.3	179	30.0	1,229	29.6	
University	198	3.7	71	11.9	414	10.0	
Household Wealth							934.2***
Poorest	1,879	34.6	83	13.9	393	9.5	
Poorer	960	17.7	105	17.6	737	17.8	
Middle	806	14.9	117	19.6	839	20.2	
Richer	779	14.4	132	22.1	955	23.0	
Richest	1,000	18.4	160	26.8	1,224	29.5	
Ethnicity and Place Residence							731.5***
Kikuyu	531	9.8	140	23.5	1,177	28.4	

Luhya	670	12.4	59	9.9	612	14.8	
Luo	714	13.2	40	6.7	387	9.3	
Urban Others	244	4.5	42	7.0	304	7.3	
Rural Others	3,265	60.2	316	52.9	1,666	40.2	
Number of Living Children							458.3***
No Children	402	7.4	26	4.4	63	1.5	
1-2 Children	1,810	33.4	208	34.8	1,814	43.7	
3-4 Children	1,583	29.1	203	34.0	1,570	37.9	
5 or More Children	1,629	30.0	160	26.8	701	16.9	
Fertility Intentions							
No More Children	1933.0	35.68	313.0	52.61	2249.0	54.3	346.9***
More Children	3486.0	64.32	282.0	47.39	1895.0	45.7	
Family Size Concordance							583.0***
Same	2,266	41.9	368	62.0	2.533	61.1	
Husband More	1,322	24.4	95	16.0	745	18.0	
Husband Fewer	353	6.5	63	10.6	387	9.3	
Unsure	1,474	27.2	68	11.5	478	11.5	
Interview Year							
2003	1,952	36.0	250	41.9	1,054	25.4	280.9***
2008	867	16.0	94	15.8	680	16.4	
2009	1,145	21.1	88	14.7	704	17.0	
2014	1,460	27.0	165	27.6	1,710	41.2	

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

Appendix Table 6.2b. Bivariate Multinomial Logistic Regression Models[‡], Betas, Standard Errors, and 95% Confidence Intervals, across Contraceptive Use Groups (Traditional Methods and Modern Methods Compared with No Method) as the Dependent Variable, Kenya Demographic and Health Survey 2003, 2008-09, and 2014.

	Traditional Methods (N=597)			**Modern Methods (N=4,148)**		
	b	SE	95% CI	b	SE	95% CI
Violence Experience in Last 12 Months						
Any	-0.25**	0.09	-0.42, -0.07	0.07	0.04	-0.01, -0.15
Physical	-0.31**	0.10	-0.50, -0.13	-0.04	0.04	-0.13, 0.04
Sexual	-0.18	0.13	-0.44, 0.07	0.11	0.06	-0.01, 0.22
Emotional	-0.21*	0.11	-0.42, -0.01	0.18***	0.05	0.08, 0.27
Violence Types						
None	---	---	---	---	---	---
One	-0.12	0.11	-0.34, 0.10	0.07	0.05	-0.03, 0.18
Two	-0.38	0.14	-0.65, -0.10	0.00	0.06	-0.12, 0.12

All Three	-0.31	0.17	-0.66, 0.03	0.17*	0.07	0.02, 0.31

† Bivariate Models were adjusted for age in years
Reference Group: No Method Users

Appendix Table 6.3. Contraceptive Use and X^2 Test across Fertility Intentions Groups, Wants No More Children, Wants Children Soon, and Wants Children Later, Kenya Demographic and Health Survey 2003, 2008-09, and 2014.

	Wants No More Children (N=4,454)		**Wants Children Soon (N=1,973)**		**Wants Children Later (N=3,108)**		
	N	%	N	%	N	%	X^2
Contraceptive Use							706.28***
None	1,933	43.0	1,551	78.0	1,571	50.3	
Traditional	313	7.0	91	4.6	164	5.3	
Modern	2,249	50.0	346	17.4	1,387	44.4	

Appendix Table 6.4. Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors of the Association Between Intimate Partner Violence Experience and Contraceptive Use as Dependent Variable - No Method Compared to Any Method, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Recent Violence										
None	---	---	---	---	---	---	---	---	---	---
Any Violence	1.10*	0.05	---	---	---	---	---	---	---	---
Physical Violence	---	---	1.06	0.05	---	---	---	---	---	---
Sexual Violence	---	---	---	---	1.09	0.07	---	---	---	---
Emotional Violence	---	---	---	---	---	---	1.14*	0.06	---	---
Number of Violence Types Experienced										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	1.11	0.07
Two Types	---	---	---	---	---	---	---	---	1.03	0.07
All Three Types	---	---	---	---	---	---	---	---	1.21*	0.10
Age (years)	0.97***	0.00	0.97***		0.97	0.00	0.97	0.00	0.97	0.00
15-19										
Religion										
Protestant	---	---	---	---	---	---	---	---	---	---
Catholic	0.98	0.06	0.98	0.06	0.98	0.06	0.98	0.06	0.98	0.06
Muslim	0.47***	0.04	0.47***	0.04	0.47***	0.04	0.47***	0.04	0.47***	0.04
Other	0.53***	0.10	0.53***	0.10	0.53***	0.10	0.52***	0.09	0.53***	0.09
Education Level										
None	---	---	---	---	---	---	---	---	---	---
Primary	3.75***	0.36	3.76***	0.36	3.74***	0.36	3.75***	0.36	3.74***	0.36

Secondary	5.82***	0.63	5.82***	0.63	5.79***	0.63	5.80***	0.63	5.80***	0.63
University	9.07***	1.28	9.04***	1.28	8.96***	1.27	9.02***	1.27	9.04***	1.28
Household Wealth										
Poorest	---	---	---	---	---	---	---	---	---	---
Poorer	1.70***	0.14	1.71***	0.14	1.71***	0.14	1.71***	0.14	1.71***	0.14
Middle	2.13***	0.18	2.12***	0.18	2.12***	0.18	2.12***	0.18	2.13***	0.18
Richer	2.24***	0.19	2.24***	0.19	2.23***	0.19	2.24***	0.19	2.24***	0.19
Richest	2.30***	0.20	2.29***	0.20	2.29***	0.20	2.29***	0.20	2.30***	0.20
Ethnicity and Place of Residence										
Kikuyu	---	---	---	---	---	---	---	---	---	---
Luhya	0.48***	0.04	0.48***	0.04	0.48***	0.04	0.48***	0.04	0.48***	0.04
Luo	0.28***	0.02	0.28***	0.02	0.28***	0.02	0.28***	0.02	0.28***	0.02
Urban Others	0.62***	0.07	0.62***	0.07	0.62***	0.07	0.62***	0.07	0.62***	0.07
Rural Others	0.51***	0.04	0.51***	0.04	0.51***	0.04	0.51***	0.04	0.51***	0.04
Number of Living Children										
No Children	---	---	---	---	---	---	---	---	---	---
1-2 Children	5.48***	0.74	5.52***	0.74	5.55***	0.75	5.51***	0.75	5.48***	0.74
3-4 Children	7.26***	1.05	7.31***	1.05	7.36***	1.07	7.30***	1.06	7.27***	1.05
5 or More Children	5.34***	0.85	5.38***	0.85	5.44***	0.86	5.40***	0.86	5.36***	0.85
Fertility Intention										
No More Children	---	---	---	---	---	---	---	---	---	---
More Children	0.54***	0.03	0.54***	0.03	0.54***	0.03	0.54***	0.03	0.54***	0.03
Family Size Concordance										
Same	---	---	---	---	---	---	---	---	---	---
Husband More	0.74***	0.05	0.75***	0.05	0.75***	0.05	0.75***	0.05	0.74***	0.05
Husband Fewer	1.00	0.09	1.01	0.09	1.01	0.09	1.01	0.09	1.01	0.09

Unsure	0.57***	0.04	0.57***	0.04	0.57***	0.04	0.57***	0.04	0.57***	0.04
Interview Year										
2004	---	---	---	---	---	---	---	---	---	---
2008	1.42***	0.10	1.42***	0.10	1.41***	0.10	1.41***	0.10	1.41***	0.10
2009	1.30***	0.09	1.29***	0.09	1.29***	0.09	1.29***	0.09	1.29***	0.09
2014	2.40***	0.14	2.40***	0.14	2.39***	0.14	2.39***	0.14	2.39***	0.14

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

Note: N=10,098 for all models

Appendix Table 6.5. Multinomial Logistic Regression Estimates of Adjusted Relative Risk Ratios and Standard Errors of the Association Between Intimate Partner Violence Experience and Contraceptive Use as Dependent Variable - No Method Compared to Traditional Method or Modern Method, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	Traditional Method									
	Model 1		**Model 2**		**Model 3**		**Model 4**		**Model 5**	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Violence d in Last 12 Months										
None	---	---	---	---	---	---	---	---	---	---
Any	0.85	0.08	---	---	---	---	---	---	---	---
Physical	---	---	0.83	0.09	---	---	---	---	---	---
Sexual	---	---	---	---	1.14	0.08	---	---	---	---
Emotional	---	---	---	---	---	---	0.87	0.10	---	---
Number of Violence Types										
None	---	---	---	---	---	---	---	---	---	---
One	---	---	---	---	---	---	---	---	0.93	0.11

Two	---	---	---	---	---	---	---	---	0.76	0.11
All Three	---	---	---	---	---	---	---	---	0.81	0.15
Age (years)	1.00	0.01	1.00	0.01	0.96***	0.00	0.99	0.01	1.00	0.01
Religion										
Protestant	---	---	---	---	---	---	---	---	---	---
Catholic	1.15	0.12	1.15	0.12	1.14	0.12	1.14	0.12	1.15	0.12
Muslim	0.44***	0.09	0.44***	0.09	0.44***	0.09	0.44***	0.09	0.43***	0.09
Other	0.79	0.25	0.79	0.25	0.79	0.25	0.80	0.25	0.79	0.25
Education Level										
None	---	---	---	---	---	---	---	---	---	---
Primary	2.76***	0.53	2.76***	0.53	2.79***	0.53	2.78***	0.53	2.77***	0.53
Secondary	5.04***	1.07	5.04***	1.07	5.12***	1.08	5.10***	1.08	5.05***	1.08
University	9.02***	2.30	9.02***	2.30	9.23***	2.34	9.18***	2.34	9.05***	2.31
Household Wealth										
Poorest	---	---	---	---	---	---	---	---	---	---
Poorer	1.33	0.22	1.33	0.22	1.33	0.22	1.33	0.22	1.33	0.22
Middle	1.60**	0.26	1.60**	0.26	1.60**	0.26	1.60**	0.26	1.60**	0.26
Richer	1.60**	0.27	1.60**	0.27	1.61**	0.27	1.61**	0.27	1.60**	0.27
Richest	1.45*	0.26	1.45*	0.26	1.47*	0.27	1.47*	0.27	1.45*	0.27
Ethnicity and Place of Residence										
Kikuyu	---	---	---	---	---	---	---	---	---	---
Luhya	0.44***	0.08	0.44***	0.08	0.44***	0.08	0.44***	0.08	0.45***	0.08
Luo	0.29***	0.06	0.29***	0.06	0.29***	0.06	0.29***	0.06	0.29***	0.06
Urban Others	0.75	0.16	0.75	0.16	0.75	0.16	0.75	0.16	0.76	0.16
Rural Others	0.80	0.10	0.80	0.10	0.81	0.10	0.80	0.10	0.80	0.10

Number of Living Children										
0	---	---	---	---	---	---	---	---	---	---
1-2	2.00**	0.46	2.00**	0.46	1.96**	0.45	1.97**	0.45	2.00**	0.45
3-4	2.70***	0.66	2.70***	0.66	2.63***	0.65	2.65***	0.65	2.69***	0.67
5+	2.82***	0.77	2.83***	0.78	2.74***	0.76	2.76***	0.76	2.81***	0.77
Fertility Intentions										
No More Children	---	---	---	---	---	---	---	---	---	---
More Children	0.76*	0.09	0.77*	0.09	0.77*	0.09	0.77*	0.09	0.76*	0.09
Family Size Concordance										
Same	---	---	---	---	---	---	---	---	---	---
Husband More	0.67**	0.08	0.67**	0.08	0.67**	0.08	0.66**	0.08	0.68**	0.09
Husband Fewer	1.04	0.16	1.04	0.16	1.04	0.16	1.04	0.16	1.05	0.16
Unsure	0.50***	0.07	0.50***	0.07	0.50***	0.07	0.50***	0.07	0.50***	0.07
Interview Year										
2004	---	---	---	---	---	---	---	---	---	---
2008	0.87	0.12	0.86	0.12	0.88	0.12	0.88	0.12	0.87	0.12
2009	0.69**	0.09	0.69**	0.09	0.70**	0.09	0.70**	0.09	0.69**	0.09
2014	0.95	0.11	0.94	0.11	0.96	0.11	0.96	0.11	0.95	0.11
Modern Method										
	Model 1		**Model 2**		**Model 3**		**Model 4**		**Model 5**	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Violence Experienced in Last 12 Months										
None	---	---	---	---	---	---	---	---	---	---
Any	1.15**	0.06	---	---	---	---	---	---	---	---
Physical	---	---	1.10	0.06	---	---	---	---	---	---

Sexual	---	---	---	---	1.14	0.08	---	---	---	---
Emotional	---	---	---	---	---	---	1.19**	0.07	---	---
Number of Violence Types Experienced										
None	---	---	---	---	---	---	---	---	---	---
One Type	---	---	---	---	---	---	---	---	1.15	0.07
Two Types	---	---	---	---	---	---	---	---	1.08	0.08
All Three Types	---	---	---	---	---	---	---	---	1.30**	0.11
Age (years)	0.96***	0.00	0.96***	0.00	0.96***	0.00	0.96***	0.00	0.96***	0.00
Religion										
Protestant	---	---	---	---	---	---	---	---	---	---
Catholic	0.95	0.06	0.95	0.06	0.95	0.06	0.95	0.06	0.95	0.06
Muslim	0.48***	0.05	0.48***	0.05	0.48***	0.05	0.48***	0.05	0.48***	0.05
Other	0.47***	0.03	0.47***	0.03	0.47***	0.03	0.47***	0.03	0.47***	0.03
Education Level										
None	---	---	---	---	---	---	---	---	---	---
Primary	4.07***	0.43	4.08***	0.43	4.06***	0.43	4.06***	0.43	4.06***	0.43
Secondary	6.18***	0.73	6.18***	0.73	6.12***	0.73	6.14***	0.73	6.15***	0.73
University	9.44***	1.39	9.42***	1.39	9.29***	1.39	9.34***	1.41	9.42***	1.41
Household Wealth										
Poorest	---	---	---	---	---	---	---	---	---	---
Poorer	1.78***	0.15	1.78***	0.15	1.78***	0.15	1.78***	0.15	1.78***	0.15
Middle	2.23***	0.19	2.22***	0.19	2.22***	0.19	2.23***	0.19	2.24***	0.19
Richer	2.36***	0.21	2.36***	0.21	2.36***	0.21	2.36***	0.21	2.37***	0.21
Richest	2.48***	0.21	2.46***	0.21	2.46***	0.21	2.36***	0.21	2.49***	0.23
Ethnicity and Place of Residence										

Kikuyu	---	---	---	---	---	---	---	---	---	---
Luhya	0.48***	0.04	0.48***	0.04	0.48***	0.04	0.47***	0.04	0.47***	0.04
Luo	0.27***	0.03	0.27***	0.03	0.27***	0.03	0.27***	0.02	0.27***	0.02
Urban Others	0.60***	0.07	0.60***	0.07	0.60***	0.07	0.60***	0.07	0.60***	0.07
Rural Others	0.47***	0.03	0.47***	0.03	0.47***	0.03	0.47***	0.03	0.47***	0.03
Number of Living Children										
0	---	---	---	---	---	---	---	---	---	---
1-2	7.00***	1.07	7.04***	1.08	7.12***	1.09	1.97**	0.45	7.00***	1.08
3-4	9.27***	1.51	9.34***	1.52	9.48***	1.53	2.65***	0.65	9.28***	1.51
5+	6.37***	1.13	6.42***	1.14	6.54***	1.15	2.76***	0.76	6.39***	1.12
Fertility Intentions										
No More Children	---	---	---	---	---	---	---	---	---	---
More Children	0.51***	0.03	0.51***	0.03	0.51***	0.03	0.77*	0.09	0.51***	0.03
Family Size Concordance										
Same	---	---	---	---	---	---	---	---	---	---
Husband More	0.76***	0.05	0.76***	0.05	0.76***	0.05	0.66**	0.08	0.75**	0.05
Husband Fewer	1.00	0.09	1.01	0.09	1.01	0.09	1.04	0.16	1.00	0.08
Unsure	0.58***	0.04	0.59***	0.04	0.59***	0.04	0.50***	0.07	0.58***	0.04
Interview Year										
2004	---	---	---	---	---	---	---	---	---	---
2008	1.57***	0.11	1.57***	0.11	1.55***	0.11	1.55***	0.11	1.55***	0.12
2009	1.46***	0.10	1.46***	0.10	1.44***	0.10	1.44***	0.10	1.45***	0.10
2014	2.83***	0.18	2.83***	0.18	2.81***	0.18	2.79***	0.17	2.82***	0.18

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

Note: N=10,098 for all models

Appendix Table 6.6 Multinomial Logistic Regression Estimates of Adjusted Relative Risk Ratios and Standard Errors of the Association Between Intimate Partner Violence Experience and Contraceptive Use as Dependent Variable - Traditional Method or Modern Method Compared to No Method Use (Reference) Stratified by Fertility Intentions- Wants No More Children, Wants Children Soon, Wants Children Later, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014.

	Wants No More Children (N=4,454)				**Wants Children Soon (N=1,973)**				**Wants Children Later (N=3,108)**			
	Traditional Method		**Modern Method**		**Traditional Method**		**Modern Method**		**Traditional Method**		**Modern Method**	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Model 1: Any vs. None	0.82	0.11	1.09	0.08	1.20	0.16	1.32*	0.17	0.99	0.18	1.39***	0.13
Model 2: Physical vs. None	0.84	0.12	1.04	0.08	1.19	0.16	1.24	0.17	0.93	0.18	1.34**	0.13
Model 3: Sexual vs. None	0.85	0.16	1.14	0.11	0.17	0.21	1.33	0.24	1.05	0.28	1.29	0.17
Model 4: Emotional vs. None	0.77	0.12	1.10	0.08	1.29	0.19	1.42*	0.21	1.23	0.26	1.49***	0.16
Age (years)	1.01	0.01	0.95***	0.00	0.99	0.01	0.94***	0.01	1.05**	0.02	1.03**	0.01
Religion												
Protestant	---	---	---	---	---	---	---	---	---	---	---	---
Catholic	1.32	0.19	0.96	0.08	0.76	0.11	0.74*	0.10	1.05	0.22	0.95	0.10
Muslim	0.52	0.17	0.52***	0.09	1.89	0.64	0.99	0.35	0.51*	0.16	0.47***	0.07
Other	0.36	0.22	0.53*	0.15	2.77	1.70	1.48	0.93	1.20	0.61	0.44	0.16
Education Level												
None	---	---	---	---	---	---	---	---	---	---	---	---
Primary	1.57	0.40	2.45***	0.36	0.64	0.16	1.56	0.43	3.40***	**1.19**	5.68***	1.12
Secondary	3.29***	0.91	3.95***	0.64	0.30***	0.08	1.20	0.35	4.97***	1.96	8.78***	1.92
University	5.12***	1.80	5.76***	1.26	0.20***	0.07	1.12	0.39	6.00***	3.03	10.28***	2.91
Household Wealth												
Poorest	---	---	---	---	---	---	---	---	---	---	---	---
Poorer	1.38	0.31	1.79***	0.21	0.72	0.16	1.30	0.30	1.26	0.36	1.92***	0.29

Middle	1.62	0.36	2.09***	0.25	0.62*	0.14	1.29	0.29	1.50	0.46	2.75***	0.43
Richer	1.40	0.33	2.38***	0.30	0.71	0.17	1.69*	0.40	2.05*	0.59	2.86***	0.45
Richest	1.18	0.30	2.07***	0.27	0.84	0.21	1.75*	0.45	1.81	0.55	3.32***	0.53
Ethnicity and Place of Residence												
Kikuyu	---	---	---	---	---	---	---	---	---	---	---	---
Luhya	0.37***	0.09	0.42***	0.05	2.60***	0.64	1.10	0.26	0.66	0.22	0.44***	0.07
Luo	0.31***	0.09	0.27***	0.04	3.15***	0.88	0.86	0.24	0.39**	0.14	0.21***	0.03
Urban Others	0.94	0.29	0.56**	0.10	1.08	0.33	0.61	0.17	0.54	0.27	0.53**	0.12
Rural Others	0.75	0.13	0.45***	0.04	1.30	0.22	0.58**	0.09	0.97	0.26	0.37***	0.05
Family Size Concordance												
Same	---	---	---	---	---	---	---	---	---	---	---	---
Husband More	0.64*	0.11	0.76**	0.67	1.56*	0.27	1.18	0.20	0.66	0.15	0.55***	0.07
Husband Fewer	1.04	0.23	0.77*	0.10	0.96	0.21	0.74	0.16	1.30	0.35	1.31	0.21
Unsure	0.46***	0.10	0.52***	0.05	2.16***	0.45	1.12	0.24	0.30***	0.10	0.61***	0.08
Year of Interview												
2003	---	---	---	---	---	---	---	---	---	---	---	---
2008	0.73	0.14	1.22*	0.12	1.36	0.26	1.67**	0.31	1.20	0.29	2.13***	0.29
2009	0.58**	0.11	1.26*	0.13	1.73**	0.33	2.18***	0.42	0.76	0.20	1.85***	0.24
2014	0.93	0.15	0.244	0.22	1.07	0.17	2.62***	0.40	0.90	0.20	3.95***	0.45

Reference =No Method Use, *p<0.05
**p<0.01 ***p<0.001
Each Model (1-4) uses only one type of violence experience.

Appendix Table 6.7 Multinomial Logistic Regression Estimates of Relative Risk Ratios and Standard Errors of the Association Between Intimate Partner Violence Experience and Contraceptive Use as Dependent Variable - Traditional Method or Modern Method Compared to No Method Use (Reference) Stratified by Fertility Intention- Wants No More Children, Wants Children Soon, Wants Children Later, Kenya Demographic and Health Surveys 2003, 2008-09, and 2014.

	Wants No More Children (N=4,454)				**Wants Children Soon (N=1,973)**				**Wants Children Later (N=3,108)**			
	Traditional Method		**Modern Method**		**Traditional Method**		**Modern Method**		**Traditional Method**		**Modern Method**	
	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE	RRR	SE
Model 1: Any vs. None	0.82	0.11	1.09	0.08	1.20	0.16	1.32*	0.17	0.99	0.18	1.39***	0.13
Model 2: Physical vs. None	0.84	0.12	1.04	0.08	1.19	0.16	1.24	0.17	0.93	0.18	1.34**	0.13
Model 3: Sexual vs. None	0.85	0.16	1.14	0.11	0.17	0.21	1.33	0.24	1.05	0.28	1.29	0.17
Model 4: Emotional vs. None	0.77	0.12	1.10	0.08	1.29	0.19	1.42*	0.21	1.23	0.26	1.49***	0.16
Age (years)	1.01	0.01	0.95***	0.00	0.99	0.01	0.94***	0.01	1.05**	0.02	1.03**	0.01
Religion												
Protestant	---	---	---	---	---	---	---	---	---	---	---	---
Catholic	1.32	0.19	0.96	0.08	0.76	0.11	0.74*	0.10	1.05	0.22	0.95	0.10
Muslim	0.52	0.17	0.52***	0.09	1.89	0.64	0.99	0.35	0.51*	0.16	0.47***	0.07
Other	0.36	0.22	0.53*	0.15	2.77	1.70	1.48	0.93	1.20	0.61	0.44	0.16
Education Level												
None	---	---	---	---	---	---	---	---	---	---	---	---
Primary	1.57	0.40	2.45***	0.36	0.64	0.16	1.56	0.43	3.40***	**1.19**	5.68***	1.12
Secondary	3.29***	0.91	3.95***	0.64	0.30***	0.08	1.20	0.35	4.97***	1.96	8.78***	1.92
University	5.12***	1.80	5.76***	1.26	0.20***	0.07	1.12	0.39	6.00***	3.03	10.28***	2.91

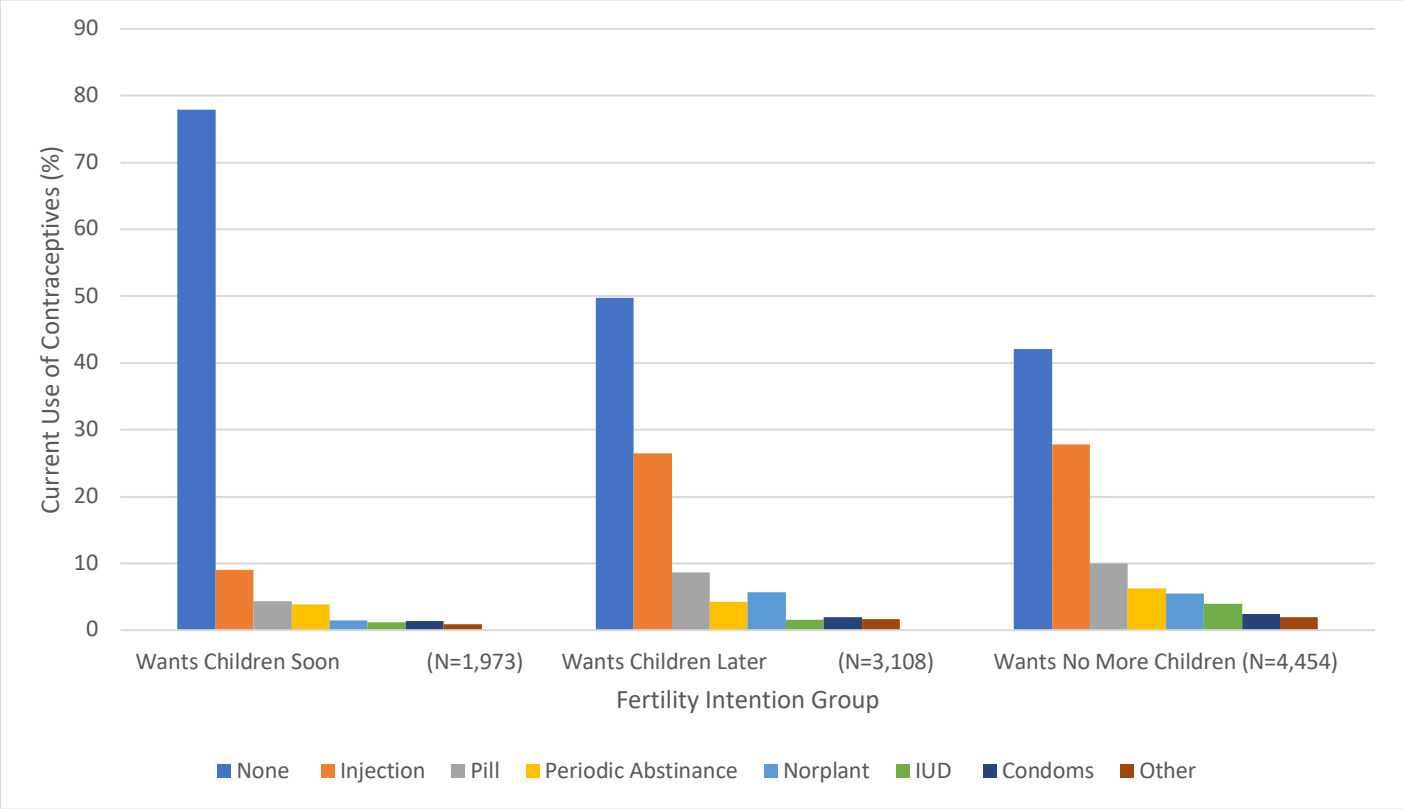
Household Wealth												
Poorest	---	---	---	---	---	---	---	---	---	---	---	---
Poorer	1.38	0.31	1.79***	0.21	0.72	0.16	1.30	0.30	1.26	0.36	1.92***	0.29
Middle	1.62	0.36	2.09***	0.25	0.62*	0.14	1.29	0.29	1.50	0.46	2.75***	0.43
Richer	1.40	0.33	2.38***	0.30	0.71	0.17	1.69*	0.40	2.05*	0.59	2.86***	0.45
Richest	1.18	0.30	2.07***	0.27	0.84	0.21	1.75*	0.45	1.81	0.55	3.32***	0.53
Ethnicity and Place of Residence												
Kikuyu	---	---	---	---	---	---	---	---	---	---	---	---
Luhya	0.37***	0.09	0.42***	0.05	2.60***	0.64	1.10	0.26	0.66	0.22	0.44***	0.07
Luo	0.31***	0.09	0.27***	0.04	3.15***	0.88	0.86	0.24	0.39**	0.14	0.21***	0.03
Urban Others	0.94	0.29	0.56**	0.10	1.08	0.33	0.61	0.17	0.54	0.27	0.53**	0.12
Rural Others	0.75	0.13	0.45***	0.04	1.30	0.22	0.58**	0.09	0.97	0.26	0.37***	0.05
Family Size Concordance												
Same	---	---	---	---	---	---	---	---	---	---	---	---
Husband More	0.64*	0.11	0.76**	0.67	1.56*	0.27	1.18	0.20	0.66	0.15	0.55***	0.07
Husband Fewer	1.04	0.23	0.77*	0.10	0.96	0.21	0.74	0.16	1.30	0.35	1.31	0.21
Unsure	0.46***	0.10	0.52***	0.05	2.16***	0.45	1.12	0.24	0.30***	0.10	0.61***	0.08
Year of Interview												
2003	---	---	---	---	---	---	---	---	---	---	---	---
2008	0.73	0.14	1.22*	0.12	1.36	0.26	1.67**	0.31	1.20	0.29	2.13***	0.29
2009	0.58**	0.11	1.26*	0.13	1.73**	0.33	2.18***	0.42	0.76	0.20	1.85***	0.24
2014	0.93	0.15	0.244	0.22	1.07	0.17	2.62***	0.40	0.90	0.20	3.95***	0.45

Reference =No Method Use, *p<0.05 **p<0.01
***p<0.001
Each Model (1-4) uses only one type of violence experience.

Appendix Table 6.8. Common Reasons for Contraceptive Non-Use Among Reproductive Aged Women in the Kenya Demographic and Health Surveys 2003, 2008-09, and 2014**.**

	N	%
Religious Prohibition	473	17.88
Wants More Children	379	14.32
Fears Side Effects	368	13.91
Respondent Opposed	278	10.51
Health Concerns	266	10.05
Husband Opposed	164	6.20
Infrequent Sex	145	5.48

Appendix *Figure 6.3.* Contraceptive Method Mix across Fertility Intention Groups, Kenya Demographic and Health Survey 2003, 2008-09, and 2014.



Chapter Seven: Mediation of Women's Autonomy in the Relationship between Intimate Partner Violence and Contraceptive Use: An Examination of the Role of Healthcare Decision-making in Kenya.

7.1 Introduction

This chapter examines the role of women's autonomy in the relationship between IPV and contraceptive use. Women's autonomy, the ability of women to make strategic life choices has been examined as a mechanism primarily to promote contraceptive use (Kabeer, 1999, 2001, Upadhyay et al., 2014). Conversely, in situations where a woman experiences violence, autonomy may be limited or non-existent and women may be subject to patriarchal norms of husbands and their community, further constraining their choices (Gazmararian et al., 2015,).

Most studies have examined the direct impact of autonomy proxies, for example how women's autonomy measures, such as increased household decision-making, relates to contraceptive use or IPV experience but very few studies have examined indirect effects of autonomy.

Few studies have examined the role of women's autonomy as a mediator, that is, that it is as a mechanism through which IPV affects contraceptive use. In addition, a large proportion of studies focus primarily on dimensions of autonomy within the household, for example decision-making over household purchases or visits to family and friends (Mishra & Tripathi, 2011, Upadhyay & Karasek, 2012, Upadhyay et al., 2014). Few studies have examined the roles of healthcare decision-making autonomy or sexual autonomy on this relationship (DeRose & Ezeh, 2010, Upadhayay, 2014). This study aims to focus primarily on healthcare decision-making as a proxy for women's autonomy.

7.2 Hypotheses

This study will examine women's autonomy, measured by women's healthcare decision-making, as a mediator. The main hypothesis is that women's healthcare decision-making will mediate the relationship between sexual and emotional IPV and contraceptive use.

7.3 Analytic Approach

7.3.1 Data and Sample.

Data for this study was described in Chapter 4 and is a pooled sample of the 2003, 2008, 2009, and 2014 Kenya Demographic and Health Surveys. The sample for this analysis was also described in Chapter 4. However, it is further restricted to include only women who described wanting to limit or space their childbearing because of their greater motivation to use contraceptives, excluding women who wanted to have a child in the next two years. The final sample was N=7,617 respondents.

7.3.2 Study Measures.

Independent variables for this study included experiences of sexual and emotional intimate partner violence in the past 12 months (recent IPV). The specifics of IPV questions used were described in Chapter 4.

The mediator variable is whether a woman made final decisions about her own healthcare with the following categories: (a) self only, meaning only she had the final decision about healthcare and (b) anyone else, meaning a husband or another party had joint or sole decision-making power over her healthcare decisions.[21]

[21] A sensitivity analysis was performed examining healthcare decision-making in 3 levels, self only, joint, and husband only. This analysis showed that both joint decision-making and husband only decision-making reduced modern contraceptive use when compared to self-only. Therefore, for ease of understanding the mediation analysis, joint and husband only were collapsed.

The dependent variable was current modern contraceptive use. This was a dichotomous variable with categories of modern method and no method/other method.

Several independent variables were used to capture demographic characteristics that might confound the relationship between violence exposure and contraceptive use. Covariates included age in years[22], a categorical variable for number of living children at the time of interview (no children, 1-2 children, 3-4 children, and 5+ children)[23], education (no education, primary, secondary and university or higher), household wealth[24] (poor, poorer, middle, richer, richest), ethnicity and residence[25] (Kikuyi, Luhya, Luo, rural others, urban others), religion (Roman Catholic, Protestant, Muslim, and Other).

7.3.4. Analysis.

Initial analyses involved examining the descriptive statistics of key sociodemographic variables across contraceptive use types and examining bivariate associations between independent variables and dependent variables using a series of chi-squared tests of independence. An additional bivariate test and chi-squared test were also run to establish that an association existed between violence experience and the hypothesized intervening variable (mediator) of healthcare decision-making. After key relationships models were established I

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[22] Sensitivity analysis was conducted including a categorical age covariate. Model fit did not differ significantly, therefore, a continuous covariate was chosen for ease of interpretation.

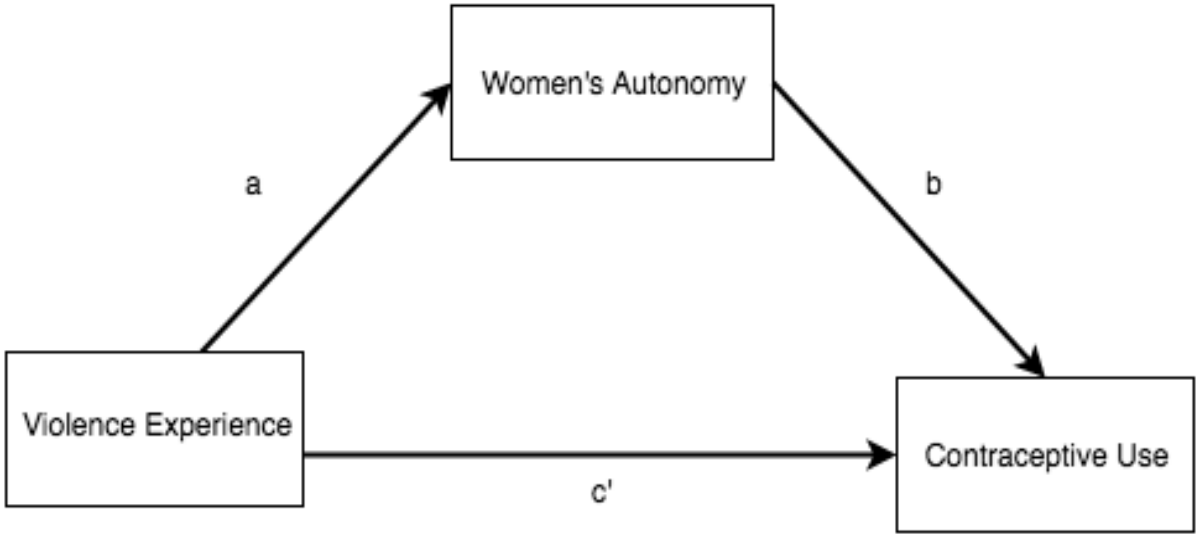
[23] Sensitivity analysis was conducted including a continuous variable for number of living children at the time of interview. The model fit did not differ significantly from the model with the categorical variable. Therefore, I present the model with the categorical covariate to demonstrate the variation in contraceptive use among different child categories.

[24] Wealth is categorized using the DHS wealth index. The variable is treated as categorical with five levels representing the *poorest, poorer, middle, richer,* and *richest* households in terms of wealth. A series of items was asked of each participant and each the items was recoded and used in a principal components analysis. The score from the principal components analysis was then reclassified into quintiles representing poorest (lowest quintile), poorer (lower quintile), middle (middle quintile), richer (higher quintile), and richest (highest quintile) by wealth in households. The index is based on prior work of Filmer and Pritchett (1999) where a score (already created) for household wealth was developed from responses to questions about the assets and amenities of each respondent's household. These categorical questions about assets asked the head of household whether he/she owned each of the following items: fridge, freezer, dishwasher, TV, video, air conditioning, microwave, cooker/stove, electric fan, water heater, heater, sewing machine, iron, radio, washing machine, camera, bicycle, motorcycle, private car, taxi, truck, computer, cell phone, and satellite dish. Questions about amenities asked about the availability of electricity, type of flooring, number of rooms, sources of water, waste disposal, and type of toilet.

[25] A composite variable was created due to the high multicollinearity between urban/rural residence and ethnicity.

used the MacKinnon (2008) mediation analysis procedure[26] in order to test whether healthcare decision-making is a mediator in the relationship between sexual and emotional intimate partner violence and current contraceptive use. Next, I test a series of models using logistic regression comparing model fit characteristics and standardized coefficients across nested models. In logistic regression models each additional variable changes the scale of coefficients making comparisons across models uninterpretable (Aneshensel, 2009, Mood 2010, MacKinnon, 2008). Therefore, information needed to judge the mediation effect of an intervening variable is gathered from a single full model containing both the independent variable of interest, mediator of interest, and all covariates hypothesized to affect the relationship (Aneshensel, 2009).

Figure 7.1. Model of Single Mediator Analysis for Logistic Regression



I employed a single-mediator model which is shown in Figure 7.1, where IPV experience represents the independent variable, the mediator is women's autonomy, and the dependent variable is contraceptive use. The rectangles and the arrows in the diagram represent relations among variables. The relationship among the variables is shown using arrow labeled with small

[26] A separate set of analyses was conducted to examine if autonomy acted as a moderator in the relationship between IPV and contraceptive use. No significant relationships were found in these analyses.

letters, with *a* representing the relation of IPV experience to healthcare decision-making, *b* representing the relation of healthcare decision-making to modern contraceptive use adjusted for IPV experience, and *c′* the relation of IPV experience to modern contraceptive use adjusted for IPV experience (Aneshensel, 2008, MacKinnon, 2008). To more fully understand the decomposition effects of the model I employed the KHB method derived by Karlson, Holm, and Breen (2010). The KHB-method compares the full model with a reduced model that substitutes the mediators by the residuals of the mediators from a regression of the mediators on the key-variables of interest in order to compare across nested models (Karlson, Holm, Breen 2010). The procedure is adapted for logistic regression and the unbiased decomposition of the total effects of a variable into a direct and indirect effects (Aneshensel, 2008, Karlson, Holm, & Breen, 2010, Kohler, Karlson, & Holm, 2011). The coefficients of the key independent variables in the models with the residuals of the mediators (the rescaled reduced model) are their total effects (c); and the coefficients of the key independent variables in the models with the actual mediators (the full model) are their direct effects (c'). The multiplication of the coefficients (a*b*) in the two models are the mediated effect, and the proportion of the total effect mediated is (a*b*)/c (Karlson, Holm, & Breen, 2010, Kohler, Karlson, & Holm, 2011). All analyses were unweighted due to the limitations of the KBH method.

7.4 Results

7.4.1 Descriptive Characteristics.

Table 7.1 shows the sociodemographic characteristics of the study sample by current contraceptive use. Modern contraceptive users and non-users were remarkably similar in religion, education, ethnicity, and wealth. Although the majority of users and non-users, as well as the population as a whole, are Protestants, it is notable that only 5% of contraceptive users are

Muslim whereas almost 23% of non-users are Muslim. In addition, non-users tended to be less educated with nearly 28.5% of women reporting no education, from the poorest wealth category (32.6%) and nearly 60% from a rural "other" ethnic group.

Modern contraceptive users and their non-using counterparts showed similar distributions of ability to make healthcare decisions.

Unfortunately, both groups experienced substantial and similar recent sexual and emotional violence frequency. Over 10% of each group experience recent sexual violence by a partner, with 2% more modern contraceptive users reporting violence than non-users. In addition, modern contraceptive users also reported 5% greater emotional violence within the last twelve months. Chi-squared tests highlighted that all independent variables, mediators and covariates were associated with current contraceptive use. Chi-squared tests also revealed healthcare decision making was associated with recent experience of both sexual and emotional violence, meeting a requirement of mediation analysis that the mediator must have an association with the independent variable.

Table 7.1. Demographic Characteristics and X^2 Tests by Whether or Not the Respondent was Using a Modern Contraceptive Method, in Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Not Using Modern Method (N=6,021)		Using Modern Method (N=4,148)		
	N	%	N	%	X^2
Age (Mean, SE)	6,021	30.9 (8.4)	4,148	30.6 (7.0)	-0.0175 (corr)
Religion					
Protestant	3,277	54.8	2,979	72.2	678.4***
Catholic	1,142	19.1	900	21.8	
Muslim	1,345	22.5	207	5.0	
Other	219	3.7	43	1.0	
Education					
No Education	1,713	28.5	137	3.3	1200.0***
Primary	3,084	51.2	2,368	57.1	
Secondary	955	15.9	1,229	29.6	
University	269	4.5	414	10.0	
Household Wealth					
Poorest	1,962	32.6	393	9.5	793.7***
Poorer	1,065	17.7	737	17.8	
Middle	923	15.3	839	20.2	
Richer	911	15.1	955	23.0	
Richest	1,160	19.3	1,224	29.5	
Ethnicity and Place of Residence*					642.3***
Kikuyu	671	11.1	1,177	28.4	
Luhya	729	12.1	612	14.8	

Luo	754	12.5	387	9.3	
Urban Others	286	4.8	304	7.3	
Rural Others	3,581	59.5	1,666	40.2	
No. of Living Children					
0	428	7.1	63	1.5	441.5***
1-2	2,018	33.5	1,814	43.7	
3-4	1,786	29.7	1,570	37.9	
5+	1,789	29.7	701	16.9	
Final Say Healthcare					
Self	1,774	29.9	1,620	39.29	252.3***
Joint	1,886	31.7	1533.0	37.18	
Husband/Other	2,282	38.4	970.0	23.53	
Recent Sexual Violence					
Yes	813	13.5	621	15.0	4.4*
No	5,208	86.5	3,527	85.0	
Recent Emotional Violence					16.9***
Yes	1,439	23.9	1,141	27.5	
No	4,582	76.1	3,007	72.5	

*p<0.05 **p<0.01
***p<0.001
The focus of this analysis is the impact of IPV on modern methods, therefore, all people not using modern methods were aggregated. This includes those using no method and traditional methods (5.87%).

7.4.2 Multivariate Logistic Regression.

First, I examine the effects of sexual violence. The results from the multivariate logistic regression for the effects of sexual violence on use of contraception are shown in Table 2. I present three sets of models: Model 1 contains the sexual violence experience controlling for age, parity, religion, household wealth, and ethnicity and rural residence; Model 2 contains only the mediator, healthcare decision-making and covariates; and Model 3 contains both sexual violence experience and the mediator controlling for covariates. Models 1 and 3 shows that sexual violence increases the likelihood a woman will use modern contraceptives compared to non-use. Introduction of the mediator reduces the odds of using contraceptives from 1.18 (95% CI 1.02, 1.36, $p<0.05$) to 1.16 (95% CI 1.01, 1.34, $p<0.05$), maintaining significance. In Model two, women who have a partner or husband involved in healthcare decision making are 10% (OR=0.90, 95% CI=0.80, 1.00, $p<0.05$) less likely than women who are solely responsible for healthcare decision making of using modern contraceptives net covariates, the odds increase slightly and to 0.92 (95% CI 0.88,0.96, $p<0.001$) when included in the full model.

Table 7.2. Binomial Logistic Regression of Betas, Odds Ratios, and 95% Confidence Intervals in the Associations Between Sexual Violence and Healthcare Decision-making on ***Contraceptive Use*** as Dependent Variable in Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1: Violence Only			**Model 2: Autonomy Only**			**Model 3: Violence + Autonomy**		
	β	OR	95% CI	β	OR	95% CI	β	OR	95% CI
Sexual Violence									
No	---	---	---	---	---	---	---	---	---
Yes	0.16	1.18*	1.02, 1.36	---	---	---	0.15	1.16*	1.01, 1.34
Final Say Healthcare									
Self	---	---	---	---	---	---	---	---	---
Husband/Joint	---	---	---	-0.11	0.90*	0.80, 1.00	-0.10	0.92***	0.88, 0.96

Next, I examine the effects of emotional violence. In Table 7.3, I present three sets of models which identically parallel those described able for sexual violence.

As in the case of sexual violence, experience of recent emotional violence increases the likelihood women use contraceptives. The final model illustrates that women experiencing emotional violence have 22% greater adjusted odds of using modern contraceptive methods compared to non-use of modern methods net the effect of healthcare decision making.

Table 7.3. Binomial Logistic Regression of Betas, Odds Ratios, and 95% Confidence Intervals of the Associations Between Emotional Violence and Final Say in Healthcare on ***Contraceptive Use*** as Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1: Violence Only			**Model 2: Autonomy Only**			**Model 3: Violence + Autonomy**		
	β	OR	95% CI	β	OR	95% CI	β	OR	95% CI
Emotional Violence									
No	---	---	---	---	---	---	---	---	---
Yes	0.19	1.21**	1.08, 1.36	---	---	---	0.20	1.22**	1.09, 1.38
Final Say Healthcare									
Self	---	---	---	---	---	---	---	---	---
Husband/Joint	---	---	---	-0.11	0.90*	0.80, 1.00	-0.10	0.92***	0.88, 0.96

Table 7.4. Binomial Logistic Regression of Betas, Odds Ratios, and 95% Confidence Intervals of the Associations Between Sexual and Emotional Violence and ***Healthcare Decision-making*** as Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1: Sexual Violence			**Model 2: Emotional Violence**		
	β	OR	95% CI	β	OR	95% CI
Final Say in Healthcare						
Self	---	---	---	---	---	---
Husband/Joint	-0.46	0.62***	0.55, 0.72	-0.32	0.73***	0.65, 081

Table 7.4 illustrates the effect of violence experience on participation in healthcare decision-making. Model 1 includes only sexual violence controlling for age, parity, religion, household wealth, and ethnicity and rural residence and model 2 presents only emotional violence controlling for covariates. Women who experience violence – compared to those who do not –have a lower likelihood of not having sole responsibility for health decision making compared to having sole responsibility for their health decisions. In other words, they are less likely to have someone else make their health care decisions for them and more likely to make them by themselves.

All three models in Tables 7.2-7.4 show that use of contraception continues to be higher for women with more education and wealth, net of other factors. Women with primary school education or more have four times the odds of those with no education of using modern contraceptives. Contraceptive use is even higher for women with university education who have nearly 8 times the odds of using modern contraceptives versus not using, compared to women with no education. Less dramatic is the effect of increased household wealth. Women who are middle class have around two times the adjusted odds of those who are in the poorest wealth category of using modern contraceptives compared to not using modern contraceptives.

Ethnicity and religion play key roles in contraceptive non-use. Women who are Muslim or members of "other" religious groups are nearly 60% (OR=0.46, $p<0.001$; 0.42, $p<0.01$ respectively) less likely than their Protestant counterparts to use modern contraceptives. Luo and Luhya women are less likely than Kikuyu women to use modern contraceptives. Luo compared to Kikuyu women have 27% adjusted odds of using modern contraceptives compared to not using contraceptives.

7.4.3 Mediation Analysis.

The coefficients and odds ratios of the mediation analysis are shown in Figures 7.2 and 7.3. These figures illustrate that the possibility of that a partial mediation exists, therefore the KBH method is warranted to understand the decomposition between direct and indirect effects of healthcare decision making. The KBH method, which rescales logistic coefficients so nested models can be comparable indicates that healthcare decision making is a partial mediator for the relationship between intimate partner violence experience and contraceptive use. KBH estimates revealed that healthcare decision making accounts for about 15% of the difference between modern contraceptive use in women who experience sexual violence and those who do not. In contrast, it seems less important in magnitude for women experiencing emotional violence. Ability to make healthcare decisions accounted for only 5% of the indirect effect of women who experience emotional violence compared to those who do not. This finding suggests that the magnitude of the effect may not be large.

Figure 7.2. Mediation Analysis of Healthcare Decision Making in the Relationship Between Sexual Violence and Contraceptive Use Using Multivariate Logistic Regression Coefficients and Odds Ratios.

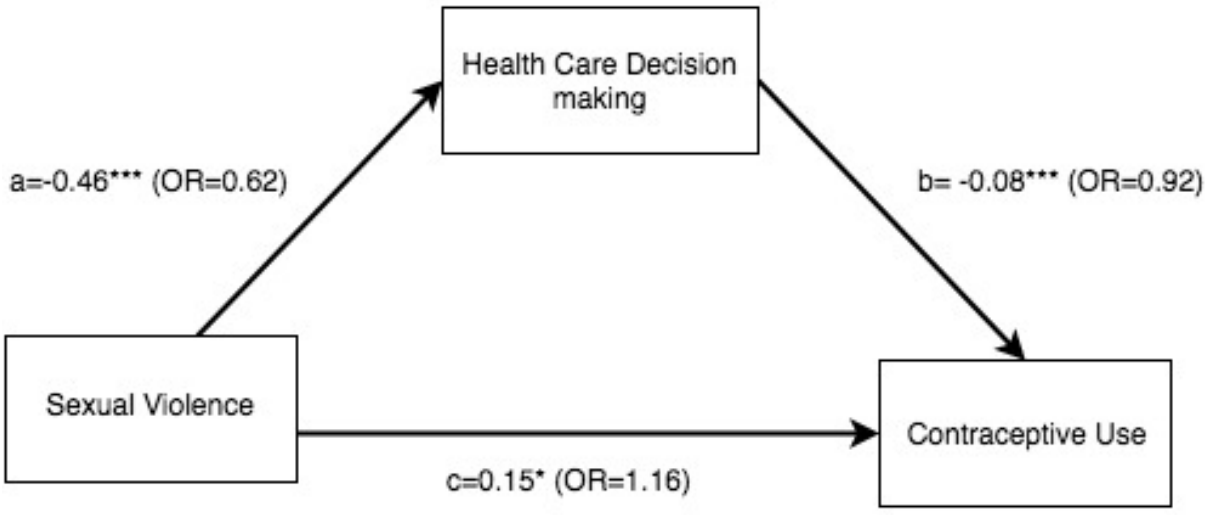
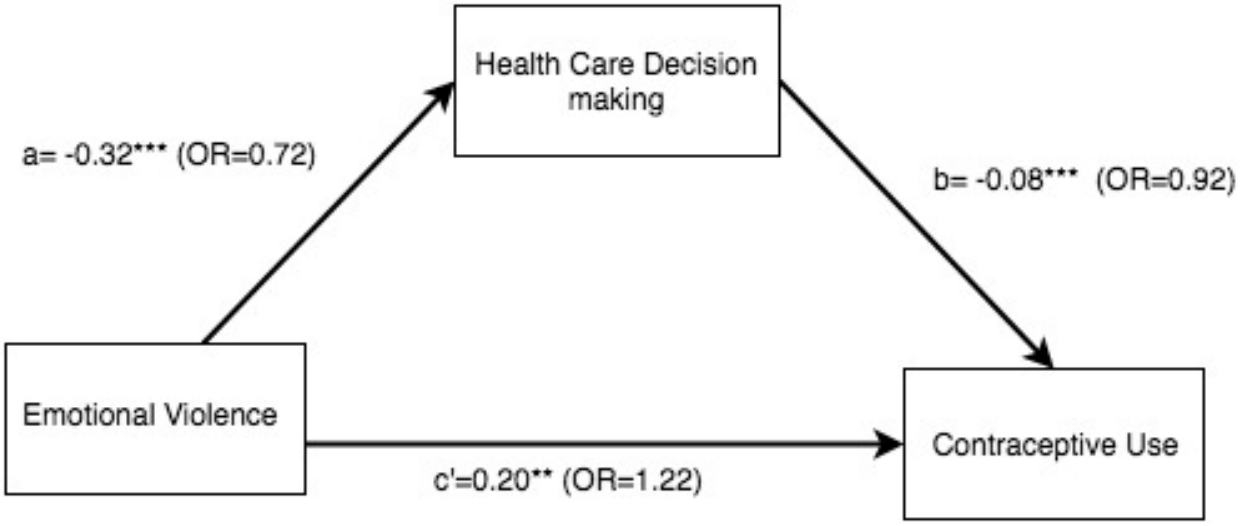


Figure 7.3. Mediation Analysis of Healthcare Decision Making in the Relationship Between Emotional Violence and Contraceptive Use Using Multivariate Logistic Regression Coefficients and Odds Ratios.



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7.5 Discussion

In this study, I examined whether healthcare decision making, representing a facet of women's autonomy, mediates the relationship between intimate partner violence and recent modern contraceptive use in Kenyan. This study found that there was some mediated effect of healthcare decision making, suggesting that although inclusion of the variable resulted in extremely small changes in final model coefficients, it is important to consider inability to make healthcare decisions as a possible barrier to contraceptive access for women in abusive partnerships. Prior work has suggested that abusive relationships may result in women making choices on their own without consulting their spouse (DeRose & Ezeh, 2010). My multivariate results are consistent with this idea because they indicate that exposure to recent sexual or emotional violence leads to a lower likelihood that women will make healthcare decisions with a partner compared to on their own.

The result that women were slightly less likely to use modern contraceptives if a husband was involved in decision making was notable. This finding may indicate that men are greater barriers for contraceptive use. Known or perceived disapproval of her spouse may undermine a woman's ability to use contraception even if she wants to avoid pregnancy. The 2003 KDHS found that that 28% of women thought their husband disapproved of family planning compared to 18% of women themselves. Although it is outside the scope of this study, it is important to consider whether and how male involvement in health care decision making may undermine contraceptive use. Previous research suggests that women often defer to husbands in patriarchal societies (DeRose & Ezeh, 2010, Kabeer, 2005, Kabagenyi et al, 2014, Mboane & Bhatta, 2015). A Ugandan study found that in rural areas when men were the primary decision-makers at the household level, they acted as obstacles to women's utilization of family planning service

(Kabagenyi et al, 2014). Men who were major decision-makers or holders of financial assets saw the cost of family planning to be an added and unneeded expense (Mboane & Bhatta, 2015). These financial objections, which are rarely studied need to be taken into account when designing strategies that seek to change men's attitudes towards the use of modern contraceptives. Future research is needed to explore whether these and/or other reasons may explain how a healthcare decision hinders a woman's intention to use contraception in Kenya.

Additionally, the descriptive findings of this work are also important. First, a very small percentage of Muslim women in the sample were using modern contraceptives. In addition, being non-Kikuyu, coupled with rural residence, decreases contraceptive use. Specific reasons for contraceptive non-use, whether disapproval, religious objection, or traditional gender norms which might undermine women's control in these groups must be studied within the Kenyan context.

There are several limitations to the study. First, the study relied on only one dichotomous measure of health care decision making. This measure is unlikely to capture all the dimensions of healthcare decision-making and could have underpowered the true effect of the variable in models. One possible solution to this issue is the creation of a measurement of healthcare decision-making through a scale or measurement of several variables focusing on dimensions of decision-making may account for greater variation. However, this strategy may also introduce greater endogeneity bias into the analysis (Eswaran & Malhothra, 2011).

Another issue with the study was the contraceptive method mix of the sample, where nearly 23% of the women used injectable contraceptives in this study, while less than 2% reported using condoms recently. This presents a problem with examining if women are able to use barrier methods in the face of abuse. The increased contraceptive use pattern may not hold

true for condom use, where IPV has shown to diminish condom negotiation, particularly in long-term partnerships (Campbell, 2002, Jewkes, Levin, & Penn-Kekena, 2003, Wood, 2000). Future studies in the region must make sure their samples contain a more varied contraceptive method mix in order to examine abuse impacts on different contraceptive types.

Finally, researchers must disentangle the true meaning of joint decision-making within household contexts, particularly in contexts where women are subordinate due to gender norms (Akinkorah, Dickson, & Seidu, 2018). In addition, policies should simultaneously aim to increase empowerment of women, but discourage IPV within these contexts and encourage more bargaining power in the public sphere for women. In addition, contraceptive interventions should consider ways to screen for IPV in order to detect and possible coercion women might face in these situations (Pulerwitz et al., 2015, McCloskey, Boonzaier, Steinbrenner, & Hunter, 2016).

7.6 Appendices. Tables and Figures

Appendix Table 7.2. Binomial Logistic Regression of Betas, Odds Ratios, and 95% Confidence Intervals in the Associations Between Sexual Violence and Healthcare Decision-making on ***Contraceptive Use*** as Dependent Variable in Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014

	Model 1: Violence Only			**Model 2: Autonomy Only**			**Model 3: Violence + Autonomy**		
	β	OR	95% CI	β	OR	95% CI	β	OR	95% CI
Sexual Violence									
No	---	---	---	---	---	---	---	---	---
Yes	0.16	1.18*	1.02, 1.36	---	---	---	0.15	1.16*	1.01, 1.34
Final Say Healthcare									
Self	---	---	---	---	---	---	---	---	---
Husband/Joint/ Other	---	---	---	-0.08	0.92***	0.80, 1.00	-0.10	0.92***	0.81, 1.01
Age (years)	-0.02	0.98***	0.97, 0.99	-0.02	0.98***	0.97, 0.99	-0.02	0.97***	0.96, 0.98
Living Children									
0	---	---	---	---	---	---	---	---	---
1-2	1.01	2.75***	1.58, 4.79	1.00	2.71**	1.53, 4.78	0.99	7.49***	5.56, 10.08
3-4	1.17	3.21***	1.83, 5.65	1.15	3.16***	1.78, 5.63	1.14	11.33***	8.32, 15.44
5+	0.80	2.22**	1.24, 3.96	0.79	2.21**	1.22, 3.99	0.78	8.59***	6.17, 11.97
Religion									
Protestant	---	---	---	---	---	---	---	---	---
Catholic	-0.08	0.92	0.81, 1.04	-0.07	0.93	0.82, 1.05	-0.07	0.94	0.84, 1.05
Muslim	-0.77	0.46***	0.38, 0.57	1.84	0.47***	0.38, 0.59	-0.74	0.44***	0.37, 0.53
Other	-0.71	0.42**	0.33, 0.74	-0.70	0.50**	0.33, 0.75	-0.70	0.47***	0.33, 0.69
Education Level									
None	---	---	---	---	---	---	---	---	---
Primary	1.27	3.56***	2.85, 4.46	1.28	3.59***	2.87, 4.49	1.27	4.41***	3.59, 5.42
Secondary	1.60	4.98***	3.88, 6.37	1.61	5.01***	3.91, 6.42	1.61	6.25***	4.98, 7.85
University	1.83	6.23***	4.54, 8.55	1.84	6.27***	4.56, 8.61	1.83	7.83***	5.92, 10.37
Household Wealth									
Poorest	---	---	---	---	---	---	---	---	---

Poorer	0.61	1.84***	1.55, 2.19	0.61	1.84***	1.54, 2.19	0.61	1.83***	1.56, 2.16
Middle	0.81	2.24***	1.87, 2.68	0.79	2.21***	1.85, 2.65	0.80	2.25***	1.91, 2.66
Richer	0.88	2.42***	2.02, 2.91	0.88	2.41***	2.00, 2.89	0.88	2.37***	2.00, 2.80
Richest	0.91	2.49***	2.05, 3.02	0.89	2.44***	2.01, 2.96	0.90	2.56***	2.14, 3.05
Ethnicity and Place of Residence									
Kikuyu	---	---	---	---	---	---	---	---	---
Luhya	-0.70	0.50***	0.42, 0.59	-0.65	0.52***	0.44, 0.62	-0.67	0.55***	0.47, 0.65
Luo	-1.30	0.27***	0.23, 0.33	-1.26	0.28***	0.23, 0.34	-1.27	0.30***	0.25, 0.36
Urban Others	-0.51	0.60***	0.47, 0.77	-0.49	0.61***	0.47, 0.79	-0.5	0.63***	0.50, 0.78
Rural Others	-0.81	0.45***	0.38, 0.52	-0.78	0.45***	0.40, 0.53	-0.79	0.49***	0.43, 0.56
Year of Interview									
2003	---	---	---	---	---	---	---	---	---
2008	0.41	1.50***	1.29, 1.75	0.41	1.51***	1.29, 1.76	0.40	1.56***	1.35, 1.79
2009	0.41	1.51***	1.30, 1.75	0.41	1.50***	1.29, 1.75	0.41	1.44***	1.25, 1.65
2014	1.07	2.91***	2.55, 3.31	1.06	2.88***	2.53, 3.28	1.06	2.72***	2.41, 3.07

Reference = No/Other Method Use

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

Appendix Table 7.3. Binomial Logistic Regression of the Associations Between Emotional Violence and Final Say in Healthcare on ***Contraceptive Use*** as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1: Violence Only			**Model 2: Autonomy Only**			**Model 3: Violence + Autonomy**		
	β	OR	95% CI	β	OR	95% CI	β	OR	95% CI
Emotional Violence									
No	---	---	---	---	---	---	---	---	---
Yes	0.19	1.21***	1.08, 1.36	---	---	---	0.20	1.22***	1.09, 1.38
Final Say Healthcare									
Self	---	---	---	---	---	---	---	---	---
Husband/Joint/Other	---	---	---	-0.08	0.92***	0.80, 1.00	-0.10	0.92***	0.88, 0.96
Age (years)	-0.02	0.98***	0.97, 0.99	-0.02	0.98***	0.96, 0.99	-0.02	0.98***	0.97, 0.98
Living Children									
0	---	---	---	---	---	---	---	---	---
1-2	1.00	2.72***	1.56, 4.73	1.00	2.71**	1.53, 4.78	0.99	2.67**	1.51, 4.72
3-4	1.15	3.17***	1.80, 5.57	1.15	3.16***	1.78, 5.63	1.14	3.10***	1.74, 5.52
5+	0.79	2.19**	1.23, 3.92	0.79	2.21**	1.22, 3.99	0.78	2.16*	1.19, 3.91
Religion									
Protestant	---	---	---	---	---	---	---	---	---
Catholic	-0.08	0.92	0.81, 1.04	-0.07	0.93	0.82, 1.05	-0.07	0.93	0.82, 1.05
Muslim	-0.76	0.47***	0.38, 0.57	1.84	0.47***	0.38, 0.59	-0.74	0.48***	0.39, 0.59
Other	-0.71	0.49**	0.33, 0.74	-0.70	0.50**	0.33, 0.75	-0.70	0.49**	0.33, 0.74
Education Level									
None	---	---	---	---	---	---	---	---	---

Primary	1.27	3.57***	2.85, 4.47	1.28	3.59***	2.87, 4.49	1.27	3.58***	2.86, 4.48
Secondary	1.60	4.99***	3.89, 6.39	1.61	5.01***	3.91, 6.42	1.61	5.02***	3.91, 6.43
University	1.84	6.28***	4.58, 8.63	1.84	6.27***	4.56, 8.61	1.83	6.34***	4.61, 8.72
Household Wealth									
Poorest	---	---	---	---	---	---	---	---	---
Poorer	0.61	1.84***	1.54, 2.19	0.61	1.84***	1.54, 2.19	0.61	1.83***	1.54, 2.19
Middle	0.81	2.24***	1.87, 2.68	0.79	2.21***	1.85, 2.65	0.80	2.22***	1.85, 2.66
Richer	0.88	2.43***	2.02, 2.92	0.88	2.41***	2.00, 2.89	0.88	2.43***	2.02, 2.92
Richest	0.92	2.50***	2.06, 3.03	0.89	2.44***	2.01, 2.96	0.90	2.48***	2.04, 3.01
Ethnicity and Place of Residence									
Kikuyu	---	---	---	---	---	---	---	---	---
Luhya	-0.71	0.49***	0.41, 0.59	-0.65	0.52***	0.44, 0.62	-0.67	0.50***	0.42, 0.60
Luo	-1.31	0.27***	0.23, 0.33	-1.26	0.28***	0.23, 0.34	-1.27	0.28***	0.23, 0.33
Urban Others	-0.51	0.60***	0.47, 0.77	-0.49	0.61***	0.47, 0.79	-0.5	0.60***	0.46, 0.78
Rural Others	-0.80	0.45***	0.39, 0.52	-0.78	0.45***	0.40, 0.53	-0.79	0.46***	0.39, 0.53
Year of Interview									
2003	---	---	---	---	---	---	---	---	---
2008	0.4	1.50***	1.28, 1.75	0.41	1.51***	1.29, 1.76	0.40	1.49***	1.27, 1.74
2009	0.41	1.51***	1.30, 1.75	0.41	1.50***	1.29, 1.75	0.41	1.50***	1.29, 1.75
2014	1.06	2.87***	2.53, 3.28	1.06	2.88***	2.53, 3.28	1.06	2.85***	2.50, 3.25

Reference = No/Other Method Use

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

Appendix Table 7.4. Binomial Logistic Regression of Betas, Odds Ratios, and 95% Confidence Intervals of the Associations Between Sexual and Emotional Violence and ***Healthcare Decision-making*** as the Dependent Variable, Kenya Demographic and Health Surveys 2003, 2008, 2009, and 2014.

	Model 1: Sexual Violence			**Model 2: Emotional Violence**		
	β	OR	95% CI	β	OR	95% CI
Final Say in Healthcare						
Self	---	---	---	---	---	---
Husband/Joint	-0.46	0.62***	0.55, 0.72	-0.32	0.73***	0.65, 081
Age (years)	-0.02	0.97***	0.96, 0.98	-0.02	0.98***	0.97, 0.98
Living Children						
0	---	---	---	---	---	---
1-2	0.99	7.49***	5.56, 10.08	0.99	2.67**	1.51, 4.72
3-4	1.14	11.33***	8.32, 15.44	1.14	3.10***	1.74, 5.52
5+	0.78	8.59***	6.17, 11.97	0.78	2.16*	1.19, 3.91
Religion						
Protestant	---	---	---	---	---	---
Catholic	-0.07	0.94	0.84, 1.05	-0.07	0.93	0.82, 1.05
Muslim	-0.74	0.44***	0.37, 0.53	-0.74	0.48***	0.39, 0.59
Other	-0.70	0.47***	0.33, 0.69	-0.70	0.49**	0.33, 0.74
Education Level						
None	---	---	---	---	---	---
Primary	1.27	4.41***	3.59, 5.42	1.27	3.58***	2.86, 4.48
Secondary	1.61	6.25***	4.98, 7.85	1.61	5.02***	3.91, 6.43
University	1.83	7.83***	5.92, 10.37	1.83	6.34***	4.61, 8.72

Household Wealth						
Poorest	---	---	---	---	---	---
Poorer	0.61	1.83***	1.56, 2.16	0.61	1.83***	1.54, 2.19
Middle	0.80	2.25***	1.91, 2.66	0.80	2.22***	1.85, 2.66
Richer	0.88	2.37***	2.00, 2.80	0.88	2.43***	2.02, 2.92
Richest	0.90	2.56***	2.14, 3.05	0.90	2.48***	2.04, 3.01
Ethnicity and Place of Residence						
Kikuyu	---	---	---	---	---	---
Luhya	-0.67	0.55***	0.47, 0.65	-0.67	0.50***	0.42, 0.60
Luo	-1.27	0.30***	0.25, 0.36	-1.27	0.28***	0.23, 0.33
Urban Others	-0.5	0.63***	0.50, 0.78	-0.5	0.60***	0.46, 0.78
Rural Others	-0.79	0.49***	0.43, 0.56	-0.79	0.46***	0.39, 0.53
Year of Interview						
2003	---	---	---	---	---	---
2008	0.40	1.56***	1.35, 1.79	0.40	1.49***	1.27, 1.74
2009	0.41	1.44***	1.25, 1.65	0.41	1.50***	1.29, 1.75
2014	1.06	2.72***	2.41, 3.07	1.06	2.85***	2.50, 3.25

Appendix Table 7.5. Women's Perception of Husband's Approval of Family Planning Among Reproductive Aged Women in the Kenya Demographic and Health Survey 2003 (N=3,256).

	N	%
Approves	1,902	58.42
Disapproves	917	28.16
Unsure	437	13.42

Appendix Table 7.6. Women's Approval of Family Planning Among Reproductive Aged Women in the Kenya Demographic and Health Survey 2003 (N=3,256).

	N	%
Approves	2,566	78.81
Disapproves	604	18.55
Unsure	86	2.64

Appendix Table 7.7. Final Say in Family Planning Use Among Reproductive Aged Women in the Kenya Demographic and Health Survey 2009 and 2014 (N=4,803).

	N	%
Self	1,406	29.27
Husband/ Other	564	11.75
Joint	2,833	58.98

Note: Asked only of contraceptive users.

Chapter Eight: Key Findings, Strengths, Limitations, Implications for Public Health in Kenya, and Conclusions

8.1 Summary of Key Findings

The objective of this dissertation is to examine the association between IPV experience and contraceptive use in three studies using the KDHS. In Chapters 5, 6, and 7 I integrated the social ecological model and theory of gender and power to answer three questions:

1. Does IPV experience affect fertility intentions?

    Sub questions: Does IPV have greater effect on spacing versus limiting? Does the association of IPV on fertility intentions differ by IPV type?

2. Does IPV experience affect contraceptive use when taking fertility intentions into account?

    Sub questions: What types of IPV have more of an effect on use/nonuse of contraception for women who want to have additional children soon compared to spacing or limiting fertility?

3. Does healthcare autonomy mediate the association between IPV and contraceptive use, taking into account fertility intentions?

There are three overall findings in this dissertation. First, IPV did have a significant effect on fertility intentions as described in Chapter 5. IPV experience increased the likelihood of a woman wanting to limit fertility (wanting no more children). Further, when women's fertility intentions are disaggregated by the timing of additional children this result remained significant, i.e. IPV experience is associated wanting to limit children vs. wanting to space children. These findings are consistent with several other studies that suggest that women who experience violence are unlikely to want to raise future children within an abusive environment, a concept I call the *uncertain futures* hypothesis (Alio et al. 2009, Biddlecom & Fapohunda, 1998, Rhodes et al., 2010). In addition, the association did significantly differ by the type of violence the woman

experienced. Significant associations between IPV and fertility intentions were only found in those experiencing sexual or emotional IPV; however, no significant associations were found between physical IPV experience and fertility intentions.

Second, IPV experience was significantly associated with increased contraceptive use but only for women with an interest in having a child soon or spacing their next pregnancy as described in Chapter 6. For women wanting no additional children, IPV was not associated with the odds of using contraception (either modern or traditional methods). In contrast, among women who wanted to delay childbearing -- a group motivated to use contraceptives -- IPV experience was associated with an increased use of modern methods. For women wanting a child right away -- a group less likely to want to use contraceptives -- IPV experience was also associated with more modern method use. This result indicates that the effect of IPV on contraceptive use must be considered in tandem with a woman's fertility goals, a key concept missing from previous studies (Alio et al. 2009, Emenike et al., 2008). In addition, IPV experience may alter fertility intentions. A woman whose fertility goals may otherwise align with no contraceptive use, may be more likely to use modern contraceptives in an abusive environment. In contrast, IPV significantly reduced traditional contraceptive use. One explanation for this discrepancy are the classification of types of contraceptives that are considered modern compared to traditional in the sample. Injection, classified as a modern contraceptive, made up the largest percentage of the modern methods group and is a method that can be used without the knowledge or participation of a partner. The traditional methods group, which included lactational amenorrhea and periodic abstinence, needed partner participation to be employed effectively. The increased use of modern methods within women subjected to all types of contraceptives is similar to previous studies done in sub-Saharan Africa, which also

show increased use of modern contraceptives with violence exposure (Alio et al., 2009, Emenike, Lawoko, & Dalal, 2008).

Finally, healthcare decision-making was not found to be a mediator in the relationship between sexual or emotional IPV and contraceptive use as described in Chapter 7. However, healthcare decision-making was significantly associated with both IPV and contraceptive use in separate analyses. Experience of either type of IPV, without a control for healthcare decision-making resulted in lower likelihood of a woman using contraceptives. In addition, ability to make healthcare decisions by oneself with and without the presence of violence increased the likelihood a woman would use contraceptives. This indicates that although the mediation may not be the correct theoretical mechanism through which IPV impacts contraceptive use, it is still an important determinant in women's contraceptive use behavior. Women in relationships where IPV is present may be less likely to make decisions in a joint fashion or allow their husband to take sole custody of their health decisions. These women may not be more empowered, but rather be more likely to act solo, due to IPV rendering martial agreement or joint decision-making difficult. Furthermore, women may not trust their husbands to make decisions on their behalf. Identifying women's ability to make their own healthcare decisions and barriers they might face are likely to improve contraceptive use (DeRose & Ezeh, 2010, Mboane & Bhatta, 2015).

8.2 Synthesis of Key Findings

There are several conclusions to draw from this dissertation that enrich the work on IPV and contraceptive use. First, the hypothesis of uncertain futures may be a logical explanation for women's motivation for their fertility choices and contraceptive use decisions in the presence of IPV. Women experiencing IPV may be more planful, strategically considering the environment

their children may be brought up in, than previous studies have indicated. The inequality in IPV relationships, which may create chronic instability or rob a woman of mental and physical resources may motivate women to exercise strategic choices such as covert use of contraceptives (Moore, Frohwirth, & Miller, 2010; Tsai et al., 2016.)

Second, unlike previous literature, this dissertation considers fertility intentions as a key factor in determining the mechanisms through which IPV may affect contraceptive use. Although reporting of fertility intentions has well known limitations (Babaloa et al., 2017, Bumpass, 1987, Rindfuss, Morgan, & Swicegood, 1988, Thomson, 1997, Westoff & Ryder, 1977, Schoen et al., 1999), this study suggests that fertility intentions, even if imprecisely measured, play an important role in how women subjected to IPV make choices about contraceptive use. Women who are interested in having additional children soon may turn to contraceptives to space or "wait" for circumstances to change. In contrast, women who feel the need to limit their childbearing may use contraceptives regardless of IPV presence. This indicates that there is not a uniformity to the impact of IPV on contraceptive use behaviors and may hinge on fertility intentions. The fact that fertility intentions play a key role in contraceptive decision-making makes common sense and is important to consider in future studies.

This study increases evidence base of IPV and contraceptive use in sub-Saharan Africa by focusing on Kenya. Previous works have included Kenya in cross-cultural studies, but none have examined several years of data. Thus, this work provides an important case study of these associations in an African setting and indicating that IPV affects fertility intentions and contraceptive use.

Finally, this study was conducted with a very large nationally representative data set that includes standardized questions on IPV, contraceptive use, fertility intentions, and women's

autonomy. It also allowed me to examine the effects of different types of IPV separately, although the analysis suggests that many women experience multiple types of IPV simultaneously. Further work should focus on increasing understanding of emotional and sexual IPV and their effects on contraceptive use outcomes.

8.3 Strengths and Limitations

Strengths

Strengths specific to each study have been outlined in previous chapters. Here I describe those related to the dissertation as a whole. First, this dissertation employed a large secondary dataset, which allowed for the testing of IPV and contraceptive use simultaneously. In addition, the dataset allowed for the testing of mediation, which has not been conducted in previous IPV and contraceptive use studies in sub-Saharan Africa.

Second, the dissertation examined several subtypes of IPV, which allowed for the examination of patterns among violence subtypes. In addition, the work included multiple key covariates to eliminate confounding. This is important as previous studies included limited covariates and could have been subject to model misclassification.

Limitations

There were several limitations to this dissertation. First, all variables in the analysis were measured at one point in time (cross-sectional); therefore, it is impossible to determine whether IPV occurred before, during or after contraceptive use or the development of women's fertility intentions. So, the cross-sectional nature of the dataset does not allow for causal inference.

Second, discussing IPV experience is sometimes unsafe or embarrassing and could result in underreporting of experience. Furthermore, women who experienced IPV and do report it on the survey may be quite different from those who don't. For example, women who report IPV in

the survey may experience more or less IPV than average. Although the DHS employs a protocol to limit the likelihood women would not be comfortable reporting their experience, for example making sure the survey was done privately without partners or children present, respondents are still asked to report on IPV to a complete stranger in an unusual setting (the interview). In addition, since responses were retrospective, it is possible women who do not have continued experience of IPV could feel the questions are not applicable to them.

Third, although previous work in Kenya has shown that the planning aspect of women's intentions are an integral part of the decision-making that leads to contraceptive use (Kabiganye, 2015), there is a sizeable literature which suggests that reporting of fertility preferences is problematic (Agadjanian, 1998a, Watkins, 1994, 2000, Agadjanian, 2005, Watkins, 1994, Westoff, 1998) So, the fertility intention responses may hold a meaning different from the one proposed in this dissertation.

The analysis was also unable to explore whether women were using contraception clandestinely, i.e., without their partners' knowledge. In circumstances, such as those in Kenya, in which the most common method is non-coitus dependent (i.e., injectables), women may decide to use contraception clandestinely, particularly when faced with IPV and a partner who disagrees with their fertility intentions. Questions such as, "Does your partner approve of contraceptives" and "Does your partner know you are using family planning", which determine a woman's perception of her partner's approval of contraceptive use were only asked in the 2003 survey, limiting the responses to 30% of total respondents in the dissertation. Nearly 88.3% (N=2,858) report that their husband knows of their use of contraception and 58% reported that their husband approves of contraceptives.

Finally, the analyses were all performed unweighted. This was a strategic decision because of a lack of appropriate weighting for the pooled dataset. In addition, the sample must be unweighted to perform the mediation analyses among categorical variables. Therefore, the results of all studies are not generalizable to the national level.

8.4 Implications for Kenyan and Global Public Health

There are several implications for the Kenyan public health context that stem from this dissertation. Most importantly, it underscores the need for targeted health system responses to violence focused specifically on women's health services (Heise, 1996, Othman & Adenan). The Demographic and Health Surveys indicate that nearly 95% of women in sub-Saharan Africa come into contact with the health system through family planning or prenatal services (Watts & Mayhew, 2004). Therefore, the incorporation of routine IPV screening as part of the family planning or prenatal care visits could be warranted (Ramsey, Richardson, Carter, Davidson, & Feder, 2002, Watts & Mayhew, 2004). One study found that only 7% of health providers in Nigeria screened for IPV, although more than 50% believed it was an important health issue, indicating an acceptance of screening by many providers in this context (John, Lawoko, & Oluwatosin, 2011).

There are two approaches to IPV screening and service integration that may be relevant in Kenya. One is the One Stop Crisis Center (OSCC) model and the other an external referral system involving non-governmental organizations for support. In the OSCC approach all screening and service delivery are done in one integrated clinic within the hospital setting (Moracco & Cole, 2009, Colombini et al., 2013). This involves a team-based approach using, health providers, medical social workers, and psychiatrists all housed in one clinic following a single protocol (Colombini et al., 2013). The second approach, focuses on training of providers

to identify IPV experiences, but then relies on an outside referral network to administer appropriate services, primarily through a connected network on non-governmental organizations (NGOs) or programs (Laisser et al., 2011).

There are several advantages to using the OSCC model. First, a small group of individuals within each hospital would be trained in IPV service delivery. This would streamline protocols for IPV screening. In addition, the model may work both in large hospital delivery systems but also rural areas, where there are few external services to utilize (REFERENCES). However, drawbacks to this system include the need for coordination among smaller clinic staff and larger hospital administrations. In addition, there is a need for a cultural shift for health providers who are now expected to provide IPV services. The startup of OSCC models tend to be resource intensive and require significant amounts of time and targeted coordination for the model to work appropriately. OSCC models may sometimes put greater strain on already overcrowded health systems. Finally, there is a concern for confidentiality particularly in settings where the service delivery space is small (Laisser et al., 2011).

Another approach that has been tested in Kenya is the use of external referral systems. This limits provider input to administration of a protocol for screening but then allows hand-off to external parties that might be more skilled in providing services. This model tends be less resource intensive for individual clinics or hospitals placing less stress on health workers and has high acceptance by health workers (John, Lawoko, & Oluwatosin, 2011). However, the coordination aspects of external resources assume 1) that there are external resources such and programs to tap and 2) those programs are high-quality and provide appropriate and adequate services. In many areas of Kenya these is not accurate.

Central to both approaches use health workers or social workers in helping women identify IPV experiences. However, must improve the skills for appropriate parties to administer non-judgmental IPV counseling within Kenya as previous studies have shown that provider bias does impact who is screened for IPV. Many providers are already engaging in screening and referral without clear training. One study in Johannesburg found that nurses, motivated by concern for patient's survival, personal experiences with IPV, and professional obligation, were administering their own interventions despite feeling inadequately trained (Sprague, Hatcher, Woollett, & Black, 2015). Comprehensive standardized training guidelines are a key component of ensuring that health providers feel empowered to carry out services (Sprague, Hatcher, Woollett, & Black, 2015).

In conjunction with health workforce strengthening, improvement of contraceptive variety and maintenance of injectable contraceptives may be important interventions for women who are facing IPV in Kenya. In this sample 23% of respondents used injection, which was not reduced by IPV experience. A priority should be to maintain this method as it seems to be a good option for women in abusive situations because it is partner-independent. This dissertation also found that there was a clear difference in modern contraceptive use between different ethnic and religious groups. For example, Kikuyu women were more likely to use contraceptives than Luhya and Luo women. In addition, Muslim women were less likely to use contraceptives than Protestant or Catholic women. A greater variety of contraceptives should be available for any women who find injections to not be a preferred method. Tailored counseling should be given to women, aligned with their current fertility intentions, and exploration of reasons for non-use should be considered.

The integration of screening into women's health services faces several ethical dilemmas that remain difficult to overcome. First, although screening seems both necessary and feasible, is it fair to screen women in situations where services are inadequate? For example, in areas where follow-up services are non-existent or poorly designed screening and identification of IPV within the health system may actually increase the trauma of already vulnerable women by introducing them into situations or systems that may actually hinder their quality of life. In addition, women's safety is a paramount concern that must be addressed in program development. Accessing screening without confidentiality or discretion could also lead to greater violence at the hands of their partner if found out. Subsequently, women who may be correctly identified as experiencing IPV must feel safe reporting specific IPV-related actions to their health care providers and in turn health providers must feel safe reporting IPV behavior to authorities or other agencies. These steps require training and attitude changes at all levels of service delivery and a targeted workforce training for the hospital workforce as well as those in the public sector.

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