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Sharing responsibility through joint decision-making and implications for intimate-partner violence: evidence from 12 Sub-Saharan African Countries

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Abstract

Intimate partner violence (IPV) affects 36% of women in Sub-Saharan Africa. In this paper, we examine the relationship between decision-making within 31,243 couples and the incidence of IPV across 12 African countries. Using the wife's responses to survey questions, we find that compared to joint decision-making, sole decision-making by the husband is associated with a 3.3 percentage point higher incidence of physical IPV in the last year, while sole decision-making by the wife is associated with a 10 percentage point higher incidence. Similar patterns hold for emotional and sexual violence. When we include the combined responses of the husband and wife about decision-making in the analysis, we identify joint decision-making as protective only when spouses *agree* that decisions are made jointly. Notably, agreement on joint decision-making is associated with lower IPV than agreement on decision-making by the husband. Constructs undergirding common IPV theories, namely attitudes towards violence, similarity of preferences, marital capital, and bargaining, do not explain the relationship. Our results are instead consistent with joint decision-making as a mechanism that allows spouses to share responsibility and mitigate conflict if the decision is later regretted.

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1 Introduction

Intimate partner violence (IPV) is a human rights violation and one of the world's leading public health problems. Worldwide, nearly one third (30%) of all women who have been in a relationship have experienced physical and/or sexual violence by their intimate partner (WHO, 2013). According to the same report, lifetime prevalence of physical and/or sexual intimate partner violence in Africa is 36.6, one of the highest regional rates (WHO, 2013). Data from the Demographic and Health Surveys (DHS) show similar rates, with 32% of women in Sub-Saharan Africa reporting that they had experienced emotional and physical (including sexual) violence ever and 25% of women reporting being subject to such abuse during the last twelve months (Cools & Kotsadam, 2017). Understanding the underlying drivers of IPV so that effective solutions can be formulated and implemented is a pressing policy priority.

A number of theories have been offered to explain when and why men perpetrate IPV, with varying empirical support. We categorize these into four broad constructs, each with a different focus including: (1) the role of individual beliefs and attitudes in justifying IPV as an acceptable behavior, (2) the misalignment of preferences between husband and wife, with IPV used as a disciplinary tool to ensure the wife does not contest the husband's wishes, (3) marital capital (such as number of children and years in the relationship), as a factor increasing the cost of exiting the relationship, and (4) IPV as a function of bargaining power within the household.

A fifth, underexplored driver of IPV in the theoretical literature is the level of shared responsibility within couples. A number of empirical studies find that joint decision-making is negatively correlated with IPV (Ebrahim & Atteraya, 2019; Friedemann-Sánchez & Lovatón, 2012; Gage, 2005; Hindin & Adair, 2002; Svec & Andic, 2018). These analyses, however, only use the wife's response regarding who decides. Only one study includes both the husband's and wife's responses, but these are included separately (Zegenhagen et al., 2019). Yet, there is evidence that the combined responses of both the husband and the wife regarding who decides may be associated with a range of outcomes (Ambler et al., 2021; Ambler et al., 2022; Annan et al., 2021)—though these existing analyses focus on responses on whether the wife is involved in making decisions, not whether the decisions are made jointly.

A separate body of interdisciplinary research offers a theoretical explanation for why joint decision-making may be associated with lower IPV. Joint decision-making is highlighted as a tool for diffusing responsibility and reducing decisional conflict by sharing risk in the management, political science and conflict resolution literatures (McGraw, 1991; Thompson, 1980) as well as the medical literature (Hoffmann et al., 2014; Kremer et al., 2007). Recently, researchers within psychology and neuroscience have also argued that shared responsibility plays an important role in motivating collective decision making, since making decisions jointly can 'shield individuals from the consequences of negative outcomes by reducing regret, punishment, and stress' (El Zein et al., 2019).

Equipped with this theoretical insight, our paper builds on existing work by examining the relationship between joint decision-making and physical, sexual and emotional IPV across 12 Sub-Saharan African countries, using nationally representative Demographic and Health Surveys (DHS) for 31,243 couples. We first analyze the relationship between the wife's response and IPV, following the approach

of earlier studies. We find a strong and significant negative relationship between the wife responding that decision-making is joint and all three types of IPV. Using the same DHS data, we construct indicators representing four alternate theories that may constitute important mediators for the relationship: attitudes towards violence, alignment of preferences, marital capital and intrahousehold bargaining. None of these sets of covariates dampen the magnitude of the observed relationship between joint decision-making and IPV, and in some cases they even strengthen the association.

Our primary contribution is to analyze data on IPV while including the combined responses of the husband and the wife, indicating both the content of each response and whether they agree. We find three broad categories of decision-making patterns and their relationship with IPV. Among couples where the wife reports that she makes decisions (regardless of her husband's response), we observe the highest levels of all three forms of IPV. The second category, with lower IPV compared to the first, contains couples that disagree over decision-making roles (but where the wife does not report making sole decisions) and couples that agree that the husband makes decisions. Finally, when both spouses report making joint decisions, we observe the lowest levels of all forms of IPV. These results are robust to including proxies for the four other constructs related to theories of IPV.

This identified relationship between *agreement* on joint decision-making and lower IPV is both novel and important. Though we cannot assign causality through our data, this empirical relationship matches a wide body of interdisciplinary theoretical work on why joint decision-making may be associated with lower levels of conflict and violence. Qualitative work from a range of countries supports this interpretation, with couples expressing that sharing decisions results in lower conflict and increases family harmony. Lastly, our econometric robustness checks confirm that the estimated relationships are not driven by omitted variable bias.

Our results have analytical and policy implications. First, they demonstrate the importance of distinguishing between individual and joint decision-making when assessing levels of women's agency. If women's agency is the capacity to make decisions about one's own life and act on them to achieve a desired outcome, *free from the threat of violence and retribution* (Klugman et al., 2014), then making joint decisions may be a means of expressing and increasing agency. Second, our results underscore the potential of interventions seeking to reduce intimate partner violence by fostering shared accountability and cooperation within couples (Dunkle et al., 2020; Sharma et al., 2020).

In the next section, we first review the literature on the causes of IPV and then consider the literature on joint decision-making. Thereafter, we discuss our data and empirical strategy. We present our main results on the relationship between joint decision-making and IPV and explore mechanisms underlying this result. In the final section, we summarize our findings and discuss their implications.

2 Determinants of intimate partner violence

An extensive literature on the determinants of IPV is found across disciplines. While there are many possible ways to group them, we have identified four sets of explanations that are relevant to our analysis.

The first set of explanations center the role of individual beliefs and attitudes in the perpetration of intimate partner violence (Khawaja et al., 2008; Sambisa et al., 2010; Straus, 2004; Uthman et al., 2009; Wang, 2016). Attitudes that violence against women is acceptable are often correlated with broader gender norms that limit women's agency (Uthman et al., 2009). The acceptance of intimate partner violence can both increase the use of IPV by the man (since he might face lower psychological and social costs of doing so) and reduce the probability of the woman resisting or exiting the relationship, leading to higher observed IPV in equilibrium.

A second set of explanations highlight how IPV can be wielded by the man to enforce his will in the case of disparate preferences (Jakobsen, 2018) or to extract resources (Bloch & Rao, 2002), especially in an environment of uncertainty around production (Bulte & Lensink, 2021). Eswaran and Malhotra (2011) find that men use violence to limit women's autonomy and ensure that men's preferences are met. Lentz (2018) finds a similar pattern analyzed from the other direction; she finds that women may choose to eat less or lower quality foods to reduce IPV. This literature typically models intra-household decision-making using a non-cooperative set-up, where the man may use violence to influence the allocation of within-household resources. Alternatively, a divergence in preferences can also alter the likelihood of joint decision-making and can have direct effects on the incidence of violence which emerges from disagreement.

A third body of literature highlights how marital capital and marital dependency can influence intimate partner violence (Kalmuss & Straus, 1982; Kim et al., 2007). On the one hand, some studies suggest that greater marital dependence and capital (e.g., in the form of children) act as a trap for women in abusive relationships, leading to a higher tolerance on the part of women for physical or emotional abuse from their husbands as they see fewer viable alternatives. In this scenario, marital dependency leads to higher levels of violence (Farmer & Tiefenthaler, 1997; Gelles, 1976). On the other hand, some research suggests that husbands of dependent wives have many ways of maintaining dominant positions (e.g., by restricting resource use) without resorting to explicit violence (Kalmuss & Straus, 1982).

Finally, a fourth body of literature (related to the third) focuses on the implications of women's bargaining power within the household on IPV. The bargaining power of married women can act as a double-edged sword, with theoretical models suggesting an ambiguous relationship between the incidence of violence and women's economic standing and access to opportunities (Eswaran & Malhotra, 2011; Tauchen et al., 1991). Women's ownership of assets and their relative share of wealth can increase their bargaining power within the household and hence can act as a deterrent to physical violence against them (Agarwal & Panda, 2007; Oduro et al., 2015; Panda & Agarwal, 2005). Similarly, cash transfers provided to women intended to reduce poverty and food insecurity have been shown to decrease physical and sexual violence (Hidrobo et al., 2016). A contrasting view is that higher bargaining power may attract more violence by threatening the existing male dominance, as suggested by the backlash theory of violence (Koenig et al., 2003; Rocca et al., 2009). While some evidence suggests that a woman's employment may increase her bargaining power and thus reduce IPV (Dildar, 2021; Henke & Hsu, 2020), other evidence suggests that the backlash effect from women's employment may result in higher levels of IPV (Dhanaraj & Mahambare, 2022; John, 2020).

In addition to who makes decisions and has bargaining power, whether decisions are made independently or jointly may also influence IPV. Indeed, empirical papers from demography, development studies and public health have found lower levels of IPV when women say that decisions are made jointly. For example, Coleman and Straus (1986) provide the first evidence of this relationship using data on US couples. Kim and Emery (2003) find similar results in Korea. Hindin and Adair (2002) use the Philippines Cebu Longitudinal Health and Nutrition Survey (CLHNS) and find that only 6% of women reported IPV when wives say that all household decisions were made jointly, compared to 25% when no decisions were made jointly. Using the 2000 Haiti DHS, Gage (2005) finds that women who had the final say on major household purchases were almost 2.7 times more likely to experience emotional violence—and 1.7 times more likely to experience physical or sexual violence—than women who made such decisions jointly with their partners. Similar results are found using DHS data for Columbia (Friedemann-Sánchez & Lovatón, 2012), Peru (Svec & Andic, 2018), and Ethiopia (Ebrahim & Atteraya, 2019).[1]

The one study that includes the responses of both the husband and wife finds that only *men's* reporting predicted the likelihood of women experiencing IPV (Zegenhagen et al., 2019). This study includes both the husband's and the wife's response separately in the estimation. When men report that decisions were made jointly or by women alone (over major household purchases and how to spend the husband's earnings), this was associated with a lower probability of IPV compared to when men report that they made decisions alone over either domain. Decision-making in other domains and women's reports of decision-making did not predict women's experience of IPV.

None of these studies have used the combined data from the husband and wife to analyze whether the pattern of agreement or disagreement is associated with violence. Nor does this literature systematically explore the theoretical mechanisms underlying the relationship between joint decision-making and lower IPV, though Svec and Andic (2018) posit that joint decision-making may be capturing more equal gender beliefs, while Zegenhagen et al. (2019) discuss how violence may be used when husbands perceive that their status within the household contradicts social norms.

3 Shared responsibility as an alternative mechanism

An alternative mechanism that may reduce IPV is joint decision-making, which allows spouses to share responsibility and mitigate conflict if the decision is later regretted. This link between joint decision-making and reduced conflict has been discussed extensively in the management, political science and conflict resolution literature, although none of this is in the context of decision-making within couples. Political science has conceptualized joint decision-making as a way for politicians to

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[1] Friedemann-Sánchez and Lovatón (2012) perform a bivariate probit analysis while Svec and Andic (2018) run multinomial logistic regressions. Other analyses consider whether women's responses that they have a say in household decisions are correlated with IPV (e.g., Mavisakalyan & Rammohan, 2021) without distinguishing whether the decision is joint.

deflect blame and defuse conflict if a chosen strategy is later regretted (McGraw, 1991; Thompson, 1980). Collective decision-making allows these officials to argue that the decision was the joint product of a group of individuals and avoid electoral consequences. Conflict resolution theory has similarly highlighted the importance of joint decision-making, typically analyzed as a process of negotiation (Filley, 1975; Zartman, 1977). Management and organizational science has stressed the importance of managers employing joint decision-making, typically to prevent workplace frustration boiling over into conflict (Greenhalgh & Chapman, 1995). Meanwhile, the medical literature has explicitly advanced 'Shared Decision-making' (SDM) as a risk management tool for doctors seeking to avoid potential malpractice lawsuits. This literature highlights how a lack of shared decision-making leads to conflict, with risk managers encouraging joint decision-making between doctors and patients to enhance a practice's legal protection (Hoffmann et al., 2014; Kremer et al., 2007).

Recent qualitative work on household decision-making, identifies the importance of joint decision-making as a way of reducing conflict among couples.

In the Philippines, Arugay et al. (2022) conducted 60 interviews in 40 households in three rural areas in August 2019 regarding joint and individual decision-making within the household. In 40 of the interviews, spouses were interviewed individually, while in 20 they were interviewed together. One man noted a drawback of individual decision-making: "it is not good to make decisions alone because the time will come when I will be blamed with the decisions I made if the result is not for the good of the family" (p. 19). Similarly, a woman noted "it is stressful to make decision by yourself alone because time will come that there might be pointing fingers later on" (p. 19).

Commonly stated advantages for joint decision-making were that "there is harmony in the family if the decision is made jointly", and that "there is an element of fairness since before they decided, the perspectives were balanced so that nobody will be blamed" (p. 20). When asked whether there is a rationale for joint decision-making even when the personal preference would be for individual decision-making, one respondent replied, "I involved my wife in the decision for farm development so that I will not be blamed on the consequences of the decision" (p. 19). In another couple, when asked about the ideal decision-making process, a wife answered that "it is ideal that both husband and wife make a decision in order that no one will be blamed for the outcome if it was implemented" (p. 19). Overall, a clear pattern emerged that people saw joint decision-making as a means to prevent future conflict, particularly if there is uncertainty about the consequences of the decision.

Similar evidence comes from Buller et al. (2016)'s mixed methods study in Ecuador. This study combined secondary analysis from a field experiment on the impact of a transfer program on IPV with in-depth interviews and focus group discussions with men and women beneficiaries. The qualitative component aimed to better understand the mechanisms underlying the quantitative results, which showed substantial reductions in physical and sexual violence among beneficiaries of the cash and in-kind food transfer program. Women frequently responded that they asked their spouse or partner for input into a decision, so that they would not be blamed if something went wrong.

Similarly, an analysis of qualitative data from eight projects in Africa and Asia focused on understanding women's empowerment finds that joint decision-making

can be beneficial for women. In focus groups in Ghana, women stressed the importance of family harmony and in the individual interviews, "women indicated that they want more input on decisions, but do not want full responsibility for decisions in case they go wrong" (Meinzen-Dick et al., 2019, p. 20).

In what follows, we explore the empirical relevance of this multidisciplinary concept—sharing responsibility through joint decision-making—for women's experience of intimate-partner violence in Sub-Saharan Africa.

3.1 Data

The DHS is a nationally representative population-based household survey that has been conducted since 1984 in over 90 countries. Our sample consists of married couples in 12 Sub-Saharan African countries covered by the DHS for which both husband and wife answered the question "who usually makes decisions about making major household purchases?"[2] Since 2004, the question has been asked separately to both husbands and wives. Response options are (a) respondent, (b) husband/wife, (c) respondent and husband/wife jointly, (d) someone else, (e) other.

In these 12 countries, women were also asked about their experience with different forms of violence through the Domestic Violence Module. Eligible women were asked whether they ever experienced emotional, physical, or sexual violence perpetrated by their husband or partner.[3] The answer options are (a) never, (b) often (c) sometimes (d) yes, but not in the last 12 months or (e) yes, but currently widowed/divorced/separated. We consider women as having experienced a particular type of IPV in the last 12 months if they reported (b) or (c) to any of the questions within the category.

We rely on women's own reports of their experiences of IPV. It is well documented that women may underreport IPV (Cullen, 2020). The underreporting would only affect our analysis if there was a systematic pattern of women who live in households where both they and their husbands report that decisions are made jointly also underreporting incidences of IPV. Data from Cullen (2020), which analyzes the magnitude and predictors of misreporting on intimate partner and sexual violence in Nigeria and Rwanda, finds no evidence for this pattern of underreporting.

We use the latest available survey round for each of the 12 countries where the decision-making question was administered to couples and the domestic violence

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[2] The question is asked about large purchases overall and is not obtained by aggregating different survey questions on decision-making over individual asset purchases.

[3] To determine a woman's experience with emotional violence, she was asked "Did your (last) (husband/partner) ever: (a) say or do something to humiliate you in front of others? (b) threaten to hurt or harm you or someone you care about? (c) insult you or make you feel bad about yourself?".Similarly, a woman is considered to have experienced physical violence if her response to "Did your (last) (husband/partner) ever do any of the following things to you: (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 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 other weapon?" is "yes" to any of the situations listed above. For determining the incidence of sexual violence, women are asked "Did your (last) (husband/partner) ever do any of the following things to you: (a) physically force you to have sexual intercourse with him when you did not want to? (b) physically force you to perform any other sexual acts you did not want to? (c) force you with threats or in any other way to perform sexual acts you did not want to?".

module was administered to married women, setting up a cross-sectional analysis with one year per country. These datasets cover the years 2010–2016. Restricting to non-missing observations results in a sample of 31,243.[4] Descriptive statistics are presented in Appendix Table 5.

3.2 Empirical strategy

The objective of this paper is to understand the importance of shared responsibility on the incidence of IPV. We first follow the existing literature by analyzing the wife's response on who makes the decisions regarding major household purchases to see how it is correlated with incidence of violence. We estimate the following OLS specification:

$$y_{ic} = \beta_0 + \beta_1 DM_{ic}^W + \beta_2 X_{ic1} + \beta_3 X_{ic2} + \theta_c + \varepsilon_{ic} \tag{1}$$

Where y_{ic} is an indicator of whether wife i faced violence (any physical, emotional or sexual) in the last 12 months in country c; DM_{ic}^W is the wife's response regarding who makes decisions about major household purchases (=1 if husband, = 2 if joint and =3 if she herself) and X_{ic1} comprises a set of household characteristics[5]. θ_c specifies country fixed effects and ε_{ic} indicates the error term.

To understand what is driving the negative association between joint decision-making and violence, we categorically introduce sets of indicators capturing the first four key constructs outlined in the literature section, which may mediate the relationship between decision-making and conflict. These are introduced into the regressions as X_{ic2}.

Attitudes towards violence are measured using situational questions[6] which describe scenarios and ask whether beating one's wife is justified. We combine the information from these questions to construct a variable =1 if neither husband nor wife condones violence in any situation; =2 when only husband condones violence; =3 when only wife condones violence and =4 when both condone violence.

Alignment of preferences is measured using responses on the ideal number of children. We construct a variable that attempts to capture the preferences of the husband and wife. The preference variable = 0 if both husband and wife report the same ideal number of children, =1 if the wife prefers more children than her

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[4] The countries are Burkina Faso (2010), Burundi (2016), Comoros (2012), Ivory Coast (2011-12), Ethiopia (2016), Gambia (2013), Kenya (2014), Mali (2012-13), Nigeria (2013), Rwanda (2014), Zambia (2013-14), and Zimbabwe (2015). It should be noted that when looking at the relationship between decision-making and IPV, our sample changes due to data availability and conditionally applicable questions. We re-run our analysis for our smallest, most restrictive sample where all variables are available to ensure that our results are not driven by sample selection issues (results available upon request).

[5] The set of household level characteristics includes a dichotomous variable for rural area, for household has electricity and wealth quantile dummies.

[6] Both husband and wife were asked whether a husband is justified in beating his wife, in a range of scenarios. More specifically, spouses were asked if wife-beating is justified if (a) the wife goes out without telling the husband; (b) the wife neglects the children; (c) the wife argues with the husband; (d) the wife refuses to have sex with the husband; (e) the wife burns the food. We construct an indicator for each individual of whether they ever condone violence, which is =1 if they answer a yes to any of the five situations above and 0 otherwise. We then used the responses of each spouse to construct the desired variable.

husband, and $=2$ if the husband prefers more kids than his wife. In addition, we include a dichotomous variable which controls for whether the wife reports not knowing her husband's preferences over kids.

Our indicators of marital capital include years of marriage, the total number of children the couple has and whether the couple is in a polygamous marriage (as marital capital is expected to be higher in monogamous marriages).

Finally, to proxy for the wife's bargaining power in the household, we include the following variables: wife's years of education, difference in years of schooling between husband and wife, age when wife was married, and age difference between husband and wife. We also include dichotomous variables for wife not working, wife works off farm, husband not working, wife says she earns more than her husband and relative ownership of assets (whether only he owns assets, she does, or both do).

We then extend the analysis to investigate how the patterns of the combined responses of the husband and wife are associated with IPV. We estimate the following specification:

$$y_{ic} = \propto_0 + \propto_1 DM_{ic}^{WH} + \propto_2 X_{ic1} + \propto_3 X_{ic2} + \theta_c + \varepsilon_{ic} \tag{2}$$

where the only difference between (1) and (2) is the variable on decision-making. In Eq. (1) it is just the wife's response. In Eq. (2), DM_{ic}^{WH} captures the responses of both the wife and the husband about who makes decisions regarding large purchases in the household. We refer to this as the combined responses. We have 9 potential combined responses: spouses agree that decisions are made by the husband, wife, or jointly, or spouses disagree (husband says husband, wife says wife or joint; husband says joint, wife says wife or husband; or husband says wife, wife says husband or joint).

We do not have any exogenous variation in the decision-making dynamics within the household in our sample, and so we face the issue of selection on observables. The set of variables included in X_{ic2} serve two purposes. First, they allow us to control for the four sets of constructs relating to theories of IPV discussed earlier. Second, by adding them sequentially and establishing the stability of our estimates we can mitigate concerns that our results are biased due to omitted variables (Altonji et al., 2005). As an additional check, we calculate bounding values for coefficients using the methodology proposed by Oster (2019) and additionally show that they are robust to using logit and probit models.

4 Results

We first report our results just using the wife's response about who decides, and then we report estimates using the combined responses of the husband and wife.

4.1 Wife reports decision-making

We follow specification (1) and present the results for each type of IPV separately (Table 1). In columns (1), (3) and (5) we only include X_{ic1} (household wealth controls) and country fixed effects. In columns (2), (4) and (6) we introduce all the

Table 1 Wife's response on decision-making and violence

	(1) Physical	(2) Physical	(3) Emotional	(4) Emotional	(5) Sexual	(6) Sexual
Wife says DM is husband [A]	0.033*** (0.005)	0.033*** (0.005)	0.030*** (0.005)	0.036*** (0.006)	0.034*** (0.004)	0.038*** (0.004)
Wife says DM is wife [C]	0.100*** (0.009)	0.095*** (0.009)	0.120*** (0.009)	0.119*** (0.010)	0.067*** (0.007)	0.065*** (0.007)
Constant	0.112*** (0.009)	0.180*** (0.026)	0.105*** (0.009)	0.093*** (0.027)	−0.006 (0.006)	−0.010 (0.018)
Observations	31229	27657	31243	27669	31228	27656
R-squared	0.033	0.050	0.029	0.042	0.048	0.059
Mean of sample	0.16	0.16	0.18	0.18	0.08	0.08
p value ([A]=[C])	0	0	0	0	0	0
Indiv. controls	No	Yes	No	Yes	No	Yes
HH controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

(1) Wife says DM is joint [B] is the reference category. (2) Indiv. controls include variables like attitude of husband and wife towards violence, knowledge and alignment of preferences of husband and wife for children, years of marriage, total number of children the couple has, whether the couple is in a polygamous marriage and measures of wife's bargaining power like her education, age when she was married, difference in wife and husband's education and age, whether husband and wife work, whether she earns more and relative ownership of assets. (3) HH controls include whether household is in rural area, it has electricity and wealth quintile to which the household belongs. (4) Robust standard errors in parentheses

***$p < 0.001$

variables in X_{ic2}, representing the four sets of constructs measuring attitudes, preferences, marital capital and bargaining power that may be mediating the observed relationship.

Compared to the couples where women report joint decision-making, the likelihood of facing any type of violence is higher when she reports that the decision-maker is either her husband or herself. When the wife says that the husband is the main decisionmaker, she is 3.3 percentage points (26.3%) more likely to have experienced any physical violence in the last 12 months compared to when decision-making was joint. However, when the wife reports that she is the main decision-maker, she is 10 percentage points (62.5%) more likely to have experienced physical violence. These differences are statistically significant at the 1% level, and the patterns are consistent for emotional and sexual violence. Interestingly, these patterns remain unchanged when we include the four sets of constructs as explanatory variables in columns (2), (4) and (6), even though these dimensions show a significant relationship with violence on their own.

4.2 Wife and husband report decision-making

The results discussed in Table 1 resonate with what is already well established in the literature, confirming a strong and significant association between the wife reporting
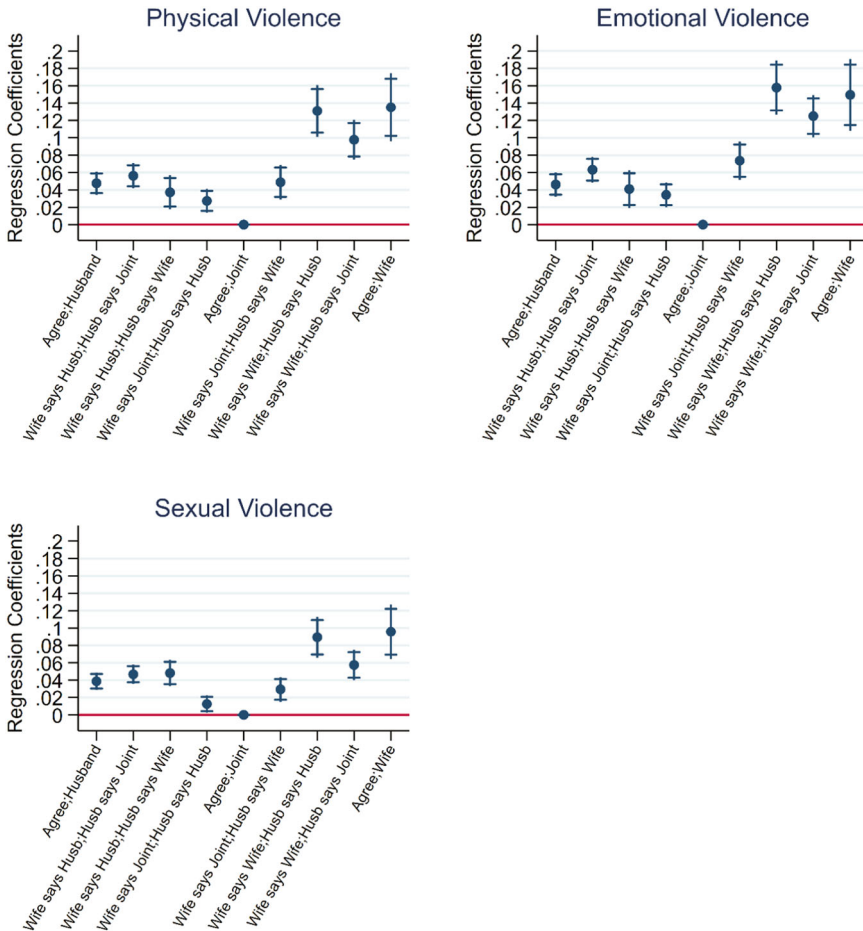
Fig. 1 Figure 1 plots coefficients from regressions of physical, emotional and sexual violence in the last 12 months on husband and wife's decision-making responses. The bars represent 95% confidence intervals for the point estimates.

that decision-making within couples is joint and lower IPV for eleven new countries (Ethiopia was the focus of Ebrahim and Atteraya's 2019 paper). Next, we seek to understand the extent to which these patterns change when we also consider the husband's response and incorporate the agreement between husband and wife on who makes decisions. To explore this further, we follow specification (2) for all three types of violence. To begin, we present the results (excluding X_{ic2}) in Fig. 1. We discuss the robustness of our results to inclusion of the four sets of constructs that proxy for different theoretical determinants of IPV in the following section.

The results in Fig. 1 underscore the importance of including the combined responses of the husband and wife to understand the association between decision-making and IPV. The first observation is that if we focus our attention on the scenarios where the wife and husband agree on who makes the decision, the results

are consistent with what we observed in Table 1. Joint decision-making is associated with significantly lower levels of IPV.[7]

However, this association is not present if only the woman reports that decisions are joint. The negative relationship between joint decision-making within couples and IPV prevalence comes from *agreement* between husband and wife that decision-making is joint (the reference category for the coefficients presented in Fig. 1). When the wife says decision-making is joint, in 57% of couples the husband provides the same answer. However, if the wife says that decision-making is joint and the husband disagrees, the likelihood that she experienced violence in the past 12 months is, on average, similar to the case when she says that the husband is the main decisionmaker.

Moreover, when she says that she is the main decisionmaker, even if her husband reports that decisions are made jointly, the incidence of violence is more than 10 percentage points higher than when they both state that decision-making is joint. These patterns hold true for all forms of violence measured in our data—physical, emotional and sexual. More generally, wives who say that they make decisions alone (irrespective of the answer of the husband) experience higher levels of IPV than wives who say the husband makes decisions alone (irrespective of the answer of the husband). This association is consistent with the fact that women who go against gender norms may be more likely to face backlash and be victims of IPV.

The direction of causality cannot be established for the relationships presented above. It is possible that in couples with high IPV, women stopped trying to make decisions jointly because it resulted in violence. Joint decision-making by couples may also be related to the four sets of constructs measuring attitudes, preferences, marital capital and bargaining described above. For example, couples who have spent more years in a marriage might see convergence in their preferences which both leads them to make joint decisions and face less conflict. This would bias our estimates. To mitigate concerns that our results are entirely driven by similar characteristics, in the next section we rerun all the results above, introducing different sets of variables corresponding to the different constructs of IPV sequentially.

4.3 Inclusion of other mechanisms

In this section, we report the results of sequentially including measures of attitudes towards violence, alignment of preferences over the number of children, marital capital and bargaining in specification (2). The results for physical, emotional and sexual violence are presented in Tables 2, 3 and 4 respectively.

The results in column (1) replicate the numbers observed in Fig. 1. Columns (2)-(5) present the coefficients on decision-making variables when other controls

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[7] Although the relationship between joint decision-making and IPV is sizeable and significant, the former should not be used as a standalone proxy for the latter. Overall in our sample, wives experienced physical IPV in 14% of households that agree on joint decision-making, while this rate was 17% in households where the couple agrees that decision-making isn't joint. However, in some countries, knowing which couples don't agree on who makes decisions may help in identifying women at higher risk of IPV. For example, in Burundi, wives experienced physical IPV in the last year in 13% of households that agree that the decision was joint, but in 25% of those that do not. Similarly large differences are observed in Rwanda and Mali.

Table 2 Physical violence with both spouses reporting

	(1)	(2)	(3)	(4)	(5)
Agree;Husband	0.048***	0.037***	0.042***	0.039***	0.044***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Wife says Husb;Husb says Joint	0.056***	0.049***	0.050***	0.048***	0.051***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Wife says Husb;Husb says Wife	0.037***	0.032**	0.031**	0.028**	0.036***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
Wife says Joint;Husb says Husb	0.027***	0.022**	0.024**	0.022**	0.022**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Wife says Joint;Husb says Wife	0.049***	0.046***	0.039***	0.038***	0.036***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Wife says Wife;Husb says Husb	0.131***	0.121***	0.123***	0.120***	0.118***
	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)
Wife says Wife;Husb says Joint	0.098***	0.094***	0.095***	0.094***	0.094***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Agree;Wife	0.135***	0.128***	0.125***	0.124***	0.123***
	(0.020)	(0.020)	(0.021)	(0.021)	(0.021)
Obsv	31229	31229	27890	27890	27657
R-squared	0.034	0.043	0.045	0.046	0.051
Mean of sample	0.16	0.16	0.16	0.16	0.16
Country FE	Yes	Yes	Yes	Yes	Yes
HH controls	Yes	Yes	Yes	Yes	Yes
Attitudes	No	Yes	Yes	Yes	Yes
Preferences	No	No	Yes	Yes	Yes
Marriage	No	No	No	Yes	Yes
Bargaining	No	No	No	No	Yes

(1) "Agree;Joint" is the reference category for the above Table (2). Attitudes include attitude of husband and wife towards violence; Preferences include knowledge and alignment of preferences of husband and wife for children; Marriage includes years of marriage, total number of children the couple has, whether the couple is in a polygamous marriage; Bargaining includes wife's education, age when she was married, difference in wife and husband's education and age, whether husband and wife work, whether she earns more and relative ownership of assets. (3) HH controls include whether household is in rural area, it has electricity and wealth quintile to which the household belongs. (4) Robust standard errors in parentheses
**$p < 0.01$, ***$p < 0.001$

described above are added sequentially.[8] The results suggest that the coefficients on the combined decision-making variables are stable to the inclusion of a host of variables representing alternative theories regarding IPV. Full tables showing coefficients for the sets of variables related to each of these theoretical dimensions are included in the Appendix. It is worth noting that many of the findings are consistent with the predictions of other theories of IPV. For example, in Appendix Table 6, both condoning violence (attitudes) and wife not knowing her husband's fertility preferences (preference misalignment) are associated with higher levels of violence, and years of marriage (marital capital) and wife working off farm (bargaining) are

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[8] Details of the variables included in these regressions and the respective coefficients are presented in appendix tables A2, A3 and A4.

Table 3 Emotional violence with both spouses reporting

	(1)	(2)	(3)	(4)	(5)
Agree;Husband	0.046***	0.038***	0.046***	0.043***	0.053***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Wife says Husb;Husb says Joint	0.063***	0.057***	0.062***	0.060***	0.066***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Wife says Husb;Husb says Wife	0.041***	0.036**	0.040***	0.038***	0.048***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
Wife says Joint;Husb says Husb	0.034***	0.031***	0.033***	0.032***	0.034***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Wife says Joint;Husb says Wife	0.074***	0.073***	0.073***	0.073***	0.070***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
Wife says Wife;Husb says Husb	0.158***	0.151***	0.160***	0.156***	0.154***
	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)
Wife says Wife;Husb says Joint	0.125***	0.122***	0.128***	0.126***	0.126***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)
Agree;Wife	0.149***	0.145***	0.145***	0.143***	0.141***
	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Obsv	31243	31243	27902	27902	27669
R-squared	0.031	0.037	0.039	0.040	0.044
Mean of sample	0.18	0.18	0.18	0.18	0.18
Country FE	Yes	Yes	Yes	Yes	Yes
HH controls	Yes	Yes	Yes	Yes	Yes
Attitudes	No	Yes	Yes	Yes	Yes
Preferences	No	No	Yes	Yes	Yes
Marriage	No	No	No	Yes	Yes
Bargaining	No	No	No	No	Yes

(1) "Agree;Joint" is the reference category for the above Table (2) Attitudes include attitude of husband and wife towards violence; Preferences include knowledge and alignment of preferences of husband and wife for children; Marriage includes years of marriage, total number of children the couple has, whether the couple is in a polygamous marriage; Bargaining includes wife's education, age when she was married, difference in wife and husband's education and age, whether husband and wife work, whether she earns more and relative ownership of assets. (3) HH controls include whether household is in rural area, it has electricity and wealth quintile to which the household belongs. (4) Robust standard errors in parentheses; $*p < 0.05$, $**p < 0.01$, $***p < 0.001$

associated with lower levels of violence. While these other variables are statistically significant in some cases and might thus explain part of the violence observed in the data, they don't meaningfully change the relationship we observe between the combined responses on decision-making and violence.

Although we include a comprehensive list of variables, it is possible that other variables that are not available in our dataset might be important. Thus, as a robustness check for our results, we employ the test for omitted variable bias described in Oster (2019). This method allows us to estimate identified sets for the parameter of interest in the presence of omitted variable bias, under the assumption that selection on observable controls is proportional to selection on unobservable controls. In Appendix Tables 6, 7, and 8 we report these "Oster bounds" for the

Table 4 Sexual violence with both spouses reporting

	(1)	(2)	(3)	(4)	(5)
Agree;Husband	0.039***	0.034***	0.039***	0.038***	0.041***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Wife says Husb;Husb says Joint	0.047***	0.043***	0.047***	0.047***	0.049***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Wife says Husb;Husb says Wife	0.048***	0.045***	0.050***	0.049***	0.052***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Wife says Joint;Husb says Husb	0.012*	0.010*	0.011*	0.011*	0.011*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Wife says Joint;Husb says Wife	0.029***	0.029***	0.029***	0.029***	0.027***
	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)
Wife says Wife;Husb says Husb	0.089***	0.085***	0.084***	0.082***	0.081***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)
Wife says Wife;Husb says Joint	0.057***	0.056***	0.059***	0.059***	0.058***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Agree;Wife	0.096***	0.093***	0.098***	0.097***	0.096***
	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)
Obsv	31228	31228	27889	27889	27656
R-squared	0.049	0.052	0.056	0.056	0.060
Mean of sample	0.08	0.08	0.08	0.08	0.08
Country FE	Yes	Yes	Yes	Yes	Yes
HH controls	Yes	Yes	Yes	Yes	Yes
Attitudes	No	Yes	Yes	Yes	Yes
Preferences	No	No	Yes	Yes	Yes
Marriage	No	No	No	Yes	Yes
Bargaining	No	No	No	No	Yes

(1) "Agree;Joint" is the reference category for the above Table (2) Attitudes include attitude of husband and wife towards violence; Preferences include knowledge and alignment of preferences of husband and wife for children; Marriage includes years of marriage, total number of children the couple has, whether the couple is in a polygamous marriage; Bargaining includes wife's education, age when she was married, difference in wife and husband's education and age, whether husband and wife work, whether she earns more and relative ownership of assets. (3) HH controls include whether household is in rural area, it has electricity and wealth quintile to which the household belongs. (4) Robust standard errors in parentheses
*$p < 0.05$, ***$p < 0.001$

coefficients estimated in Tables 2, 3 and 4 respectively.[9] First, we observe that these bounding sets never include the value zero, providing a robustness check for our estimated results. Second, in addition to excluding zero, they are also tightly bound around the estimated coefficient of interest. These results further support our findings and help us in rejecting the hypothesis that there are unobservable factors that are driving the observed relationship between violence and joint decision-making.

Our findings are robust to using logit and probit models (Appendix Table 9). Moreover, our results hold both for women experiencing IPV 'sometimes' and

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[9] To calculate the bounds, we use the Stata package psacalc using Rmax, that is 1.3 times the R-squared in specifications that control for observables, the lower bound is estimated using delta = 0 and upper bound is estimated using delta = 1.

women experiencing IPV 'often' (Appendix Table 10); agreement on joint decision-making in the couple is associated with lower levels of both more frequent and less frequent perpetration by the husband. Lastly, when analyzing results separately by country (Appendix Figs. 2–4), we note that our results largely hold, though they are noisier since statistical power is reduced. There is also the case of Nigeria, where agreement on the husband making decisions is associated with less violence than agreement on joint decision-making (and this is precisely estimated).[10] While our primary interest is looking at broad patterns in within-country variation, we return to this country-level heterogeneity in our discussion.

5 Discussion and conclusion

We use reporting by wives and husbands on household decision-making over large purchases in 12 nationally representative surveys in Sub-Saharan Africa to examine the empirical relationship between the mode of decision-making and perpetration of IPV by the husband. Sole decision-making by the wife is associated with the highest levels of IPV, followed by sole decision-making by the husband.

Our main contribution is to demonstrate the importance of including the combined responses of both husbands and wives in analyses of household decision-making. Spouses do not necessarily provide the same answer about who decides and the patterns of agreement and disagreement provide important insights about the household. At an aggregate level, we find that IPV is the lowest in households where both the husband and the wife report that they make decisions jointly. Every other combination of responses is associated with higher levels of IPV.

We include additional variables that are associated with other theories regarding IPV: attitudes towards violence, similarity of preferences, marital capital, and women's bargaining power. While some of these variables are themselves significantly related to violence, they do not change our main findings on the association between agreement that decisions are made jointly and lower levels of IPV. The qualitative evidence reviewed above provides an interpretation of our empirical results. Couples who agree that they jointly make decisions may also be sharing responsibility for these decisions—and less IPV results when the responsibility is shared.

One of the limitations of the analysis presented in this paper is that it does not causally identify the impact of agreement that decisions are made jointly on the incidence of IPV. However, the descriptive patterns hold across a wide range of African countries, are aligned with a substantial body of cross-disciplinary theoretical work on how making decisions together mitigates conflict, and are supported by qualitative research on how joint decision-making reduces conflict in couples. While we concentrate on Sub-Saharan Africa in our quantitative analysis, future research should explore the extent to which our results hold in other regions. It should also

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[10] The incidence of emotional violence in Burundi and physical violence in Burkina appears lower when the couple agrees on the woman making decisions rather than when they agree that decisions are made jointly, but the former pattern is found in only 0.34 and 0.11 percent of the country sample's households respectively.

examine the reasons underlying country-specific deviations from the regional pattern. What contextual forces lead to country-level heterogeneity in the relationship between jointness and IPV?

Lastly, shared reports of joint decision-making may indicate an underlying level of respect and mutuality within a marriage. Interventions to encourage couples to make decisions jointly may not necessarily impact IPV if they do not help create these deeper relationships. Interventions, however, that build respect and encourage shared responsibility (in e.g., economic or family planning decisions) may have a more significant impact. Moreover, recognizing that women who live in households in which individuals make major decisions independently or there is disagreement over who decides are at higher risk of IPV may help in the targeting of interventions.

Compliance with ethical standards

6 Appendix

Figures 2–4 and Tables 5–10

Physical Violence

Fig. 2 The coefficients from regressions of physical violence in the last 12 months on husband and wife's decision-making responses for the 12 Sub-Saharan African countries in our sample. The bars represent 95% confidence intervals for the point estimates

Emotional Violence

Fig. 3 The coefficients from regressions of emotional violence in the last 12 months on husband and wife's decision-making responses for the 12 Sub-Saharan African countries in our sample. The bars represent 95% confidence intervals for the point estimates
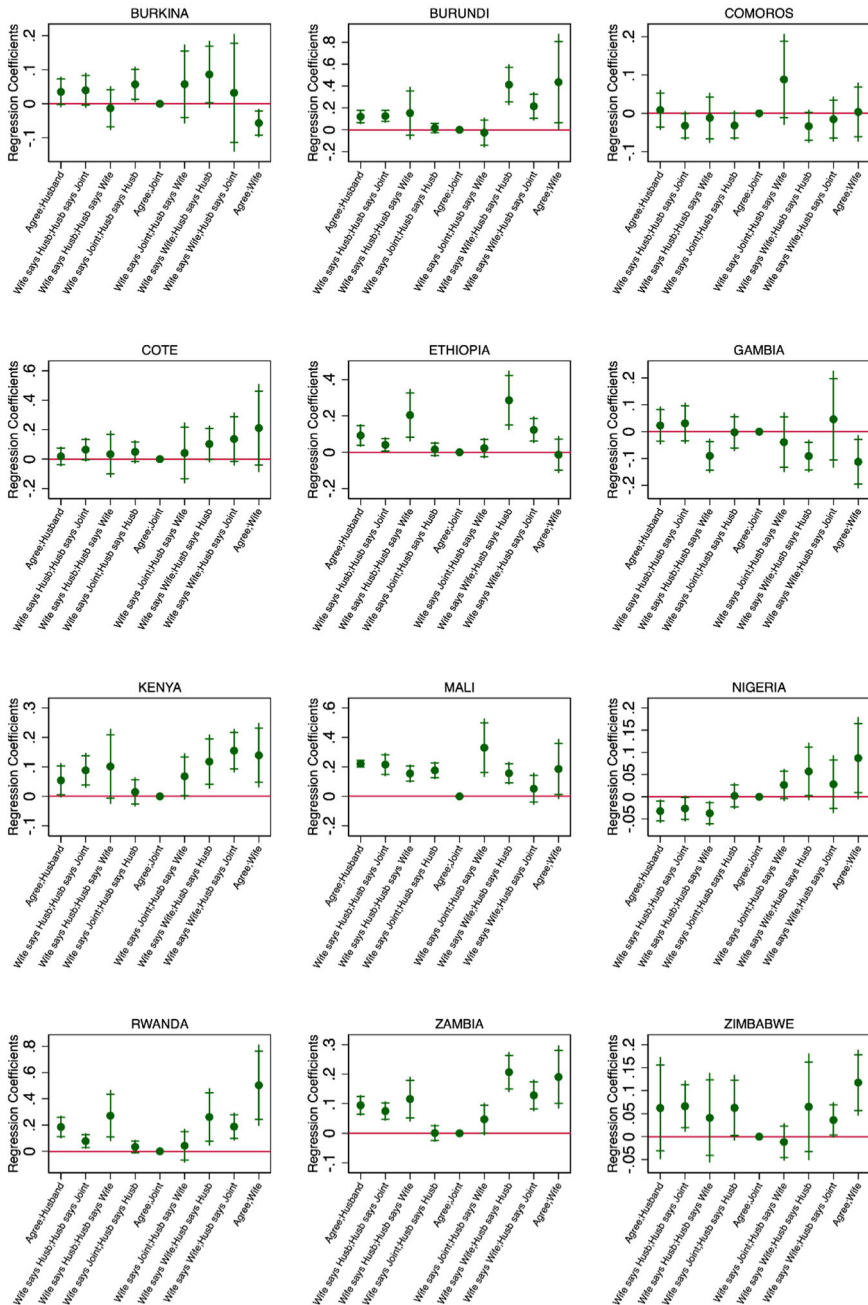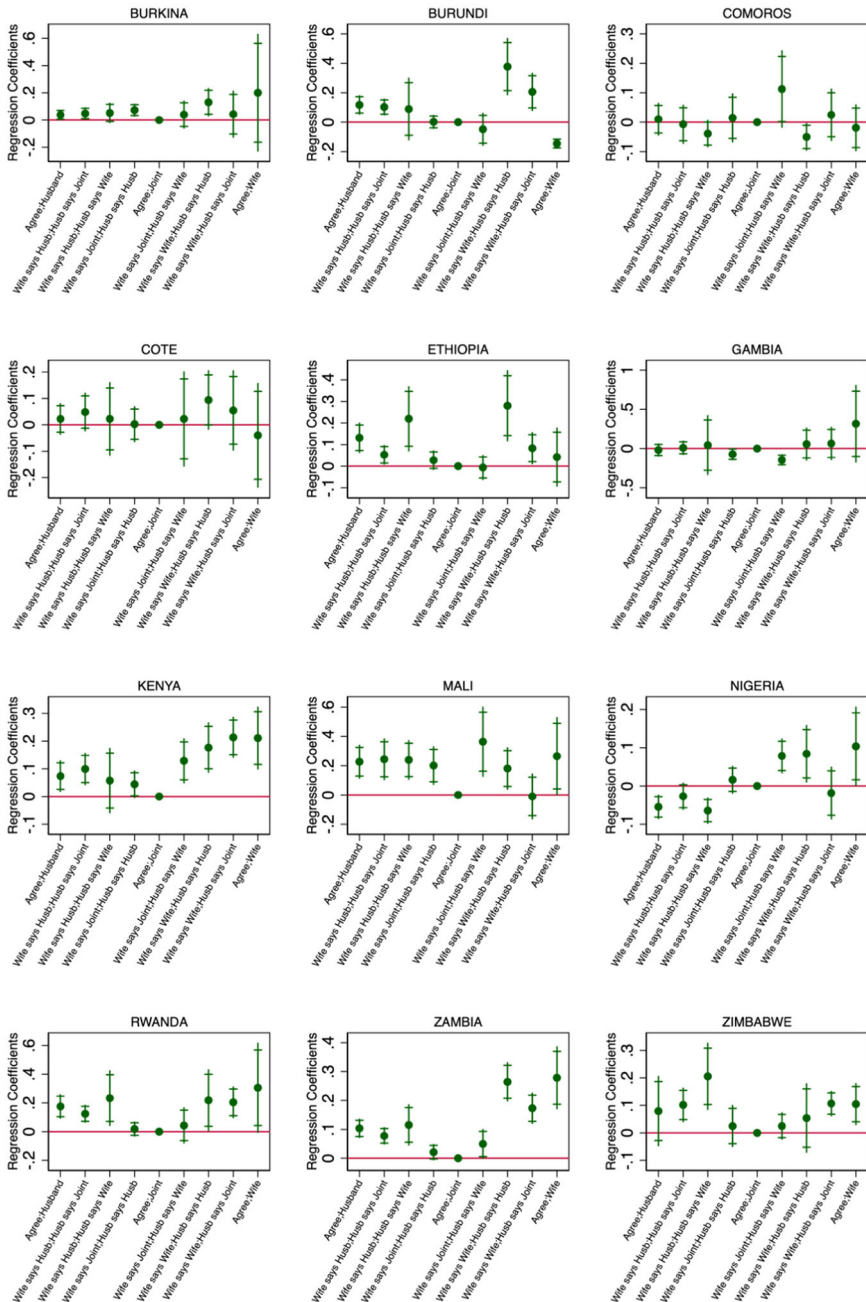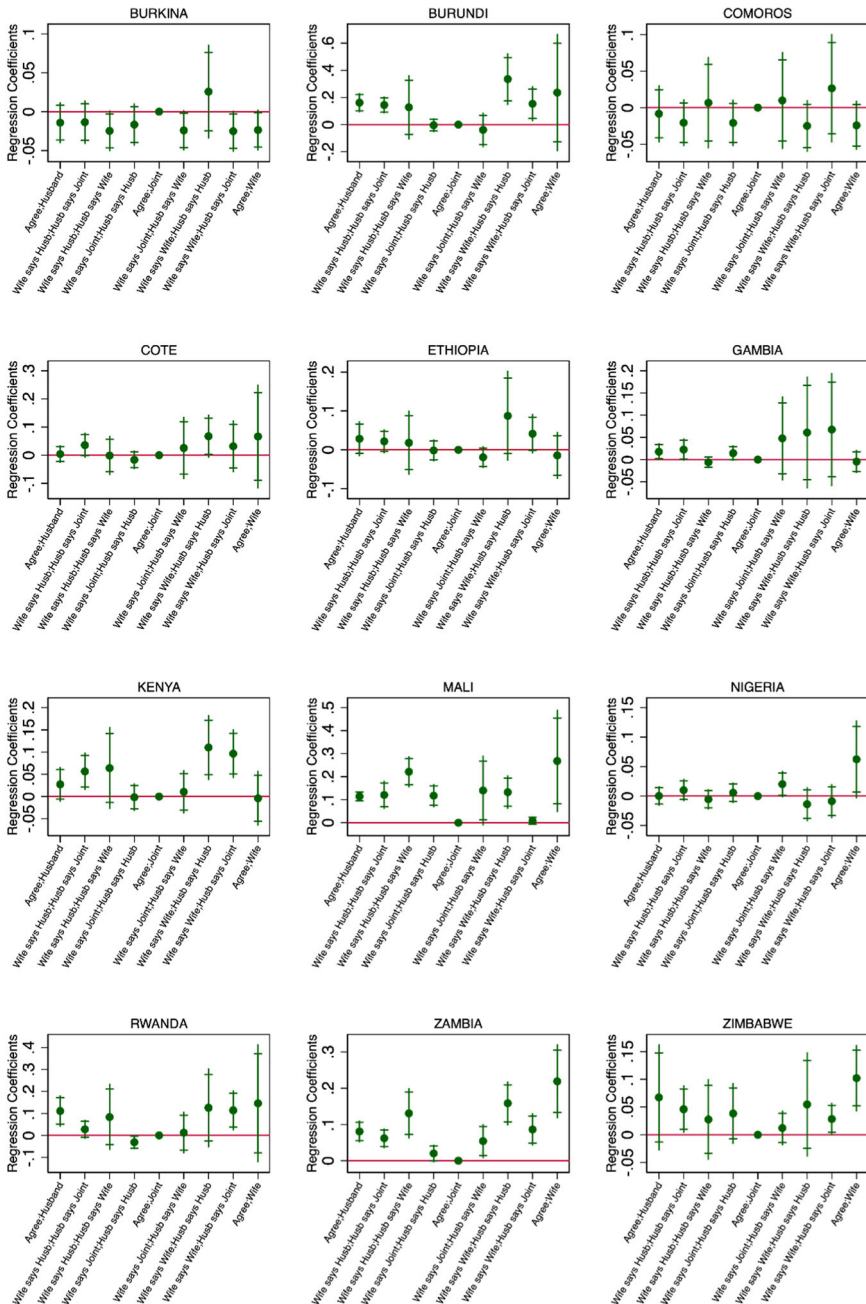
Fig. 4 The coefficients from regressions of sexual violence in the last 12 months on husband and wife's decision-making responses for the 12 Sub-Saharan African countries in our sample. The bars represent 95% confidence intervals for the point estimates

Table 5 Sample means of key variables across countries

	Physical IPV	Emotional IPV	Sexual IPV	Wife Says Wife	Wife Says Joint	Husband Says Wife	Husband says Joint	HH is rural	HH has electricity
Burkina	0.10	0.09	0.01	0.02	0.18	0.03	0.16	0.75	0.11
Burundi	0.20	0.18	0.22	0.06	0.60	0.03	0.62	0.85	0.08
Comoros	0.03	0.05	0.02	0.22	0.29	0.19	0.34	0.62	0.65
Cote d'Ivoire	0.22	0.16	0.05	0.08	0.31	0.04	0.30	0.68	0.46
Ethiopia	0.15	0.19	0.07	0.08	0.70	0.09	0.71	0.79	0.27
Gambia	0.10	0.12	0.02	0.05	0.43	0.04	0.38	0.59	0.34
Kenya	0.24	0.24	0.09	0.17	0.54	0.12	0.52	0.64	0.24
Mali	0.21	0.29	0.13	0.06	0.11	0.10	0.07	0.75	0.27
Nigeria	0.10	0.16	0.04	0.05	0.34	0.22	0.27	0.66	0.49
Rwanda	0.19	0.19	0.09	0.08	0.64	0.05	0.66	0.81	0.23
Zambia	0.22	0.19	0.14	0.10	0.56	0.08	0.58	0.61	0.21
Zimbabwe	0.17	0.26	0.09	0.25	0.63	0.20	0.72	0.59	0.38
Total	0.16	0.18	0.08	0.09	0.44	0.12	0.44	0.68	0.30

Table 6 Alternative hypotheses (physical violence)

	(1)	(2)	(3)	(4)	(5)
Agree;Husband	0.048***	0.037***	0.042***	0.039***	0.044***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Wife says Husb;Husb says Joint	0.056***	0.049***	0.050***	0.048***	0.051***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Wife says husb;Husb says Wife	0.037***	0.032**	0.031**	0.028**	0.036***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
Wife says joint;Husb says Husb	0.027***	0.022**	0.024**	0.022**	0.022**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Wife says Joint;Husb says Wife	0.049***	0.046***	0.039***	0.038***	0.036***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Wife says Wife;Husb says Husb	0.131***	0.121***	0.123***	0.120***	0.118***
	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)
Wife says Wife;Husb says Joint	0.098***	0.094***	0.095***	0.094***	0.094***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Agree;Wife	0.135***	0.128***	0.125***	0.124***	0.123***
	(0.020)	(0.020)	(0.021)	(0.021)	(0.021)
Household Wealth					
=1 if rural area	−0.024***	−0.025***	−0.027***	−0.028***	−0.029***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Household has electricity	−0.011	−0.007	−0.004	−0.005	−0.005
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Wealth quantile: bottom 20%	−0.024***	−0.027***	−0.024***	−0.025***	−0.020**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Wealth quantile: next-to-bottom 20%	−0.003	−0.004	−0.003	−0.004	−0.002
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Wealth quantile: second highest 20%	−0.019**	−0.013	−0.013	−0.012	−0.015*
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Wealth quantile: top 20%	−0.055***	−0.041***	−0.046***	−0.044***	−0.048***
	(0.008)	(0.008)	(0.009)	(0.009)	(0.010)

Table 6 continued

	(1)	(2)	(3)	(4)	(5)
Attitudes Towards Violence					
No one condones violence		0 (.)	0 (.)	0 (.)	0 (.)
Only husband condones violence		0.048*** (0.007)	0.047*** (0.007)	0.047*** (0.007)	0.046*** (0.007)
Only wife condones violence		0.057*** (0.005)	0.058*** (0.005)	0.057*** (0.005)	0.057*** (0.005)
Both condone violence		0.101*** (0.007)	0.100*** (0.007)	0.099*** (0.007)	0.099*** (0.007)
Preference Alignment					
Same number of ideal kids			0 (.)	0 (.)	0 (.)
Wife prefers more kids than husband			0.010 (0.006)	0.010 (0.006)	0.011 (0.006)
Husband prefers more kids than wife			0.001 (0.006)	0.000 (0.006)	0.003 (0.006)
Wife doesn't know husb's pref			0.012* (0.006)	0.013* (0.006)	0.013* (0.006)
Marriage					
Years of marriage				−0.002*** (0.000)	−0.003*** (0.000)
Couple in a polygamous marriage				0.032*** (0.007)	0.036*** (0.007)
Total number of children woman has				0.004*** (0.001)	0.006*** (0.001)
Bargaining					
Years of schooling: woman					0.002** (0.001)
Woman not working					−0.031*** (0.006)
Woman works off farm					−0.004 (0.007)
Husband does not work					−0.003 (0.015)
Age when married (Age - Yrs of marriage)					−0.004*** (0.001)
Difference in year of education (Husband-Wife)					0.001 (0.001)
Husband's age in years - Woman's age in years					−0.004*** (0.001)
Woman says she earns more than her husband					0.018 (0.012)
Only wife owns assets					0 (.)
Only husband owns assets					−0.015 (0.011)
Both own assets					−0.002 (0.011)
No one owns assets					0.009 (0.012)
Constant	0.094*** (0.010)	0.059*** (0.010)	0.052*** (0.012)	0.058*** (0.012)	0.164*** (0.026)
Obsv	31229	31229	27890	27890	27657
R-squared	0.034	0.043	0.045	0.046	0.051
Mean of sample	0.16	0.16	0.16	0.16	0.16

Table 6 continued

	(1)	(2)	(3)	(4)	(5)
Country FE	Yes	Yes	Yes	Yes	Yes
Oster Bounds					
Beta 1	(.05.09)	(.04.08)	(.04.09)	(.04.08)	(.04.09)
Beta 2	(.06.07)	(.05.06)	(.05.06)	(.05.06)	(.05.06)
Beta 3	(.04.07)	(.03.06)	(.03.06)	(.03.06)	(.04.07)
Beta 4	(.03.05)	(.02.04)	(.02.04)	(.02.04)	(.02.04)
Beta 6	(.05.07)	(.05.06)	(.04.06)	(.04.06)	(.04.05)
Beta 7	(.13.14)	(.12.13)	(.12.13)	(.12.13)	(.12.12)
Beta 8	(.1.1)	(.09.1)	(.1.1)	(.09.1)	(.09.1)
Beta 9	(.14.15)	(.13.14)	(.13.13)	(.12.13)	(.12.13)

(1) "Agree;Joint" is the reference category for the above Table (2) Beta 1-Beta 9 provides coefficient bounds for our variables of interest "Agree;Husband" - "Agree;Wife" in the order these coefficients are presented in the first panel of the table. These bounds are calculated based on the methodology suggested by Oster (2019). Beta 5 is omitted as it corresponds to the reference category "Agree;Joint" (3) Robust standard errors in parentheses

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

Table 7 Alternative hypotheses (emotional violence)

	(1)	(2)	(3)	(4)	(5)
Agree;Husband	0.046***	0.038***	0.046***	0.043***	0.053***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Wife says Husb;Husb says Joint	0.063***	0.057***	0.062***	0.060***	0.066***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Wife says husb;Husb says Wife	0.041***	0.036**	0.040***	0.038***	0.048***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
Wife says joint;Husb says Husb	0.034***	0.031***	0.033***	0.032***	0.034***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Wife says Joint;Husb says Wife	0.074***	0.073***	0.073***	0.073***	0.070***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
Wife says Wife;Husb says Husb	0.158***	0.151***	0.160***	0.156***	0.154***
	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)
Wife says Wife;Husb says Joint	0.125***	0.122***	0.128***	0.126***	0.126***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)
Agree;Wife	0.149***	0.145***	0.145***	0.143***	0.141***
	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Household Wealth					
=1 if rural area	−0.031***	−0.032***	−0.035***	−0.038***	−0.040***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Household has electricity	−0.019**	−0.016*	−0.014	−0.012	−0.013
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Wealth quantile: bottom 20%	−0.016*	−0.018*	−0.018*	−0.018*	−0.009
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Wealth quantile: next-to-bottom 20%	−0.000	−0.002	−0.002	−0.001	0.002
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Wealth quantile: second highest 20%	−0.013	−0.008	−0.007	−0.007	−0.011
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Wealth quantile: top 20%	−0.039***	−0.029**	−0.032***	−0.029**	−0.042***
	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)

Table 7 continued

	(1)	(2)	(3)	(4)	(5)
Attitudes Towards Violence					
No one condones violence		0(.)	0(.)	0(.)	0(.)
Only husband condones violence		0.018**	0.020**	0.020**	0.022**
		(0.007)	(0.007)	(0.007)	(0.007)
Only wife condones violence		0.052***	0.054***	0.054***	0.054***
		(0.005)	(0.006)	(0.006)	(0.006)
Both condone violence		0.077***	0.072***	0.072***	0.074***
		(0.007)	(0.007)	(0.007)	(0.007)
Preference Alignment					
Same number of ideal kids			0	0	0
			(.)	(.)	(.)
Wife prefers more kids than husband			0.016*	0.014*	0.015*
			(0.006)	(0.006)	(0.006)
Husband prefers more kids than wife			0.011	0.006	0.009
			(0.006)	(0.006)	(0.006)
Wife doesn't know husb's pref			0.005	0.005	0.007
			(0.006)	(0.006)	(0.006)
Marriage					
Years of marriage				−0.000	−0.001
				(0.000)	(0.000)
Couple in a polygamous marriage				0.030***	0.034***
				(0.007)	(0.008)
Total number of children woman has				0.004**	0.005**
				(0.001)	(0.001)
Bargaining					
Years of schooling: woman					0.005***
					(0.001)
Woman not working					−0.039***
					(0.007)
Woman works off farm					−0.012
					(0.007)
Husband does not work					−0.001
					(0.016)
Age when married (Age - Yrs of marriage)					−0.002**
					(0.001)
Difference in year of education (Husband-Wife)					0.002*
					(0.001)
Husband's age in years - Woman's age in years					−0.002***
					(0.001)
Woman says she earns more than her husband					0.042**
					(0.013)
Only wife owns assets					0
					(.)
Only husband owns assets					0.006
					(0.012)
Both own assets					0.013
					(0.011)
No one owns assets					0.015
					(0.012)
Constant	0.083***	0.057***	0.043***	0.030*	0.068*
	(0.010)	(0.011)	(0.012)	(0.012)	(0.028)
Obsv	31243	31243	27902	27902	27669
R-squared	0.031	0.037	0.039	0.040	0.044

Table 7 continued

	(1)	(2)	(3)	(4)	(5)
Mean of sample	0.18	0.18	0.18	0.18	0.18
Country FE	Yes	Yes	Yes	Yes	Yes
Oster Bounds					
Beta 1	(.05.09)	(.04.09)	(.05.09)	(.04.09)	(.05.11)
Beta 2	(.06.08)	(.06.08)	(.06.08)	(.06.08)	(.07.09)
Beta 3	(.04.06)	(.04.06)	(.04.06)	(.04.06)	(.05.07)
Beta 4	(.03.06)	(.03.05)	(.03.06)	(.03.06)	(.03.06)
Beta 6	(.07.09)	(.07.09)	(.07.09)	(.07.09)	(.07.08)
Beta 7	(.16.17)	(.15.16)	(.16.17)	(.16.17)	(.15.16)
Beta 8	(.12.13)	(.12.13)	(.13.13)	(.13.13)	(.13.13)
Beta 9	(.15.16)	(.14.15)	(.15.15)	(.14.15)	(.14.15)

(1) "Agree;Joint" is the reference category for the above Table (2) Beta 1-Beta 9 provide coefficient bounds for our variables of interest "Agree;Husband" - "Agree;Wife" in the order these coefficients are presented in the first panel of the table. These bounds are calculated based on the methodology suggested by Oster (2019). Beta 5 is omitted as it corresponds to the reference category "Agree;Joint" (3) Robust standard errors in parentheses

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

Table 8 Alternative hypotheses (sexual violence)

	(1)	(2)	(3)	(4)	(5)
Agree;Husband	0.039***	0.034***	0.039***	0.038***	0.041***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Wife says Husb;Husb says Joint	0.047***	0.043***	0.047***	0.047***	0.049***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Wife says husb;Husb says Wife	0.048***	0.045***	0.050***	0.049***	0.052***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Wife says joint;Husb says Husb	0.012*	0.010*	0.011*	0.011*	0.011*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Wife says Joint;Husb says Wife	0.029***	0.029***	0.029***	0.029***	0.027***
	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)
Wife says Wife;Husb says Husb	0.089***	0.085***	0.084***	0.082***	0.081***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)
Wife says Wife;Husb says Joint	0.057***	0.056***	0.059***	0.059***	0.058***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Agree;Wife	0.096***	0.093***	0.098***	0.097***	0.096***
	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)
Household Wealth					
=1 if rural area	−0.001	−0.001	−0.000	−0.001	−0.004
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Household has electricity	−0.016***	−0.014**	−0.014**	−0.014**	−0.011*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Wealth quantile: bottom 20%	−0.012*	−0.013*	−0.014**	−0.014**	−0.011
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Wealth quantile: next-to-bottom 20%	0.000	−0.001	−0.001	−0.001	−0.000
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Wealth quantile: second highest 20%	−0.007	−0.004	−0.002	−0.002	−0.003
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Wealth quantile: top 20%	−0.025***	−0.018**	−0.017**	−0.017**	−0.018**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)

Table 8 continued

	(1)	(2)	(3)	(4)	(5)
Attitudes Towards Violence					
No one condones violence		0	0	0	0
		(.)	(.)	(.)	(.)
Only husband condones violence		0.016***	0.015**	0.015**	0.014**
		(0.005)	(0.005)	(0.005)	(0.005)
Only wife condones violence		0.032***	0.033***	0.033***	0.032***
		(0.004)	(0.004)	(0.004)	(0.004)
Both condone violence		0.046***	0.044***	0.044***	0.043***
		(0.005)	(0.005)	(0.005)	(0.005)
Preference Alignment					
Same number of ideal kids			0	0	0
			(.)	(.)	(.)
Wife prefers more kids than husband			0.014**	0.013**	0.014**
			(0.004)	(0.004)	(0.005)
Husband prefers more kids than wife			0.009*	0.007	0.008*
			(0.004)	(0.004)	(0.004)
Wife doesn't know husb's pref			0.002	0.002	0.002
			(0.004)	(0.004)	(0.004)
Marriage					
Years of marriage				−0.000	−0.000
				(0.000)	(0.000)
Couple in a polygamous marriage				0.015**	0.016**
				(0.005)	(0.005)
Total number of children woman has				0.001	0.001
				(0.001)	(0.001)
Bargaining					
Years of schooling: woman					0.001
					(0.001)
Woman not working					−0.032***
					(0.005)
Woman works off farm					−0.007
					(0.005)
Husband does not work					0.008
					(0.011)
Age when married (Age - Yrs of marriage)					−0.001**
					(0.000)
Difference in year of education (Husband-Wife)					−0.000
					(0.000)
Husband's age in years - Woman's age in years					−0.001***
					(0.000)
Woman says she earns more than her husband					0.021*
					(0.010)
Only wife owns assets					0
					(.)
Only husband owns assets					0.005
					(0.008)
Both own assets					0.011
					(0.007)
No one owns assets					0.005
					(0.008)
Constant	−0.014*	−0.030***	−0.044***	−0.047***	−0.017
	(0.007)	(0.007)	(0.008)	(0.008)	(0.018)

Table 8 continued

	(1)	(2)	(3)	(4)	(5)
Obsv	31228	31228	27889	27889	27656
R-squared	0.049	0.052	0.056	0.056	0.060
Mean of sample	0.08	0.08	0.08	0.08	0.08
Country FE	Yes	Yes	Yes	Yes	Yes
Oster Bounds					
Beta 1	(.04.08)	(.03.07)	(.04.08)	(.04.08)	(.04.08)
Beta 2	(.05.06)	(.04.05)	(.05.06)	(.05.05)	(.05.06)
Beta 3	(.05.07)	(.05.06)	(.05.07)	(.05.07)	(.05.07)
Beta 4	(.01.03)	(.01.02)	(.01.03)	(.01.02)	(.01.02)
Beta 6	(.03.04)	(.03.04)	(.03.04)	(.03.04)	(.03.04)
Beta 7	(.09.1)	(.09.09)	(.08.09)	(.08.09)	(.08.09)
Beta 8	(.06.06)	(.06.06)	(.06.06)	(.06.06)	(.06.06)
Beta 9	(.1.1)	(.09.1)	(.1.11)	(.1.11)	(.1.1)

"Agree;Joint" is the reference category for the above Table (2) Beta 1-Beta 9 provide coefficient bounds for our variables of interest "Agree;Husband" - "Agree;Wife" in the order these coefficients are presented in the first panel of the table. These bounds are calculated based on the methodology suggested by Oster (2019). Beta 5 is omitted as it corresponds to the reference category "Agree;Joint" (3) Robust standard errors in parentheses

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

Table 9 Robustness to probit and logit specifications

	Physical			Emotional			Sexual		
	OLS (1)	Probit (2)	Logit (3)	OLS (4)	Probit (5)	Logit (6)	OLS (7)	Probit (8)	Logit (9)
Agree;Husband	0.044*** (0.008)	0.174*** (0.032)	0.319*** (0.058)	0.053*** (0.008)	0.205*** (0.032)	0.370*** (0.057)	0.041*** (0.006)	0.266*** (0.040)	0.521*** (0.078)
Wife says Husb;Husb says Joint	0.051*** (0.008)	0.201*** (0.032)	0.364*** (0.057)	0.066*** (0.008)	0.254*** (0.031)	0.454*** (0.055)	0.049*** (0.006)	0.301*** (0.038)	0.576*** (0.074)
Wife says Husb;Husb says Wife	0.036*** (0.011)	0.122** (0.050)	0.240** (0.093)	0.048*** (0.012)	0.175*** (0.047)	0.333*** (0.084)	0.052*** (0.008)	0.337*** (0.059)	0.689*** (0.117)
Wife says Joint;Husb says Husb	0.022*** (0.007)	0.088*** (0.032)	0.148** (0.059)	0.034*** (0.008)	0.132*** (0.032)	0.230*** (0.057)	0.011** (0.005)	0.047 (0.041)	0.074 (0.083)
Wife says Joint;Husb says Wife	0.036*** (0.010)	0.147*** (0.046)	0.260*** (0.083)	0.070*** (0.012)	0.266*** (0.042)	0.469*** (0.074)	0.027*** (0.008)	0.170*** (0.058)	0.325*** (0.116)
Wife says Wife;Husb says Husb	0.118*** (0.016)	0.428*** (0.054)	0.750*** (0.094)	0.154*** (0.017)	0.533*** (0.052)	0.925*** (0.089)	0.081*** (0.013)	0.455*** (0.064)	0.870*** (0.118)
Wife says Wife;Husb says Joint	0.094*** (0.012)	0.354*** (0.042)	0.632*** (0.074)	0.126*** (0.013)	0.435*** (0.041)	0.756*** (0.069)	0.058*** (0.009)	0.351*** (0.051)	0.680*** (0.097)
Agree;Wife	0.123*** (0.021)	0.462*** (0.068)	0.816*** (0.116)	0.141*** (0.022)	0.483*** (0.066)	0.835*** (0.110)	0.096*** (0.017)	0.540*** (0.077)	1.055*** (0.142)
Constant	0.164*** (0.026)	−1.017*** (0.111)	−1.719*** (0.201)	0.068* (0.028)	−1.450*** (0.108)	−2.492*** (0.193)	−0.017 (0.018)	−2.481*** (0.146)	−4.835*** (0.305)
Observations	27,657	27,657	27,657	27,669	27,669	27,669	27,656	27,656	27,656
R-squared	0.051			0.044			0.060		
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HH controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Attitudes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Preferences	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Marriage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bargaining	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(1) "Agree;Joint" is the reference category for the above Table (2) Attitudes include attitude of husband and wife towards violence; Preferences include knowledge and alignment of preferences of husband and wife for children; Marriage includes years of marriage, total number of children the couple has, whether the couple is in a polygamous marriage; Bargaining includes wife's education, age when she was married, difference in wife and husband's education and age, whether husband and wife work, whether she earns more and relative ownership of assets. (3) HH controls include whether household is in rural area, it has electricity and wealth quintile to which the household belongs. (4) Robust standard errors in parentheses

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

Table 10 Decision-making and frequency of violence

	Physical		Emotional		Sexual	
	Often	Sometimes	Often	Sometimes	Often	Sometimes
	(1)	(2)	(3)	(4)	(5)	(6)
Agree;Husband	0.016***	0.028***	0.023***	0.030***	0.018***	0.024***
	(0.004)	(0.007)	(0.004)	(0.007)	(0.003)	(0.005)
Wife says Husb;Hush says Joint	0.018***	0.033***	0.022***	0.044***	0.016***	0.033***
	(0.004)	(0.007)	(0.004)	(0.007)	(0.003)	(0.005)
Wife says Husb;Hush says Wife	0.019***	0.017*	0.035***	0.013	0.032***	0.020***
	(0.006)	(0.010)	(0.007)	(0.010)	(0.005)	(0.007)
Wife says Joint;Husb says Husb	0.008**	0.013*	0.009**	0.025***	0.003	0.008*
	(0.003)	(0.007)	(0.004)	(0.007)	(0.003)	(0.005)
Wife says Joint;Husb says Wife	0.011**	0.025**	0.012**	0.058***	0.011***	0.016**
	(0.005)	(0.010)	(0.006)	(0.011)	(0.004)	(0.007)
Wife says Wife;Husb says Husb	0.050***	0.068***	0.075***	0.080***	0.034***	0.047***
	(0.010)	(0.015)	(0.012)	(0.015)	(0.008)	(0.011)
Wife says Wife;Husb says Joint	0.036***	0.058***	0.050***	0.076***	0.024***	0.035***
	(0.007)	(0.011)	(0.008)	(0.011)	(0.005)	(0.008)
Agree;Wife	0.032***	0.091***	0.064***	0.077***	0.042***	0.054***
	(0.011)	(0.019)	(0.015)	(0.019)	(0.011)	(0.014)
Constant	0.001	0.163***	-0.006	0.074***	0.001	-0.018
	(0.013)	(0.024)	(0.016)	(0.025)	(0.010)	(0.016)
Observations	27,669	27,669	27,669	27,669	27,669	27,669
R-squared	0.022	0.044	0.026	0.030	0.025	0.041
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HH controls	Yes	Yes	Yes	Yes	Yes	Yes
Attitudes	Yes	Yes	Yes	Yes	Yes	Yes
Preferences	Yes	Yes	Yes	Yes	Yes	Yes
Marriage	Yes	Yes	Yes	Yes	Yes	Yes
Bargaining	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses.

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

Often $=1$ if to any of the survey questions, the response was "often". Sometimes$=1$ if all responses were "sometimes"

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