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Article

Household decision-making and its association with intimate partner violence: Examining differences in men's and women's perceptions in Uganda

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ABSTRACT

Introduction: A vast body of evidence identifies intimate partner violence (IPV) as a public health and human rights issue with detrimental health consequences. The exploration of household decision-making, as an indicator of women's empowerment, and its association with IPV has so far yielded mixed results, mostly due to measurement issues. Given the sizeable investment in women's empowerment initiatives, and their potential to improve women's health, it is important to elucidate the relationship between household decision-making and IPV.

Methods: We conducted a secondary analysis of the 2011 Uganda Demographic and Health Survey (DHS) data to explore the relationship between women's household decision-making and experience of physical IPV. The dependent variable in our analysis was past year physical violence and it was constructed using men's reported perpetration of partner violence (men's questionnaire). Six independent variables were included – one each for men and women's perspectives on who usually makes decisions about the following domains: 1) how money earned is spent, 2) health care, and 3) large household purchases. We ran a probit model, controlling for variables featured in our theoretical framework.

Results: The association between household decision-making and women's likelihood of experiencing IPV depended on the decision-making domain and on who reported it. Women's reporting on decision-making did not predict their experience of IPV, whereas men's reporting on two decision-making domains (large household purchases and expenditure of husband's earnings) predicted likelihood of women experiencing IPV. Joint decision-making and women's decisions alone in both of these domains were associated with a lower probability of IPV compared to husband's making the decisions alone, where husband's reported decision-making.

Conclusion: This study demonstrates that men's views on coupled dynamics should be included in program design and evaluation to provide a more holistic picture of the ecological framework and risk and protective factors of IPV.

1. Introduction

Despite an international commitment to achieve gender equality (Nations, 2017), violence against women persists in myriad forms, with intimate partner violence (IPV) being one of its most pervasive manifestations. Comprising physical, emotional and sexual abuse by a current or previous intimate partner (Fulu & Heise, 2015), IPV typically occurs on an on-going basis rather than as an isolated episode, and women affected often experience more than one form of violence (García et al., 2005). The global prevalence of IPV is estimated at 30% (ranging from 27.8 to 32.2%) (Devries et al., 2013), though this masks

considerable heterogeneity in prevalence between and within regions, countries, and even between neighbourhoods (Heise & Kotsadam, 2015).

A vast body of evidence identifies the serious health consequences of IPV, demonstrating it is not solely a human rights issue, but also a global public health concern (Fulu & Heise, 2015; García et al., 2005; Johnson & Kishor, 2004; Kyegombe et al., 2014; World Health Organisation, 2013). Effects are short and long-term (Campbell, 2002), and cumulative across the lifespan. Those who experience IPV directly and their offspring are burdened by its health consequences, which can be direct (injury and death) or indirect (physical, sexual and

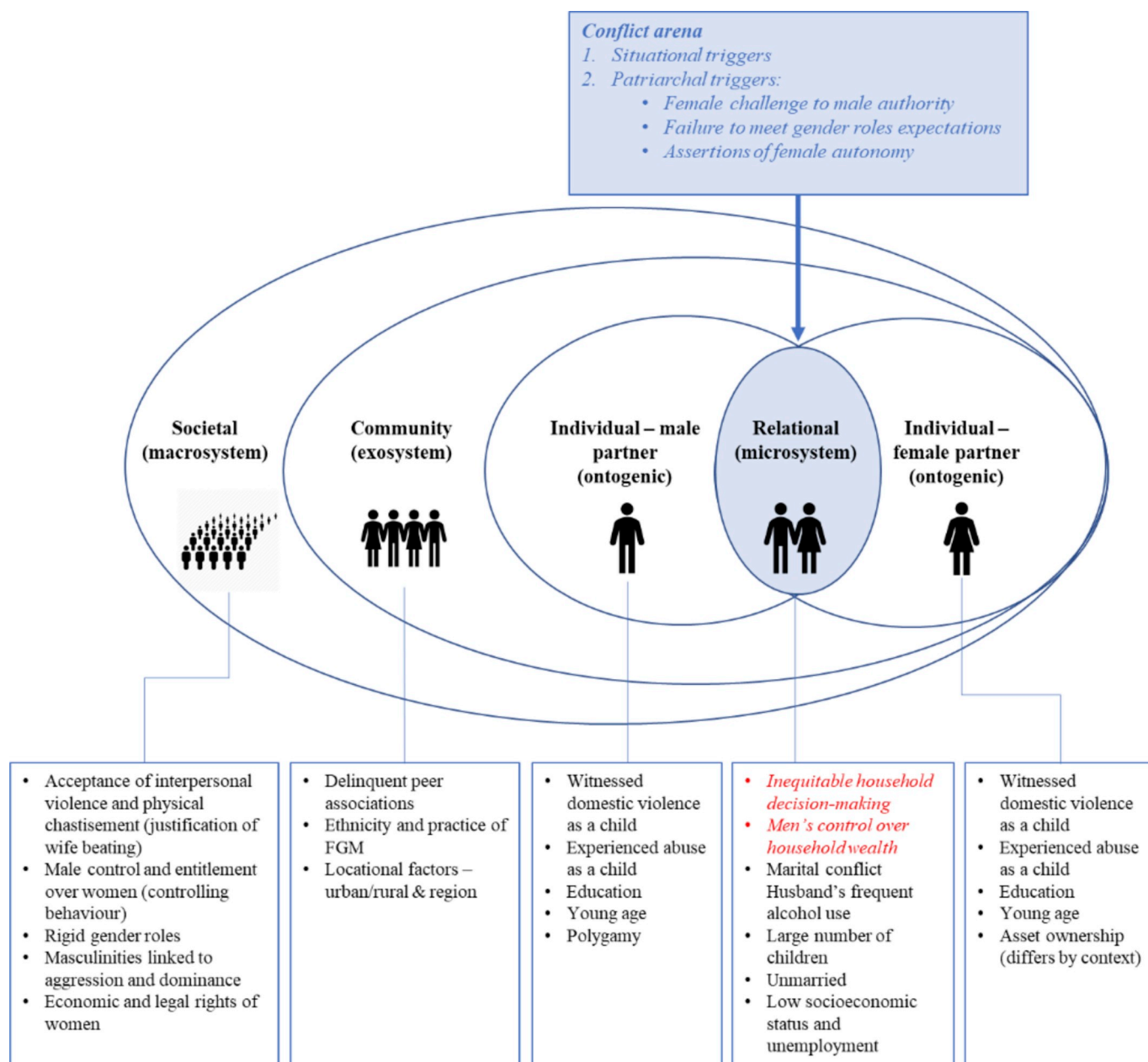
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Note: Factors italicised in red are explanatory variables in this paper.

Fig. 1. Ecological framework.

Source: Adapted from Heise 1998 and Heise 2011

reproductive, or mental health) (Campbell, 2002). This can potentially lead to inter-generational transmission of IPV (Fulu et al., 2017). Furthermore, apart from the direct health consequences, there is the potential uptake of harmful health behaviours among survivors, such as alcohol or drug abuse as a coping mechanism (Campbell, 2002; World Health Organisation, 2013). IPV may also reduce access to health services (Hindin, Kishor, & Ansara, 2008; Johnson & Kishor, 2004). Causal pathways between IPV and these health consequences however, are often complex, context-specific and it is difficult to establish temporality of association (World Health Organisation, 2013).

1.1. Intimate partner violence and household decision-making: theoretical insights and considerations

Heise's framework (1998) uses an adapted version of Bronfenbrenner's ecological framework of child development to the

understanding of IPV, including its underlying risk factors of IPV (see Fig. 1). The ecological framework shifts discourse away from single causes of IPV, to recognising that the probability of IPV occurring is a function of numerous factors that interact with each other across four levels (individual, relational, community and societal factors) (Go et al., 2003). This ecological framework is not definitive, and requires adaptation to the cultural context in which it is being used (Heise, 1998). This is particularly important in the context of low-income country research, since the initial ecological framework drew heavily on studies from high-income countries, due to the availability of research when it was developed. It has since been validated by studies in low-income contexts (Go et al., 2003; Kyegombe et al., 2014; Paul, 2016; Wekwete, Sanhokwe, Murenjekwa, Takavarasha, & Madzingira, 2014), demonstrating its continued relevance.

The relational level of the ecological framework, which accounts for those variables affecting the couple and their relationship, is vital to

understand risk factors of IPV. However, there are important relational factors that have received less attention in the literature, such as household decision-making, an indicator of power and control within relationships (Friedemann-Sánchez & Lovatón, 2012; Hindin & Adair, 2002). Decision-making represents an interaction occurring within the household and provides an understanding of dynamics within relationships (Rahman, Hoque, & Makinoda, 2011). These dynamics can in turn elucidate the extent to which each party fulfils or resists prescribed gender social norms (Flake & Forste, 2006) and determines how household resources are allocated, which has implications for the welfare of all household members (Dodoo & Frost, 2008; Hindin & Adair, 2002; Rahman et al., 2011). Since power and control are at the basis for the perpetration of gender based violence, understanding relationship power dynamics through decision-making enhances understanding of IPV (Hindin & Adair, 2002).

Evidence suggests that as an indicator of empowerment, women's decision-making has one of the strongest positive associations across multiple developmental outcomes (Taukobong et al., 2016). While other indicators of women's empowerment such as household earnings are important, decision-making enables understanding of who has control over how those earnings are spent, and thus the power dynamics within couples that may influence access to other indicators of empowerment. It thus provides insight into the extent to which women are able to exercise choice and control (Rahman et al., 2011). There is however, some empirical evidence that has found that increases in women's decision-making may be positively associated with IPV. Women who make household decisions could be at greater risk of IPV if their spouse perceives their household dominance diminishing or that this reflects their inability to fulfil their socially prescribed household gender role (Gage, 2005; Islam, Broidy, Baird, & Mazerolle, 2017; Rajan, 2014; Wilson-Williams, Stephenson, Juvekar, & Andes, 2008).

Feminist theorists argue that increasing women's empowerment reduces IPV. They link IPV to societal level factors, specifically men's power and control over women in patriarchal societies. According to this perspective, enhanced female autonomy and power should reduce IPV (Eswaran & Malhotra, 2011; Schuler & Nazneen, 2018). While feminist theory's assertion of the inverse relationship between IPV and women's decision-making power has theoretical plausibility, empirical evidence is mixed (Assaf & Chaban, 2013) (Antai, 2011; Donta, Nair, Begum, & Prakasam, 2016).

Other theories and empirical evidence suggest that increasing women's decision making power or women's sole decision-making may be positively associated with IPV (Hindin, 2003; Oyekale, 2014; Rajan, 2014; XuKerley and Sirisunyaluck, 2011). A study examining women's empowerment and IPV in Bangladesh found that as the number of household decisions women participated in increased, so too did their odds of experiencing IPV (Rahman et al., 2011). Finally, the evidence suggests decisions dominated by either men or women is associated with greater risk of IPV compared to egalitarian or joint decision-making (Rajan, 2014; XuKerley and Sirisunyaluck, 2011). Numerous studies have found that households in which decisions are made jointly have a lower probability of IPV, compared to households in which either the husband or wife dominate decision-making (Flake & Forste, 2006; Friedemann-Sánchez & Lovatón, 2012; Gage, 2005; Hindin & Adair, 2002; Singh, Singh, & Singh, 2014; XuKerley and Sirisunyaluck, 2011).

When situating household decision making in the wider context, we found that violence may be used when men perceive their status within the household is inconsistent with social norms (Yick, 2001) or when women challenge gender norms by transgressing socially prescribed household gender roles (Stern, Heise, & McLean, 2017; Weitzman, 2014). Women experience backlash against these transgressions to social norms, whereby men use violence to demonstrate their dissatisfaction with women's enhanced household power (Chin & Yoo, 2012; Paul, 2016), reassert their dominance and control in the household and as a form of self-gratification against feelings of powerlessness

(Eswaran & Malhotra, 2011; Gage, 2005; Oropesa, 1997).

Along these lines, women's household decision-making is more likely to be associated with an increase in IPV in societies where masculinities are associated with male dominance and control over women, and where traditional gender roles prevail (Flake & Forste, 2006; Hatcher, Colvin, Ndlovu, & Dworkin, 2014; Islam et al., 2017; Mann & Takyi, 2009; XuKerley and Sirisunyaluck, 2011). However, influences at the relational and societal level may differ. Men may use IPV if cultural norms at the societal level dictate men traditionally make household decisions, even if women's decision-making is not perceived as a threat at the relational level (Flake & Forste, 2006). Conversely, in their study in the Philippines, Hindin and Adair (2002) note the paradox between women's equality at the societal level which is not replicated in the household at the microsystem level, resulting in high levels of IPV.

A more refined analysis of the relationship between decision-making and violence should take into consideration that decision-making authority is a nuanced concept which is often gender stratified (Mann & Takyi, 2009), with women traditionally having more decision-making power in domestic activities and men in external ones (Choi and Harwood, 2004). Hence, decisions relating to a domain that has been socialised as traditionally a woman's decision, may not be positively associated with IPV in the same magnitude that a domain that directly challenges men's culturally assigned household role of breadwinner and decision-maker (XuKerley and Sirisunyaluck, 2011). The relatively few studies analysing the association between women's decision-making power and IPV by domain have found the size and direction of the association differed by domain, however there was no consistency in findings across studies (Castro, Casique, & Brindis, 2008; Oyekale, 2014; Rahman et al., 2011).

Likewise, when considering gendered perceptions of household decision-making, Mann and Takyi (2009) found more women reported egalitarian decision-making processes than men, and the association with IPV differed between men and women's reporting of who made the decisions. Specifically, associations were only statistically significant for men reporting their wife makes decisions solely or jointly (Mann & Takyi, 2009). These findings, although limited to analysing the effect on justifications of wife beating as a proxy for IPV, suggest men's perspectives were a stronger predictor of attitudes toward IPV than women's perspectives, with the authors concluding there may be different mechanisms explaining men and women's perceptions of IPV (Mann & Takyi, 2009). A similar finding occurred in Nepal, which found men's self-reported views on acceptance of wife beating was positively and statistically significantly associated with IPV, whereas women's acceptance of wife beating was not (Yoshikawa, Shakya, Poudel, & Jimba, 2014).

1.2. Measuring decision-making

There are myriad methods for constructing decision-making variables which makes consensus on its association with IPV challenging to ascertain. Several studies using DHS data construct decision-making variables by summing the number of decisions made by the respondent alone, jointly, by their partner or divided between them and their partner across all decision-making domains (Flake & Forste, 2006; Friedemann-Sánchez & Lovatón, 2012). However, this approach cannot determine whether the association differs by decision-making domain and may create misleading interpretations since not all decision-making domains can be extrapolated to women's empowerment (Heckert & Fabric, 2013). Other studies group decision-making by domain, including on how to spend money, final say on healthcare, final say on large purchases, final say on daily purchases, final say on visits to family and friends and what to do with husband's money (Oyekale, 2014; Rahman et al., 2011). Finally a third group of studies create binary variables equal to 1 if women decided alone or jointly and 0 otherwise (Antai, 2011; Donta et al., 2016; Kwagala, Wandera, Ndugwa, &

Kabagenyi, 2013). This approach is limited because, as identified earlier, there are important distinctions between women making decisions alone and jointly.

In datasets from countries, such as Uganda, where a significant proportion of women report making decisions jointly, this has great implications in the results, as combining responses may not detect nuances between sole and joint decision-making (Peterman, Schwab, Roy, Hidrobo, & Gilligan, 2015). Studies analysing joint versus either men or women making decisions (Gage, 2005; Singh et al., 2014) are not able to establish whether there are differences in the association depending on whether women or men are sole decision-makers.

For this analysis on Ugandan Demographic Health Survey (DHS) data, we use a categorical variable to analyse decision-making by domain, an approach adopted in few other papers. We do this because, as mentioned before, not all decision-making domains can be extrapolated to women's empowerment, since some may reinforce traditional gender roles (Castro et al., 2008). This suggests it is important to know which decision-making domains may be associated with IPV, to understand whether these reinforce or undermine women's empowerment. For this paper, we adapt Heise's ecological framework by drawing on empirical research on the association between women's household decision-making and IPV in low-income settings, to ensure it is appropriate for the Ugandan context (See Fig. 1).

The purpose of this study is to explore the relationship between women's decision-making in the household and their experience of physical intimate partner violence. Specifically, we use DHS data from Uganda to assess: a) the evidence and magnitude of the effect of the association between women's sole and joint household decision-making and physical IPV; 2) whether there are differences in this association between the three decision-making domains: respondent's healthcare, large household purchases and how husband's earnings are spent; and 3) whether there are gendered differences in the association between women's decision-making and IPV.

A contribution of this paper is it builds on the scant literature that includes men's perceptions of decision-making power, and analyses whether there are differences in the association between decision-making and IPV depending on whether it is men or women self-reporting on who makes decisions.

2. Methods

2.1. Data and sample

We conducted a secondary analysis of the 2011 Uganda DHS data to explore the relationship between women's decision-making in the household and their experience of physical IPV. Data collection occurred between June and December 2011, with re-coded data available in 2012. We sought and received approval for the use of this data. We used the household, woman's and man's DHS questionnaires for this analysis. We also used the couple's dataset for the main analysis as views on decision-making could be compared between spouses. This allowed us to link the men's questionnaire, including the men's domestic violence module, to their partner's responses from the woman's questionnaire. The DHS Ethical and Safety guidelines requires that only one individual per household can be asked the domestic violence module, meaning the couple's dataset only includes domestic violence modules administered to men.

The dependent variable in our analysis was physical violence within the past 12 months. This was constructed using the couples' dataset using men's reported perpetration of domestic violence toward their partner (men's questionnaire). A dichotomous dependent variable was constructed equal to 1 if men who received the domestic violence module answered "yes" to the question, "have you ever hit, slapped, kicked, or done anything else to physically hurt your (last) wife/partner at times when she was not already beating or physically hurting you", and if they reported this had occurred within the past 12 months.

Six independent variables were included – one each for men and women's perspectives on who usually makes decisions about: 1) how the money you/husband earns is spent, 2) health care for yourself, and 3) large household purchases. A categorical variable for each explanatory variable was coded 1 if husbands alone, 2 if jointly, and 3 if wives alone usually made decisions.

Confounding variables were selected based on their alignment with the ecological framework. Certain variables in the ecological framework were excluded due to lack of available data in the couple's dataset, including delinquent peer associations, husband's frequent alcohol consumption, economic and legal rights of women, masculinities linked to aggression and dominance, rigid gender roles, male control and entitlement over women. Where confounding variables would feasibly be the same between men and women (i.e. marital status where the unit of analysis is the couple), we used data originating from the men's questionnaire for consistency with the dependant variable and to avoid multicollinearity. A categorical variable was created for men's and women's views on justification of wife beating, which summed the number of domains in which the respondent agreed using a scale from 0-5 that wife beating is justified. This approach was adopted due to the high correlation when each domain was considered separately.

2.2. Analysis

Data was analysed using STATA version 14.2. Descriptive statistics used UDHS' domestic violence constructed weights. While it is widely accepted weights should be used in descriptive statistics, there is less consensus regarding their use in regression analysis. This research, in accordance with DHS guidelines (59), does not use sample weights, since weighted rather than actual observations would be used to calculate standard errors which could underestimate standard errors and produce biased confidence intervals (59,60).

As correlations between men's decision-making variables were between 40.90% and 48.71% ($p < 0.000$) three regression models were run for each decision-making domain. Each regression comprised two independent variables; men's and women's perspectives on who makes decisions. To avoid multi-collinearity, correlations between variables were tested and three highly correlated control variables (number of children, men's age and land ownership) with $p < 0.00$ removed.

We re-coded 'don't know' as missing and dropped all missing observations. We removed the control variable "views on female genital mutilation" from the regression since the large number of missing observations (396) reduced the sample size. We expect that including ethnicity may capture views on female genital mutilation since at the community level in Uganda, some ethnic groups practice female genital mutilation. We used a probit model which assumes a normal distribution of the probability of IPV. Robust standard errors were estimated to correct for heteroskedasticity.

Sensitivity analysis was conducted to validate findings from regression results in the primary analysis. This was done using the men's questionnaire and women's questionnaire data separately. A final sensitivity analysis was conducted analysing whether couples who agree on who makes decisions face a different probability of IPV compared to couples with divergent views on who makes decisions. For this, we constructed a dependent variable equal to 0 if women and men agreed on who usually makes decisions in large household purchases/husband's earnings, and equal to 1 if they did not.

3. Results

3.1. Descriptive statistics

We conducted cross tabulation in the total unweighted sample to understand characteristics among those who reported perpetrating IPV compared to those who did not (Table 1). Men who report perpetrating IPV are more likely to report that wife beating is justified compared to

Table 1
Cross-tabulation descriptive statistics, full unweighted sample, n = 908.

		IPV within past 12 months (number, percent of those reporting perpetration of IPV within 12 months)	No IPV within past 12 months (number, percent of those not reporting perpetration of IPV)
Respondents father ever beat mother	Yes	109 (78%)	383 (57%)
	No	30 (22%)	292 (43%)
Marital status	Married	108 (72%)	562 (74%)
	Living with partner	43 (28%)	195 (26%)
Income quintile	Poorest	47 (31%)	171 (23%)
	Poorer	35 (23%)	154 (20%)
	Middle	29 (19%)	119 (16%)
	Richer	20 (13%)	140 (18%)
	Richest	20 (13%)	173 (23%)
Husband's highest level of education	No education	12 (5%)	53 (7%)
	Primary school	102 (45%)	442 (58%)
	Secondary school	30 (13%)	187 (25%)
	Higher education	82 (36%)	75 (10%)
Wife's highest level of education	No education	25 (17%)	120 (16%)
	Primary school	101 (67%)	457 (60%)
	Secondary school	20 (13%)	136 (18%)
	Higher education	5 (3%)	44 (6%)
Husband own's a house	Does not own	22 (15%)	111 (15%)
	Alone only	90 (60%)	403 (53%)
	Jointly only	32 (21%)	185 (24%)
	Both alone and jointly	7 (5%)	58 (8%)
Number of domains in which wife beating is considered justified (men's perspective)	0	71 (47%)	485 (64%)
	1	27 (18%)	97 (13%)
	2	22 (15%)	92 (12%)
	3	18 (12%)	52 (7%)
	4	6 (4%)	21 (3%)
	5	7 (5%)	10 (1%)
Number of domains in which wife beating is considered justified (women's perspective)	0	48 (32%)	325 (43%)
	1	22 (15%)	107 (14%)
	2	25 (17%)	108 (14%)
	3	26 (17%)	85 (11%)
	4	19 (13%)	71 (9%)
	5	11 (7%)	61 (8%)

couples where men do not report perpetrating IPV. For example, 9% who reported perpetrating IPV stated it was justified in 4–5 domains, compared to 4% among those who did not report perpetrating IPV. Among those who reported perpetrating IPV, 78% stated their father had beaten their mother compared to 57% among those who did not report being violent. There were also difference in socioeconomic status – among those who reported perpetrating violence 13% were from the richest income quintile compared to 23% among those who did not report perpetrating violence. [Appendix A](#) outlines descriptive statistics for the regression samples.

When looking at decision making within the household, compared to those who report perpetrating IPV, men who do not report perpetrating IPV report a greater proportion of decisions are made jointly ([Chart 1](#)). Men are more likely than women to perceive decisions are made jointly.

3.2. Regression results

[Table 2](#) reports regression results for independent variables (full model results in [Appendix A](#)). Our results found that the association between decision making and women's likelihood of experiencing IPV depended on the decision-making domain and also on who reported household decision making. Hence, we found that women's reporting on decision making did not predict if they were more or less likely to experience IPV, whereas men's reporting on decision-making in two domains predicted likelihood of experiencing IPV. When using data on women's views on who makes decisions, no results are statistically significant. Conversely, when men report household decision-making, compared to husband's making decisions alone, decisions made by women alone and jointly in the domains of large household purchases and husband's earnings were both associated with a lower probability of

experiencing IPV.

Joint decision-making is associated with a reduced probability of IPV compared to husband's alone making the decision, though only for men's self-reported data (no results are statistically significant using women's self-reported decision-making). There is a 5.9 percentage point reduction in the probability of IPV for decisions on large household purchases and a 9.1 percentage point reduction for decisions on husband's earnings where decisions are made jointly compared to husband's alone making decisions. Statistically significant control variables are similar across models.

Women making decisions alone compared to husband's alone is associated with a larger percentage point reduction in experiencing IPV compared to jointly made decisions. Specifically, women making decisions alone for a) large household purchases was statistically significantly associated with an 11.7 percentage point lower probability of experiencing IPV and b) husband's earnings was statistically significantly associated with a 15.8 percentage point lower probability of experiencing IPV, compared to husband's alone making decisions, where husband's reported decisions-making.

In terms of control variables, we found that men's fathers beating their mothers is associated with an 11.8–13.0 percentage point increase in the probability of IPV compared to men whose fathers did not beat their mothers, thus reinforcing evidence on the intergenerational cycle of violence and validating the ecological framework that exposure to IPV as a child is a risk factor. East Central is associated with a 24.6–28.2 percentage point lower probability of IPV compared to Kampala, while women from the Banyankol tribe is a protective factor compared to those from the Baganda tribe.

In models 1 and 2, women's agreement that wife beating is justified in three domains is associated with an increased probability of IPV compared to those who state it is never justified, as is primary school

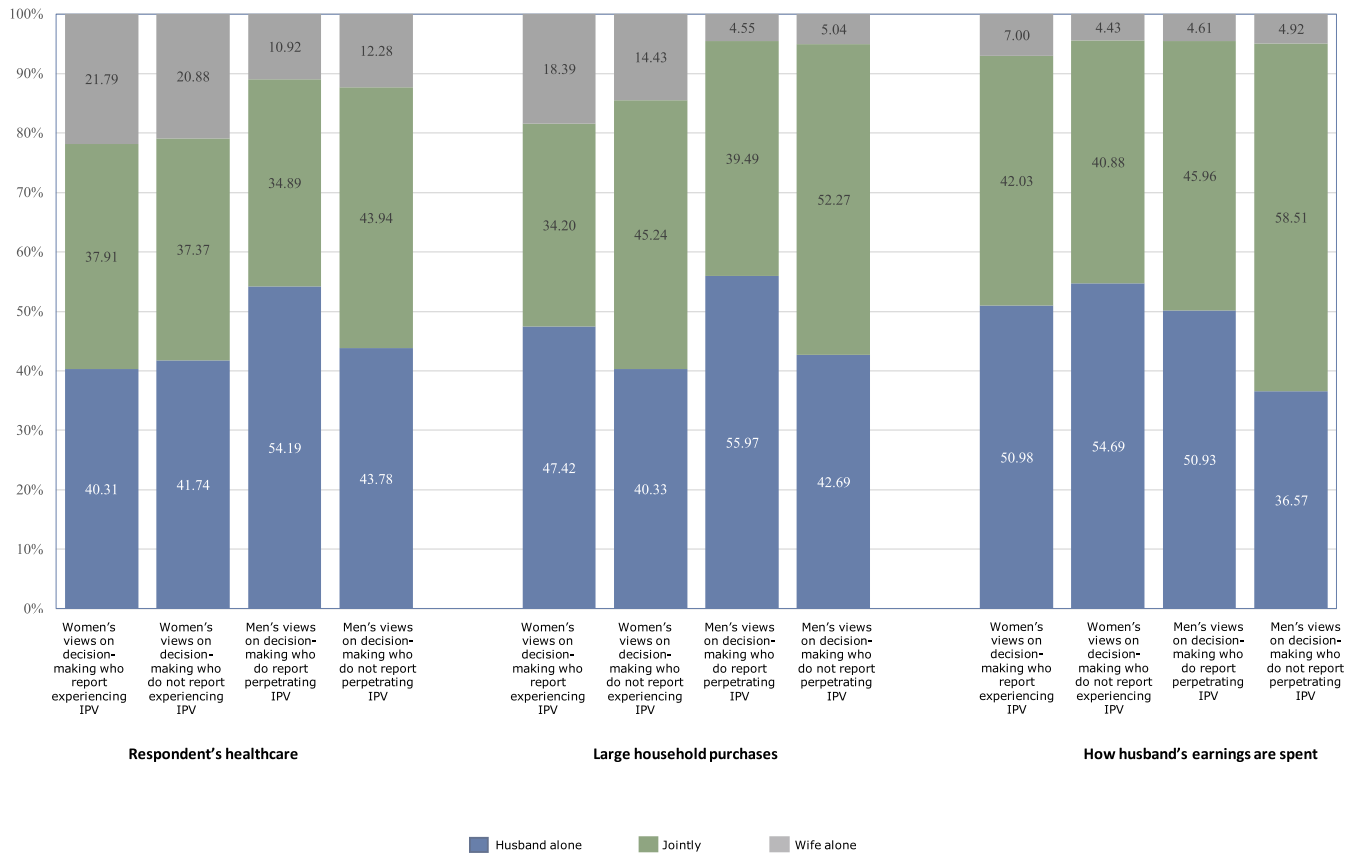


Chart 1. Views on who makes decisions by gender and experience of IPV.

being women's highest level of education compared to no education. In model 3, compared to their respective reference categories, being from the richest income quintile and Eastern region are protective factors while men who have primary school as their highest level of education is a risk factor.

Sensitivity analysis is consistent with findings from the regression results in the primary analysis (Table 3). In the men's self-reported data, only decisions made jointly for large household purchases is no longer statistically significant. Women's perceptions show no statistical significance across decision-making variables, as per the regression results in the primary analysis. The latter is particularly interesting given the women's dataset uses women's self-reported experience of IPV (through the domestic violence module administered to women). This strengthens our analysis, as the sensitivity analysis is less likely to be subject to social desirability or information bias compared to men's reported use of violence as per the primary analysis. This suggests the data limitations may not effect the findings.

Given that results differed between men and women, additional analysis was undertaken to test whether couples in which there is

consensus on who makes the decisions have a lower probability of IPV than couple's in which individuals have divergent views on who makes decisions. Results for this analysis were not statistically significant for the explanatory variables, suggesting there is no association between couples having divergent views on who makes decisions and occurrence of IPV. Statistically significant control variables were similar to the primary analysis regression results.

4. Discussion

Using Ugandan DHS data, our study demonstrates that there are important differences in the association between women's joint and sole decision-making on IPV that depends on whether the women's or men's data on decision-making is used. When compared to husbands' sole decision-making, women's sole and joint decision-making has no evidence of an association with IPV when using women's self-reported data. There is a reported decrease in probability of IPV when using men's self-reported data in the domains of large household purchases and husband's earnings.

Table 2 Regression results (primary analysis).

Variable (reference category husband's sole decision-making)	Model 1: Respondents healthcare	Model 2: Large household purchases	Model 3: Husband's earnings
Coefficient (standard errors)			
Decision-making explanatory variable - men's perspective			
Jointly	-0.033 (0.028)	-0.059 (0.030)*	-0.091 (0.035)**
Wife alone	-0.025 (0.042)	-0.117 (0.041)**	-0.158 (0.053)**
Decision-making explanatory variable - women's perspective			
Jointly	0.008 (0.031)	0.020 (0.029)	0.002 (0.031)
Wife alone	0.060 (0.038)	0.085 (0.045)	0.092 (0.073)

* = p < 0.05; ** = p < 0.01; ***p < 0.001.

Table 3
Sensitivity analysis.

Variable	Men's only dataset			Women's only dataset		
	Model 1: Respondent's healthcare	Model 2: Large household purchases	Model 3: Husband's earnings	Model 1: Respondent's healthcare	Model 2: Large household purchases	Model 3: Husband's earnings
Jointly	−0.039 (0.025)	−0.043 (0.026)	−0.073 (0.029)*	−0.010 (0.041)	−0.039 (0.041)	−0.016 (0.037)
Wife alone	−0.049 (0.035)	−0.088 (0.036)*	−0.106 (0.050)*	0.024 (0.046)	−0.064 (0.047)	−0.016 (0.060)
Statistically significant control variables	<ul style="list-style-type: none"> ● Older age (p) ● Father beat mother ● Richest (models 2 and 3) or richer (model 3) income quintile (p) ● Views supporting wife beating in 1 or 3 domains ● Banyankole ethnicity (p) 			<ul style="list-style-type: none"> ● Father beat mother ● Husband alcohol use (model 2 only) ● Rich or richest wealth index (p) ● Other ethnicity and Munyarwanda (model 3) ● Husband's controlling behaviour 		

* = $p < 0.05$; ** = $p < 0.01$; *** $p < 0.001$; p = protective factor.

The evidence of an association only for men's views on decision-making suggests men's perceptions of who makes decisions may be a more important predictor of IPV than women's perceptions. This finding is similar to a previous study in Ghana, in which there was evidence of an association between IPV and women or joint decision-making from men's perceptions. There was however no evidence of an association for women's sole decision-making when it was women's perceptions (Mann & Takyi, 2009). This may occur because, as the potential perpetrator of IPV, men's perception of their wife's participation in decisions is paramount to whether it supports or undermines their concept of masculinity and challenges their views on household gender roles. Despite this demonstrated importance of men's perspectives, IPV research including measures on decision making has almost exclusively collected data from women, a limitation noted in several studies (Castro et al., 2008; Doodoo & Frost, 2008; Flake & Forste, 2006).

Meanwhile the results that did not show evidence of an association when women report who makes household decisions and IPV validates a previous study in Uganda (Kwagala et al., 2013). This finding may be explained by women making joint decisions to avoid conflict or blame from adverse consequences of the decision, rather than reflecting actual partnership (Buller et al., 2016), thereby diluting associations with IPV. Women reporting wife beating is justified in more domains than men may be because IPV is often associated with feelings of self-blame and shame on the part of the victim, meaning women may seek to justify their experience of violence. Conversely, men's attitudes and behaviours may not align, or social desirability bias may influence their response.

When men report women solely make the decisions, the reduction in the probability of experiencing IPV is greater than when they report decisions are made jointly. This finding could be explained when linking to gender norms at the societal level. Perhaps men who are willing to report they involve women in decision-making do not see it as a threat, and their acceptance of household gender equality is more pronounced when they perceive they are involving women as the sole decision-maker compared to jointly. For men's views on decision-making, the domains related to large household purchases and husband's earnings were associated with IPV, while healthcare was not. While this may be because men's healthcare is not linked to a gender norm, it remains difficult to draw conclusions due to inconsistency in the literature on decision-making domains analysed and results (Castro et al., 2008; Oyekale, 2014; Rahman et al., 2011).

This study also demonstrates important differences in men and women's perceptions more broadly, including justification of wife beating. Women were more likely than men to think wife beating is justified; on average women reported it was not justified in three out of five domains, compared to men who reported it was not justified in four domains. This finding is consistent with previous research in Africa (Fawole, Aderonmu, & Fawole, 2005; Mann & Takyi, 2009).

While this paper is focused on the relational level of the ecological framework, our findings for several control variables also validate other layers (community and individual) of the ecological framework in the

Ugandan context, and provide opportunity for future research to examine these further. The East Central region and one women's ethnicity, the Banyankol tribe, act as protective factors compared to those from the capital, Kampala or from the Baganda tribe. This indicates that geographical and ethnic factors might influence gender norms at the community level, highlighting the community layer within the ecological framework may warrant further exploration in future research to understand the drivers of this further. Further, exposure to violence as a child through witnessing a father beating a mother also predicted experience to IPV as per the individual level within the ecological framework.

Our results need to be interpreted cautiously, as men's perceptions of decision-making may not reflect actual decision-making – men tend to report decisions are made jointly more often than women. Therefore, though they may perceive women are involved in decisions and this is encouraging for reducing the probability of IPV, it does not necessarily mean gender equality in decision-making has been achieved.

Survey design may explain discrepancies between men's and women's reporting of IPV and the low prevalence of IPV relative to international rates. Men report perpetrating less than half the IPV women report experiencing. It is more likely men are underreporting than women overreporting IPV. One reason for this is the restricted application of the Conflict Tactics Scale (CTS) in the men's questionnaire of the DHS. The CTS in the women's questionnaire provides numerous opportunities for respondents to report violence if they are unwilling to disclose initially (Johnson & Kishor, 2004). Questions regarding specific acts of violence reduces subjectivity regarding what constitutes IPV. Social desirability bias may also influence reporting. In contrast, the data for male perpetration of violence is based on one question that does not adhere to specific acts of violence from the CTS, and thus may be a weaker tool for capturing IPV. The CTS is also limited in that it counts individual acts of violence rather than considering repeated or systematic violence.

A major limitation of this research is susceptibility to measurement error. This is likely in the dependent variable, since IPV is commonly underreported (Flake & Forste, 2006; Gage, 2005; García et al., 2005). For victims, this arises from stigma and feelings of shame or fear (Johnson & Kishor, 2004; Uthman, Moradi, & Lawoko, 2011; World Health Organisation, 2013). Among perpetrators, this may occur from lack of awareness regarding what constitutes IPV, social desirability or recall bias. Though the DHS seeks to minimise measurement error by employing strategies to increase disclosure (UBOS. Uganda Demographic Health Survey, 2012), non-disclosure is nonetheless likely and thus IPV prevalence underestimated.

Measurement error may also occur in the independent variables. Response bias may exist, as it requires respondents to consider past events, recall and self-report who makes decisions, which may be subjective or inaccurate (Assaf & Chaban, 2013). This could be exacerbated by social desirability bias, in which respondents may report decisions to mirror their perceptions of how others in the community may report this (Peterman et al., 2015). Who usually makes decisions

may not represent power dynamics, for example if the usual decision-maker can be overridden by their partner (Peterman et al., 2015).

Despite these limitations these results demonstrate the importance of collecting views of both individuals within the relational sphere of the ecological framework. The ecological framework demonstrates the couple is an important place for analysis. Yet only involving women is problematic given household decision-making is a subjective measure that could bias data if collected from one partner (Yoshikawa et al., 2014). Given men are predominantly the perpetrators of IPV, it is imperative to understand the profile of the abuser, and how they perceive the power balance within the relationship (Castro et al., 2008; Flake & Forste, 2006). This information can be incorporated into prevention and response programmes seeking to reduce IPV (Flake & Forste, 2006).

Involving men in IPV programmes and potentially women's empowerment programmes that seek to shift gender norms is important to change their views on household decision-making gender roles. Men's willingness to involve women in household decision-making is influenced by gender norms at the societal level. Where men are comfortable reporting women make decisions jointly or solely, there are likely spill-over effects in terms of a reduced probability of IPV compared to if men dominate household decisions. Therefore, working with men in programmes to address gender norms and encourage equality within the household via decision-making may help reduce the likelihood of IPV in Uganda. Interventions aimed at influencing gender norms should also be designed in a manner that is cognisant of local context and cultural traditions, evident from the results of certain regions acting as protective factors.

IPV programmes could also consider working with couples, to explore perceived versus actual decision-making. Men and women may perceive women are involved in decisions, however this may not reflect actual decision-making, for example men may have the final say or women may accept men's decisions to avoid conflict. It is important to understand this relationship between decision-making and IPV, to ensure that appropriate planning, support and training on IPV is integrated into empowerment programmes, as required.

These programme planning implications reinforce initial findings of IPV prevention interventions, including SASA! in Uganda, Indashiwarka in Rwanda and Change Starts at Home in Nepal. SASA! worked with couples individually and together to renegotiate household gender roles, decision-making and points of tension. An evaluation of Indashiwarka found promoting gender equality at the societal level challenged men's inherent household authority (Stern et al., 2017). Initial impacts of these programs on reducing IPV appear promising (Clark et al., 2017; Kyegombe et al., 2014). These programs can also encourage men to report perpetrating IPV (Stern et al., 2017).

There are also implications for future research including evaluations of IPV and gender equality programs. Incorporating men's views on subjective potential risk factors of IPV is important to consider in research design to more accurately assess the effect of a program. Current decision-making questions in the DHS capture who makes decisions, but not who they think should make decisions, which would reveal men's views on gender roles. For example, a study in Thailand gauged opinions on ten household roles that focused on traditionally prescribed gender responsibilities (XuKerley and Sirisunyaluck, 2011). Collecting and analysing this data will enable IPV prevention programmes to target communities with the most entrenched traditional gender norms. Adapting the DHS questionnaire to collect data on more decision-making domains including those considered to be traditionally ascribed to women would provide insight into the relative effect of each decision-making domain on IPV. Further, future research could delve further into what is driving reported differences in prevalence of IPV between men and women.

The literature adopts myriad methods for creating decision-making variables, with little consensus regarding methodological best practice. Given there are important differences between the role of women in joint versus sole decision-making and its respective association with

IPV, future research should avoid combining these into one variable. Alternatively, a count of whether decisions are divided, egalitarian or made solely by men or women can be used, though caution is required interpreting results since some decision-making domains may perpetuate prescribed gender roles (Heckert & Fabic, 2013). It is also only appropriate where many decision-making domains are included to distinguish divided versus egalitarian decision-making. An alternative approach, adopted in this paper, uses a categorical variable and analyses decision-making by domain.

Future research should consider conflict in the relational level of the ecological framework, including agreement and disagreement within couples on decision-making, and whether this can create tension or a trigger point for the use of violence. This research briefly analysed this in the sensitivity analysis, and found different views on who makes decisions may not be associated with IPV.

5. Conclusion

IPV has been identified as a global public health and human rights issue. The high prevalence of IPV in Sub-Saharan Africa, including Uganda, and the short, medium and longer-term implications of IPV on health of women and children provides a strong case to understand its drivers in order to develop prevention programmes that target these drivers. Those working to improve women's empowerment in line with the SDGs must also understand and plan for any unintended consequence that may arise, such as backlash against women's household decision-making. This paper contributes to efforts to prevent IPV and its detrimental consequences by highlighting the role of an important variable at the relational level of the ecological framework, household decision-making. Future analysis at other levels of the ecological framework may wish to focus on ethnicity and location (community level) and exposure to IPV as a child (individual level) given these were identified as protective and risk factors respectively. Longitudinal datasets rather than cross-sectional such as the DHS may provide a more detailed understanding of intergenerational violence, while qualitative data may assist in drawing out cultural differences that explain the protective factors at the community level.

This study fills a gap in the literature by incorporating men's perceptions of decision-making and developing a methodology for analysing the association between women and men's decision-making and IPV. It demonstrates that men's views are important and should be included in future research measuring the effectiveness of programs and in program design, to provide a more holistic picture of the ecological framework and risk and protective factors of IPV. It is important we continue to understand men's perceptions of their own masculinities, since this is internalised and played out at the relational-level including how they respond to women's decision-making, which may influence their use of violence against their spouse (Jewkes, Flood, & Lang, 2015). This will require continued collection and additional analysis of data on men's perspectives.

Ethical statement

Ethical approval for this research was sought and approved by the London School of Hygiene and Tropical Medicine's Research Ethics Committee in 2017.

Declaration of interests

The authors declare no conflict of interest.

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APPENDIX A. Descriptive statistics all variables

Variable	Data source M = men's survey W = women's survey	Ecological framework	Description of variable (bold = reference category)	Dropped observations	Mean (standard deviation)		
					Model 1 (respondent's healthcare) N = 626	Model 2 (large household purchases) N = 764	Model 3 (husband's earnings) N = 750
Current physical IPV	M	Dependant variable	Created binary variable where 1 = respondent reported they often or sometimes were physically violence toward their wife in past 12 months when she was not hurting him and = 0 otherwise	None	0.183 (0.387)	0.175 (0.380)	
Person who usually decides on respondent's healthcare (men's perspective)	M	Explanatory variables	Re-coded variables: 1 = husband alone 2 = respondent and wife/partner 3 = wife alone	9	1.858 (0.970)	NA	
Person who usually decides on respondent's healthcare (woman's perspective)	W			11	1.811 (0.752)	NA	
Person who usually decides on large household purchases (men's perspective)	M			1	1.724 (0.798)	NA	
Person who usually decides on large household purchases (woman's perspective)	W			3	1.730 (0.698)	NA	
Person who usually decides on how husband's earnings are spent (men's perspective)	M			148	NA	1.711 (0.687)	
Person who usually decides on how husband's earnings are spent (woman's perspective)	W			11	NA	1.511 (0.587)	
Ontogenic level							
Husband's father ever beat his mother	M	Witnessed IPV	0 = no 1 = yes	94	0.628 (0.483)	0.641 (0.480)	
Man experienced physical violence from father, mother or step-parents	M	Experienced violence as a child	Variable created = 1 if answered 'yes' to father/step-father or mother/step-mother ever physically hurt them and 0 otherwise	None	0.061 (0.240)	0.062 (0.241)	
Husband's highest level of education	M	Education	0 = no education 1 = primary school 2 = secondary school 3 = higher education	None	1.302 (0.695)	1.363 (0.727)	
Wife's highest level of education	W			None	1.092 (0.672)	1.142 (0.696)	
Wife's age	W	Young age	Continuous	None	29.862 (7.670)	29.645 (7.516)	
Husband owns a house	M	Asset ownership	0 = does not own 1 = alone only 2 = jointly only 3 = both alone and jointly	None	1.324 (0.782)	1.240 (0.744)	
Wife owns a house	W			None	1.364 (1.068)	1.354 (1.073)	
Number of wives	M	Polygamy	Continuous	None	1.208 (0.477)	1.185 (0.445)	
Microsystem							
Marital status	M	Unmarried	0 = never in union 1 = married 2 = living with partner 3 = widowed 4 = divorced 5 = no longer living together/separated	None	1.252 (0.435)	1.273 (0.446)	

Wealth index	M	Low socioeconomic status	1 = poorest 2 = poorer 3 = middle 4 = richer 5 = richest	None	2.804 (1.373)	2.807 (1.378)	2.941 (1.373)
Occupation (men)	M	Unemployment	0 = not working 1 = professional/technical/managerial 2 = clerical 3 = sales 4 = agriculture self-employed 5 = agriculture employee 6 = household and domestic 7 = services	None	4.434 (1.416) 3.580 (2.307)	4.421 (1.430) 3.56 (2.306)	4.510 (1.445) 3.513 (2.337)
Occupation (women)	W			None			
Exosystem							
Location	M	Locational factors	Created variable location = 1 if urban and 0 = rural	None	0.122 (0.327)	0.126 (0.332)	0.142 (0.350)
Region	M	Locational factors	1 = Kampala 2 = Central 1 3 = Central 2 4 = East central 5 = Eastern 6 = North 7 = Karamoja 8 = West-Nile 9 = Western 10 = Southwest	None	5.742 (2.767)	5.714 (2.769)	5.642 (2.878)
Ethnicity (men)	M	Ethnicity	1 = baganda, 2 = banyankole, 3 = basoga, 4 = bakiga, 5 = iteso, 6 = other	None	4.353 (1.940)	4.365 (1.934)	4.223 (1.971)
Ethnicity (women)	W		1 = baganda, 2 = banyankole, 3 = basoga, 4 = bakiga, 5 = atesa, 6 = other, 7 = acholi, 8 = alur, 9 = ngakaramajong, 10 = langi, 11 = lugbara, 12 = madi, 13 = mufumbira, 14 = mugishu, 15 = mugwere, 16 = munkonjo, 17 = munyoro, 18 = mutooro, 19 = munyarwanda	None	6.813 (4.995)	6.837 (4.984)	6.641 (5.117)
Macrosystem							
Number of domains in which wife beating is considered justified (men's perspective)	M	Acceptance of interpersonal violence and physical chastisement	Variable created of sum of number of domains in which respondent agrees wife beating is justified, from 0 to 5.	None	0.968 (1.320)	0.964 (1.313)	0.968 (1.328)
Number of domains in which wife beating is considered justified (women's perspective)	W			None	1.689 (1.709)	1.695 (1.713)	1.611 (1.674)

APPENDIX B. REGRESSION RESULTS

Variable (reference category)	Model 1: Respondents healthcare	Model 2: Large household purchases	Model 3: Husband's earnings
Coefficient (standard errors)			
Explanatory variables			
Decision-making explanatory variable - men's perspective			
Jointly	-0.033 (0.028)	-0.059 (0.030)*	-0.091 (0.035)**
Wife alone	-0.025 (0.042)	-0.117 (0.041)**	-0.158 (0.053)**
Decision-making explanatory variable - women's perspective			
Jointly	0.008 (0.031)	0.020 (0.029)	0.002 (0.031)
Wife alone	0.060 (0.038)	0.085 (0.045)	0.092 (0.073)
Ontogenic factors			
Husband's highest level of education (no education)			
Primary	0.023 (0.059)	0.017 (0.061)	0.054 (0.067)**
Secondary	-0.012 (0.064)	-0.016 (0.066)	0.011 (0.071)
Higher	-0.093 (0.070)	-0.085 (0.075)	-0.010 (0.085)
Wife's highest level of education (no education)			
Primary	0.070 (0.033)*	0.070 (0.034)*	0.091 (0.035)
Secondary	0.084 (0.052)	0.071 (0.052)	0.092 (0.051)
Higher	0.272 (0.141)	0.230 (0.135)	0.197 (0.126)
Wife's age	-0.004 (0.002)	-0.004 (0.002)*	-0.004 (0.002)
Husband's father ever beat his mother (no)			
Yes	0.120 (0.028)***	0.130 (0.028)***	0.118 (0.031)***
Husband experienced physical violence from father, mother or step parents (no)			
Yes	0.058 (0.054)	0.059 (0.056)	0.028 (0.062)
Husband owns a house (does not own)			
Alone only	0.000 (0.049)	-0.012 (0.048)	0.003 (0.050)
Jointly only	-0.015 (0.055)	0.004 (0.056)	-0.019 (0.060)
Both alone and jointly	-0.012 (0.072)	-0.012 (0.075)	-0.029 (0.080)
Wife owns a house (does not own)			
Alone only	0.086 (0.078)	0.080 (0.082)	0.108 (0.091)
Jointly only	0.001 (0.031)	0.002 (0.031)	0.030 (0.035)
Both alone and jointly	0.083 (0.064)	0.088 (0.064)	0.136 (0.075)
Number of wives/partners (Nations, 2017)			
2	0.030 (0.038)	0.030 (0.037)	0.051 (0.043)
3	-0.083 (0.072)	-0.095 (0.067)	Not estimable
4	Not estimable	Not estimable	Not estimable
5	0.099 (0.263)	0.037 (0.237)	0.091 (0.243)
Microsystem			
Current marital status (married)			
Cohabitation	0.033 (0.034)	0.032 (0.033)	0.050 (0.035)
Wealth index (poorest)			
Poor	0.009 (0.078)	0.008 (0.045)	-0.067 (0.054)
Middle	-0.027 (0.050)	-0.033 (0.052)	-0.073 (0.057)
Richer	-0.032 (0.053)	-0.034 (0.055)	-0.085 (0.061)
Richest	-0.092 (0.060)	-0.114 (0.060)	-0.176 (0.066)**
Husband's occupation (not working)			
Professional/technical/managerial	0.055 (0.163)	0.015 (0.180)	
Clerical	Not estimable	Not estimable	Not estimable
Agriculture – self employed	0.002 (0.143)	-0.026 (0.165)	-0.022 (0.074)
Agriculture – employee	0.022 (0.147)	0.005 (0.169)	-0.013 (0.074)
Services	0.069 (0.148)	0.066 (0.170)	0.068 (0.076)
Wife's occupation (not working)			
Professional/technical/managerial	-0.027 (0.081)	-0.019 (0.085)	0.025 (0.102)
Clerical	Not estimable	Not estimable	Not estimable
Agriculture – self employed	0.015 (0.036)	0.015 (0.036)	-0.009 (0.039)
Agriculture – employee	-0.072 (0.056)	-0.054 (0.059)	-0.052 (0.066)
Sales and services	0.008 (0.040)	0.003 (0.040)	-0.017 (0.043)
Exosystem			
Place of residence (urban)			
Rural	-0.068 (0.051)	-0.052 (0.051)	-0.039 (0.054)
Husband's ethnicity (Baganda)			
Banyankol	-0.028 (0.082)	-0.062 (0.082)	0.009 (0.093)
Basoga	0.051 (0.117)	0.019 (0.119)	0.006 (0.109)
Bakiga	-0.102 (0.079)	-0.118 (0.082)	-0.031 (0.090)
Iteso	-0.148 (0.080)	-0.135 (0.092)	-0.064 (0.106)
Other	-0.057 (0.067)	-0.087 (0.070)	-0.073 (0.063)
Wife's ethnicity (Baganda)			
Banyankol	-0.096 (0.046)*	-0.110 (0.047)*	-0.132 (0.051)**
Basoga	0.033 (0.075)	0.026 (0.078)	0.028 (0.084)

Bakiga	0.083 (0.091)	0.063 (0.087)	0.010 (0.085)
Atesa	0.244 (0.131)	0.178 (0.121)	-0.111 (0.128)
Other	0.030 (0.064)	0.044 (0.067)	0.028 (0.073)
Acholi	0.198 (0.139)	0.176 (0.136)	0.190 (0.148)
Alur	0.066 (0.112)	0.033 (0.099)	-0.045 (0.090)
Ngakarama	0.010 (0.110)	0.003 (0.107)	-0.081 (0.105)
Langi	0.107 (0.118)	0.070 (0.112)	0.027 (0.118)
Lugbara	-0.019 (0.076)	0.001 (0.083)	-0.114 (0.073)
Madi	Not estimable	Not estimable	Not estimable
Mufumbira	0.083 (0.135)	0.057 (0.125)	0.014 (0.114)
Mugishu	0.152 (0.091)	0.152 (0.091)	0.161 (0.100)
Mugwere	Not estimable	Not estimable	Not estimable
Mukonjo	Not estimable	Not estimable	Not estimable
Munyoro	-0.019 (0.075)	-0.021 (0.076)	-0.030 (0.082)
Mutooro	Not estimable	Not estimable	Not estimable
Munyarwan	-0.076 (0.052)	-0.081 (0.053)	-0.066 (0.067)
Region (Kampala)			
Central 1	0.076 (0.105)	0.018 (0.100)	0.050 (0.103)
Central 2	-0.104 (0.092)	-0.153 (0.091)	-0.167 (0.090)
East central	-0.246 (0.093)**	-0.282 (0.093)**	-0.267 (0.095)**
Eastern	-0.162 (0.100)	-0.193 (0.100)	-0.223 (0.095)*
North	-0.139 (0.116)	-0.158 (0.121)	-0.171 (0.119)
Karamoja	0.008 (0.153)	-0.021 (0.154)	-0.003 (0.168)
West-nile	-0.071 (0.118)	-0.108 (0.115)	-0.067 (0.124)
Western	-0.029 (0.105)	-0.079 (0.103)	-0.060 (0.103)
Southwest	-0.058 (0.104)	-0.092 (0.103)	-0.102 (0.103)
Macrosystem			
Number of domains in which wife beating is considered justified (men's perspective) (0)			
1	0.029 (0.041)	0.043 (0.041)	0.014 (0.042)
2	0.059 (0.042)	0.057 (0.042)	0.041 (0.044)
3	0.099 (0.053)	0.076 (0.051)	0.093 (0.054)
4	0.066 (0.083)	0.052 (0.078)	0.058 (0.080)
5	0.169 (0.123)	0.178 (0.124)	0.164 (0.154)
Number of domains in which wife beating is considered justified (women's perspective) (0)			
1	-0.002 (0.038)	0.016 (0.037)	0.032 (0.042)
2	0.020 (0.038)	0.029 (0.038)	0.023 (0.040)
3	0.120 (0.049)*	0.143 (0.050)**	0.103 (0.055)
4	0.025 (0.047)	0.060 (0.050)	0.081 (0.058)
5	0.046 (0.052)	0.038 (0.052)	0.021 (0.054)

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