
ESCUELA DE GOBIERNO

DOCUMENTOS DE TRABAJO 2026/05

Intergenerational Persistence in Intimate- Partner Violence

Juan David Hernandez-Leal

Frances Lu

Camila Navajas-Ahumada

Marzo 2026

Documentos de trabajo: <https://bit.ly/2REorES>

UTDT: Av. Figueroa Alcorta 7350, C1428BCW Buenos Aires, Argentina

Intergenerational Persistence in Intimate-Partner Violence*

Juan David Hernandez-Leal

University of California San Diego

Frances Lu

California Department of Social Services

Camila Navajas-Ahumada

Universidad Torcuato Di Tella

This Version: March 2026

First Version: April 2024

Abstract

We study the intergenerational persistence of intimate-partner violence (IPV) in Sub-Saharan Africa. Women who report that their fathers physically abused their mothers are 25.9 percentage points more likely to experience IPV. Place and ethnicity explain one third of the persistence variation, with no additional variation explained by other observed socioeconomic factors. Women who report that their mothers were IPV victims are more likely to find IPV acceptable, which is not explained by a rationalization of their own victimization. IPV persistence is stronger in ethnicities with lower IPV prevalence, emphasizing the role of parental IPV relative to its cultural salience.

*Corresponding author: Camila Navajas-Ahumada (cnavajas@utdt.edu). We would like to thank Prashant Bharadwaj, Gordon Dahl, Rafael Di Tella, Veronica Frisanchi, Andrés Gago, Claudia Goldin, Gaurav Khanna, Maria Lombardi, Sara Lowes, Mariana Marchionni, Paul Niehaus, Claudia Olivetti, Ana Tur Prats and Tom Vogl. In particular, we acknowledge the participants and faculty mentors of the 2023–2024 NBER Gender in the Economy Dissertation Fellowship workshop for their thoughtful feedback. This research was funded by the National Science Foundation Graduate Research Fellowship for Frances Lu (grant DGE-2038238). All authors contributed equally to this work. Pablo Fernandez and (Winfrey) Xian Ying Kong provided excellent research assistance. All errors are our own.

1 Introduction

Whether and why inequality's persistence across generations matters for economic development has been studied for several decades (Galor and Zeira, 1993). Although attention has traditionally been paid to income, consumption and wealth, due to data limitations and because inequality may be multidimensional (Kolm, 1977; Atkinson and Bourguignon, 1982; Sen, 1997), recent literature has focused on intergenerational associations in alternative variables, such as education (Neidhöfer et al., 2018; Asher et al., 2021; Alesina et al., 2021b) and health (Bhalotra and Rawlings, 2013; Lu and Vogl, 2023).

In this paper, we empirically study the intergenerational persistence of intimate-partner violence (IPV), a variable that has been shown to negatively impact the economic outcomes and health of women and their children (Aizer, 2011; Currie et al., 2022). IPV is a global human-rights and public-health issue, as it is estimated that more than one third of women worldwide have experienced it (García-Moreno et al., 2013).

Using survey data from 16 countries in Sub-Saharan Africa, a region of the world that has particularly high IPV prevalence, we estimate mother–daughter associations in IPV victimization. We find that women whose fathers ever physically abused their mothers are 25.9 percentage points (1.89×) more likely to have experienced IPV with their current cohabitating partners. This association is not explained by selection into or out of partnership. By conducting Monte Carlo simulations, we provide evidence that this result is unlikely to be explained by reporting errors. We examine the role of place and ethnicity in explaining intergenerational persistence in IPV, since it could be explained by persistent spatial inequality and cultural factors, but place and ethnicity fixed effects account for just one third of persistence variation. Additionally, we include socioeconomic covariates such as respondents' education, the husbands' education and the couples' current household wealth and find that these factors account for almost none of the remaining variation in persistence.

To explain why IPV might be intergenerationally persistent, we focus on the role of cultural transmission, which has been demonstrated to play an important role in the perpetuation of other forms of gender inequality (Fernández et al., 2004; Jayachandran, 2015; Dhar et al., 2019). Particularly, we focus on women's attitudes towards IPV since they may impact their probability of being or staying with abusive partners. We find that women from families with IPV have higher acceptability of wife beating compared to women who did not experience parental IPV. We provide evidence that this difference in attitudes is not driven by ex-post rationalization due to exposure to more violence with current partners. Moreover, we show that cultural transmission of attitudes towards IPV

is stronger for ethnicities with lower IPV acceptability, highlighting the importance of family-level socialization in shaping attitudes based on the salience of the focal behavior.

As assortative matching can exacerbate long-run inequality ([Fernández and Rogerson, 2001](#); [Pollak, 2004](#)), we explore the relationship between sons-in-law's and daughters' attitudes toward IPV acceptability. We find that assortative matching on IPV attitudes is stronger in ethnicities with lower levels of IPV acceptability, suggesting that the relationship between parental IPV and daughters' attitudes may ultimately translate into selection into partnerships with individuals who have higher IPV acceptability.

Finally, we explore how IPV persistence varies with its levels. We show that IPV persistence is stronger in ethnicities with lower IPV prevalence, which may explain why IPV is so difficult to eradicate and persists across time and space. From a policy perspective, our results suggest that combating IPV may involve not only reducing its levels, but also addressing its intergenerational component. A better understanding of attitude formation toward IPV may serve as a promising starting point for designing interventions that can achieve that goal.

This paper contributes to the literature in economics that explores the drivers of IPV.¹ Most of such literature focuses on the role of household bargaining power. For example, some studies have analyzed the impact of the wage gap ([Aizer, 2010](#)), divorce laws ([Stevenson and Wolfers, 2006](#)), cash transfers ([Bobonis et al., 2013](#)), and unemployment ([Anderberg et al., 2016](#); [Tur-Prats, 2021](#)), among other factors.² In addition, a few papers focus on long-term determinants, such as the role of cultural factors ([Alesina et al., 2021a](#)), family structure ([Tur-Prats, 2019](#)) or past exposure to gender-based collective violence ([Stojetz and Brück, 2023](#)). Our paper contributes to this literature by empirically examining whether IPV victimization is transmitted from one generation (mothers) to the next (daughters) and how attitudes play a role in this transmission.

Additionally, this paper relates to the literature that aims to understand norm transmission through cultural exposure. A handful of studies document how norms persist across time and space, for instance, by studying how migrants to regions with different norms experience persistence of origin-region behavior ([Giavazzi et al., 2019](#); [Jessen et al., 2024](#); [Miho et al., 2024](#)). Our findings contribute to that literature by showing that there is higher IPV persistence in low-IPV ethnicities.

¹Outside the literature in economics, there is a vast multidisciplinary literature exploring the drivers of IPV, which includes its intergenerational transmission. Most mechanisms focus on the impact of perinatal exposure to trauma, an examination of the neurobiological mechanisms of transmission, and the role of developmental psychopathology in the transmission process. See, for example, [Smith-Marek et al. \(2015\)](#) and [Ehrensaft and Langhinrichsen-Rohling \(2021\)](#) for comprehensive reviews.

²Other papers show that IPV may be triggered by dissatisfaction with the marriage ([Bloch and Rao, 2002](#)) or emotional cues ([Card and Dahl, 2011](#))

The paper proceeds as follows. Section 2 describes the data and empirical methods. Section 3 reports our main persistence estimates and discusses the role of place, ethnicity, and socioeconomic status in explaining variation in persistence. It also discusses the role of selection and misreporting in explaining our results. Section 4 discusses the role of cultural transmission. Finally, Section 5 concludes.

2 Data and Methods

2.1 Sample and Measurement

Our primary data source is the Demographic and Health Surveys (DHS), which are nationally representative cross-sectional surveys of women and men aged 15 to 49 years.³ We use all surveys that contain a module on domestic violence.⁴ The DHS domestic-violence module in the women’s survey contains key information for measuring the persistence of IPV across generations. We refer to the respondent as the daughter in our context. To measure the occurrence of IPV between the respondent’s parents, we use the single question of “whether the respondent’s father ever beat her mother.” To measure whether a daughter has ever experienced IPV with her current partner (i.e., the “son-in-law”), we generate a single indicator variable based on a series of questions about whether the respondent has ever experienced physical, sexual or emotional violence with her current partner.⁵

Additionally, both the women’s and men’s DHS surveys contain a set of questions on the respondent’s attitudes towards domestic violence: “whether wife beating is justified” in five hypothetical situations. We create a variable measuring the share of these hypothetical situations in which the respondent believes wife beating is justified.⁶

Finally, the surveys also contain sociodemographic characteristics we use in some of our robustness exercises, as well as to explore alternative explanations. These include age and education (for both the daughters and their husbands), an index that captures the wealth of the household, the number of children ever born, age at first marriage, and many geographic indicators, like country, region, and rural area.

To account for the role of ethnicity, we merge the DHS data with the Murdock Ethnographic Atlas, an ethnicity-level database containing pre-industrial cultural charac-

³All analyses use sampling weights rescaled to reflect each survey’s contribution to the sample.

⁴The domestic-violence module is administered to one randomly selected woman in each household.

⁵When defining women as married, we include both formal marriages and informal unions that involve cohabitation with a partner.

⁶Results hold for each individual question or an alternative method of calculating the index which uses the first principal component while standardizing the index to have mean 0 and variance 1.

teristics, using the methodology from [Michalopoulos et al. \(2019\)](#). We are able to match 85% of observations from the DHS with the Ethnographic Atlas. As a result of these data merges, our main analysis sample includes 117,415 partnered women from 28 surveys across 16 countries in Sub-Saharan Africa.⁷ For a subset of 43,807 women, we are able to merge women with their partners from the men’s survey, which allows us to account for men’s ethnicity and explore their attitudes towards IPV. We are not able to merge all women with partners as some male partners are not present at the time of the survey, some households are not sampled for the men’s survey, and only men aged 15–49 are surveyed. Appendix Table [A.1](#) reports the list of surveys in the main and matched partner samples.

Appendix Table [A.2](#) details the exact questions asked in the survey in addition to the descriptive statistics of our main sample. Women are on average 30 years old, 69% live in rural areas and 41% have not received any type of education. In our sample, 21% of women report that their father ever physically abused their mothers and 35% report having suffered any type of violence (physical, sexual or emotional) from their current husband or partner.⁸

2.2 Methods

In our main specification, we estimate the following linear regression for a woman i in survey s :

$$Y_{is} = \alpha + \beta \text{ParentIPV}_{is} + \epsilon_{is}, \quad (1)$$

where Y_{is} is the outcome and ParentIPV_{is} is an indicator variable of whether the woman reported the occurrence of IPV between her parents. β is the main estimate of interest. We cluster standard errors at the DHS primary-sampling-unit level, which are small geographic units (villages or city blocks) sampled at the largest subnational region $\times$ rural level. To explore potential mechanisms, we conduct an accounting exercise by adding different types of fixed effects and covariates to the main regression specification and documenting the impact on the magnitude of the main persistence estimate, β .

To investigate the role of cultural transmission, we estimate the correlation between attitudes on the acceptability of IPV and parental IPV. We then add increasingly granular fixed effects to control for place and ethnicity to examine whether variation in transmission

⁷We focus on this sample for our main analysis because, as mentioned above, our main outcome variables (own IPV experience) are only collected for partnered women. However, given that we explore the role of parental IPV on selection into partnership and how attitudes towards IPV correlate with partnership status, we conduct this secondary analysis using a sample of unpartnered women as well.

⁸Section [3](#) provides a discussion on the role of respondent reporting errors in addition to Monte Carlo exercises that explore how results may change due to such potential misreporting.

is within or across cultural groups.

3 IPV Persistence Estimates

We report pooled estimates of intergenerational persistence of IPV in Figure 1.⁹ The first coefficient estimates the association between a woman's reports of witnessing physical violence between her parents and whether she has ever experienced any type of IPV (physical, sexual or emotional) with her current cohabitating partner. We find that women who report parental IPV are 25.9 percentage points (1.89×) more likely to report ever experiencing IPV with their current partner.¹⁰

Accounting for IPV Persistence

We examine the role of place and ethnicity in explaining IPV's intergenerational persistence because it could be explained by persistent spatial inequality and cultural factors. To examine the role of place, we cumulatively increase the granularity of the controls from the baseline specification to include survey (which is almost equivalent to country) and local region (the largest subnational region) interacted with rural fixed effects. Place-based effects at the regional level explain 28% of persistence variation. Next, we control for ethnicity, a variable that the literature, particularly in the African context, has highlighted as a central dimension of cultural identity (Guiso et al., 2006; Michalopoulos and Papaioannou, 2014; Alesina and Giuliano, 2015). Ethnicity fixed effects alone account for 27% of the variation in persistence. However, ethnic groups are highly spatially clustered, so we examine the combined role of place and ethnicity and find that the interaction of ethnicity and local region together explain around 33% of persistence variation.

A majority of the intergenerational persistence in IPV is driven by within-locality and within-ethnicity variation. One potential explanation is that socioeconomic status is an important determinant for the incidence of IPV and is also intergenerationally persistent.¹¹ To explore this, we control for measures of socioeconomic status including the respondent's education, her husband's education and their current household wealth. We find that this accounts for almost none of the remaining variation in persistence.¹²

⁹Figure A.1 shows the persistence estimate for every country in our sample.

¹⁰Table A.3 shows that the results hold across each type of IPV: physical, sexual and emotional.

¹¹For example, Agüero et al. (2022) shows that human capital investments explain 22 percent of the transmission of domestic violence in the Philippines.

¹²Following recent evidence that suggests that IPV reporting is lower during the evening (Theiss, 2024), we additionally control for the start time of the interview and find that this factor does not change our persistence estimates. In addition, we also conducted the accounting exercise for the partnered sample. This

Role of Selection into and out of Partnerships

Our persistence estimates are for women who are currently partnered. One concern for interpreting these estimates is that partnership rates could vary systematically between women with and without exposure to parental IPV. We examine the role of selection into and out of partnership (Appendix Table A.4) and find no difference in the proportion of women who have ever been in a partnership (cohabitation or marriage) by parental IPV. However, women with parental IPV are slightly less likely (2.7pp) to be currently partnered, which is the selection criteria for our analysis sample.¹³

We then conduct a Lee Bounds exercise to determine whether selection out of partnership quantitatively impacts our persistence estimates. (Appendix Table A.5). We estimate very tight bounds for our persistence estimates, indicating that they are not driven by this selection.

Role of Respondent Reporting Error

One main challenge in studying IPV persistence is that it relies on self-reported data that could suffer from underreporting.¹⁴ Previous research has tried to measure the extent of IPV misreporting, for example, by comparing direct methods like the DHS against experimental methods.¹⁵ Our study has an additional challenge because it relies on self-reported measures of both left-hand side (i.e., whether the respondent's father ever physically abused their mother) and right-hand side variables (i.e., whether the respondent experienced IPV from their current partner) and misreporting of these variables may not be independent from each other.¹⁶

As a first step toward understanding the role of reporting errors, we list all the possible scenarios in terms of the true and reported value of both variables (Appendix

allows us to further control for the male partner's ethnicity and we find that it does not play a quantitatively significant role on top of the female respondent's ethnicity.

¹³This is driven primarily by higher rates of divorce and separation, but higher rates of widowhood also play a role.

¹⁴As discussed by Theiss (2024), this could be for several reasons: aversion to recalling or discussing traumatic events, the perception that IPV is a private issue, expected stigmatization, intrinsic shame, fear that a perpetrator may face legal sanctions, risk of economic or physical retaliation, and others

¹⁵A number of papers have used different methods to measure the prevalence of IPV, and their results are mixed. On one hand, Cullen (2023) finds that, in Nigeria, using an indirect list experiment (LE) yields a measure of IPV 35% higher than face-to-face (F2F) surveys. Similarly, (Petersman et al., 2024) find that an audio computer-assisted self-interview (ACASI) results in a 4–7 pp higher prevalence of IPV, again compared to the F2F benchmark. Other studies find similar results in Ethiopia (Gilligan et al., 2024; Kotsadam and Villanger, 2022) and Peru (Agüero and Frisancho, 2022). Finally, Singh et al. (2024) find that the field-worker effect accounts for 32% of total variation in the reporting of IPV in Ethiopia.

¹⁶For example, it could be that there are some people who are not willing to openly talk about IPV and therefore would misreport their own and their mother's IPV.

Table A.11). We rule out cases that imply an overreporting of either variable. For the remaining scenarios, we identified several cases where the direction of the bias would go in the opposite direction and would imply interpreting our estimates as lower bounds. However, other scenarios would lead to overestimates of IPV persistence: the cases where the respondent answered that neither she nor her mother have suffered IPV but one of those variables suffers from misreporting.¹⁷

As a second step, in Figure 2, we report the results of several Monte Carlo simulations to better understand how all these potential underreporting scenarios may bias our results. We consider cases of underreporting of (i) the left-hand side variable (ii) the right-hand side variable (iii) both variables simultaneously and such misreporting is independent from each other and (iv) both variables simultaneously and such misreporting is correlated.¹⁸ The main takeaway from these Monte Carlo simulations is that it would take a remarkably high probability of misreporting to reject the hypothesis that IPV is intergenerationally persistent. In particular, in our most conservative scenario, the probability of misreporting should be 55%—equivalent to an IPV prevalence of 89%—which is highly inconsistent with previous research.

4 Cultural Transmission

In this section, we examine the potential role of cultural transmission in the intergenerational persistence of IPV. First, we measure the correlation between daughter attitudes and their reporting of parental IPV. Table 1 shows that exposure to parental IPV is associated with an increase of 0.044 (17.6%) in the daughter’s index of reported acceptability of IPV.¹⁹ Potentially, this result may be driven by ex-post rationalization due to exposure to violent partners. However, we find that this positive association in attitudes is even stronger for unpartnered women, providing evidence against ex-post rationalization. Additionally, our results are robust to including ethnicity and region fixed effects, indicating that these factors do not explain the relationship between parental IPV and daughter attitudes. This is consistent with direct exposure to parental IPV playing a role in the daughters’ socialization.

To further understand the role of parental IPV in the daughters’ socialization, in Table 2 Panel A, we conduct a heterogeneity exercise to explore whether attitudes differ based

¹⁷Note that the case where both variables suffer from misreporting simultaneously would result in a downward bias of our estimates.

¹⁸We show results for a correlation of 0.5, but results for other correlation assumptions are available upon request.

¹⁹In Appendix Tables A.6–A.10, we show that results hold individually for each question of the index.

on ethnicity and IPV acceptability.²⁰ In ethnicities with lower IPV acceptability, parental IPV may be more salient and, therefore, may be more relevant for attitude formation towards IPV. Consistent with that idea, we show that, in ethnicities with below-median IPV acceptability, women whose fathers ever physically abused their mothers are more likely to report acceptability of IPV—0.034pp (24.3%) relative to 0.054pp (15%) in ethnicities above-median IPV acceptability²¹. As assortative matching can exacerbate long-run inequality (Fernández and Rogerson, 2001; Pollak, 2004), Table 2 Panel B shows the relationship between sons-in-law’s and daughters’ attitudes towards IPV acceptability. We show that assortative matching on IPV attitudes is stronger in ethnicities with lower levels of IPV acceptability, suggesting that the relationship between parental IPV and daughters’ attitudes may ultimately translate to selection into partnership with those with higher IPV acceptability.

Finally, in Table 3, we conduct a heterogeneity exercise to explore IPV persistence relative to its levels. The fact that the intergenerational transmission of IPV is stronger where IPV prevalence is lower may be one reason IPV survives across time and place. To explore this, we calculate the average IPV prevalence by ethnicity and show that, in ethnicities with below-median IPV prevalence, women whose father ever physically abused their mothers are 18.5pp (77%) more likely to report ever experiencing IPV with their current partner (relative to 15.7pp (35%) in ethnicities with above-median IPV prevalence).²²

Overall, the policy implication of these results is that short-term or individual-level interventions focused on reducing IPV prevalence would not necessarily be enough. A challenge for policymakers trying to eradicate IPV once and for all would involve designing policies that not only reduce IPV levels but also target its intergenerational component. Our findings suggest that designing such policies may involve improving our understanding of cultural transmission and, more specifically, IPV attitude formation.

²⁰To define ethnicities with higher and lower IPV acceptability, we first compute the average of the daughter-attitude index per ethnicity. We then classify ethnicities based on whether they are below or above the median of that value.

²¹To formally test whether the above- and below-median effects are different, we normalize each coefficient by the corresponding control group mean of the outcome variable, and test whether these normalized effects differ across groups. We compute the standard error of each normalized coefficient using the delta method, accounting for uncertainty in both the estimated coefficient and the control mean. We then test for equality of normalized effects across groups using a standard two-sided z-test.

²²To define ethnicities with higher and lower IPV prevalence, we first compute the average of the variable that measures daughter IPV per ethnicity. We then classify ethnicities based on whether they are below or above the median of that value.

5 Conclusion

In this paper, we provide evidence that IPV is intergenerationally persistent, using survey data from 16 countries in Sub-Saharan Africa. Women who report that their fathers ever physically abused their mothers are considerably more likely to also report that they have experienced IPV with their current cohabitating partner. We show that this result is unlikely to be driven by selection into or out of partnership or by reporting errors.

To understand why IPV may be intergenerationally persistent, we focus on the role of cultural transmission by analyzing women's attitudes towards IPV. We find that women from families with IPV are more likely to answer that violence is justified under different scenarios. This relationship is stronger in ethnicities with lower IPV acceptability, suggesting that family-level socialization plays a role in attitude formation.

Finally, we show that IPV persistence is stronger in ethnicities with lower levels of IPV, which may be in line with IPV surviving across time and space and being a global women's human-rights violation. Overall, improving our understanding of cultural transmission, and more specifically, attitude formation towards IPV, may allow us to design policies that target the intergenerational persistence of IPV, which may be key to eradicating IPV once for all.

6 References

References

- Agüero, Jorge M and Veronica Frisancho (2022) “Measuring violence against women with experimental methods,” *Economic Development and Cultural Change*, 70 (4), 1565–1590.
- Agüero, Jorge M, Catalina Herrera-Almanza, and Kira Villa (2022) “Do human capital investments mediate the intergenerational transmission of domestic violence?” *SSM-Population Health*, 17, 100985.
- Aizer, Anna (2010) “The gender wage gap and domestic violence,” *American Economic Review*, 100 (4), 1847–1859.
- (2011) “Poverty, violence, and health the impact of domestic violence during pregnancy on newborn health,” *Journal of Human Resources*, 46 (3), 518–538.
- Alesina, Alberto, Benedetta Brioschi, and Eliana La Ferrara (2021a) “Violence against women: A cross-cultural analysis for Africa,” *Economica*, 88 (349), 70–104.
- Alesina, Alberto and Paola Giuliano (2015) “Culture and institutions,” *Journal of economic literature*, 53 (4), 898–944.
- Alesina, Alberto, Sebastian Hohmann, Stelios Michalopoulos, and Elias Papaioannou (2021b) “Intergenerational mobility in Africa,” *Econometrica*, 89 (1), 1–35.
- Anderberg, Dan, Helmut Rainer, Jonathan Wadsworth, and Tanya Wilson (2016) “Unemployment and domestic violence: Theory and evidence,” *Economic Journal*, 126 (597), 1947–1979.
- Asher, Sam, Paul Novosad, and Charlie Rafkin (2021) “Intergenerational mobility in India: New methods and estimates across time, space, and communities,” Unpublished manuscript. Available at: <https://paulnovosad.com/pdf/anr-india-mobility.pdf>.
- Atkinson, Anthony B and Francois Bourguignon (1982) “The comparison of multi-dimensional distributions of economic status,” *Review of Economic Studies*, 49 (2), 183–201.
- Bhalotra, Sonia and Samantha Rawlings (2013) “Gradients of the intergenerational transmission of health in developing countries,” *Review of Economics and Statistics*, 95 (2), 660–672.

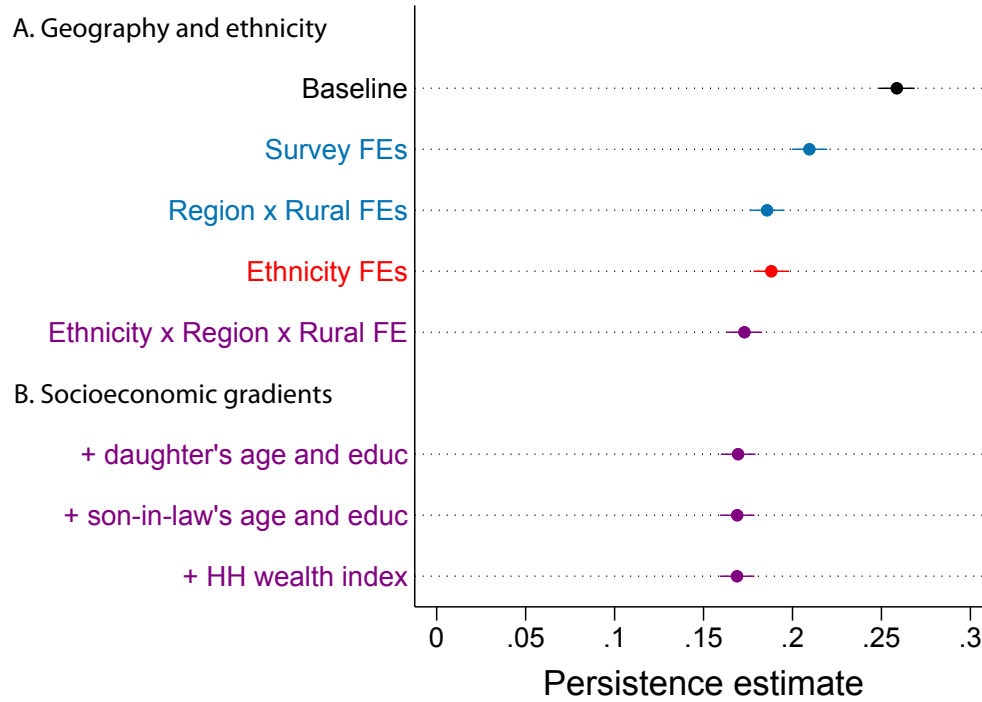
- Bloch, Francis and Vijayendra Rao (2002) "Terror as a bargaining instrument: A case study of dowry violence in rural India," *American Economic Review*, 92 (4), 1029–1043.
- Bobonis, Gustavo J, Melissa González-Brenes, and Roberto Castro (2013) "Public transfers and domestic violence: The roles of private information and spousal control," *American Economic Journal: Economic Policy*, 5 (1), 179–205.
- Card, David and Gordon B Dahl (2011) "Family violence and football: The effect of unexpected emotional cues on violent behavior," *Quarterly Journal of Economics*, 126 (1), 103–143.
- Cullen, Claire (2023) "Method matters: The underreporting of intimate partner violence," *World Bank Economic Review*, 37 (1), 49–73.
- Currie, Janet, Michael Mueller-Smith, and Maya Rossin-Slater (2022) "Violence while in utero: The impact of assaults during pregnancy on birth outcomes," *Review of Economics and Statistics*, 104 (3), 525–540.
- Dhar, Diva, Tarun Jain, and Seema Jayachandran (2019) "Intergenerational transmission of gender attitudes: Evidence from India," *Journal of Development Studies*, 55 (12), 2572–2592.
- Ehrensaft, Miriam K and Jennifer Langhinrichsen-Rohling (2021) "Intergenerational transmission of intimate partner violence: Summary and current research on processes of transmission," *Handbook of interpersonal violence and abuse across the lifespan: A project of the National Partnership to End Interpersonal Violence Across the Lifespan (NPEIV)*, 2485–2509.
- Fernández, Raquel, Alessandra Fogli, and Claudia Olivetti (2004) "Mothers and sons: Preference formation and female labor force dynamics," *Quarterly Journal of Economics*, 119 (4), 1249–1299.
- Fernández, Raquel and Richard Rogerson (2001) "Sorting and long-run inequality," *Quarterly Journal of Economics*, 116 (4), 1305–1341.
- Galor, Oded and Joseph Zeira (1993) "Income distribution and macroeconomics," *Review of Economic Studies*, 60 (1), 35–52.
- García-Moreno, Claudia, Christina Pallitto, Karen Devries, Heidi Stöckl, Charlotte Watts, and Naeema Abrahams (2013) *Global and regional estimates of violence against women: Prevalence and health effects of intimate partner violence and non-partner sexual violence*: World Health Organization.

- Giavazzi, Francesco, Ivan Petkov, and Fabio Schiantarelli (2019) "Culture: Persistence and evolution," *Journal of Economic Growth*, 24 (2), 117–154.
- Gilligan, Daniel O, Melissa Hidrobo, Jessica Leight, and Heleene Tabet (2024) "Using a list experiment to measure intimate partner violence: Cautionary evidence from Ethiopia," *Applied Economics Letters*, 1–7, Available at: <https://doi.org/10.1080/13504851.2024.2308579>.
- Guiso, Luigi, Paola Sapienza, and Luigi Zingales (2006) "Does culture affect economic outcomes?" *Journal of Economic perspectives*, 20 (2), 23–48.
- Jayachandran, Seema (2015) "The roots of gender inequality in developing countries," *Annual review of economics*, 7 (1), 63–88.
- Jessen, Jonas, Sophia Schmitz, and Felix Weinhardt (2024) "Immigration, female labour supply and local cultural norms," *The Economic Journal*, 134 (659), 1146–1172.
- Kolm, Serge-Christophe (1977) "Multidimensional egalitarianisms," *Quarterly Journal of Economics*, 91 (1), 1–13.
- Kotsadam, Andreas and Espen Villanger (2022) "Jobs and intimate partner violence-evidence from a field experiment in ethiopia," *Journal of Human Resources*, Available at: <https://doi.org/10.3368/jhr.0721--11780R2>.
- Lu, Frances and Tom Vogl (2023) "Intergenerational persistence in child mortality," *American Economic Review: Insights*, 5 (1), 93–109.
- Michalopoulos, Stelios and Elias Papaioannou (2014) "National institutions and subnational development in Africa," *The Quarterly journal of economics*, 129 (1), 151–213.
- Michalopoulos, Stelios, Louis Putterman, and David N Weil (2019) "The influence of ancestral lifeways on individual economic outcomes in Sub-Saharan Africa," *Journal of the European Economic Association*, 17 (4), 1186–1231.
- Miho, Antonela, Alexandra Jarotschkin, and Ekaterina Zhuravskaya (2024) "Diffusion of gender norms: Evidence from Stalin's ethnic deportations," *Journal of the European Economic Association*, 22 (2), 475–527.
- Neidhöfer, Guido, Joaquín Serrano, and Leonardo Gasparini (2018) "Educational inequality and intergenerational mobility in Latin America: A new database," *Journal of Development Economics*, 134, 329–349.

- Peterman, Amber, Malick Dione, Agnès Le Port, Justine Briaux, Fatma Lamesse, and Melissa Hidrobo (2024) "Disclosure of violence against women and girls in Senegal," *World Bank Economic Review*, art. lhae039. Available at: <https://doi.org/10.1093/wber/lhae039>.
- Pollak, Robert A (2004) "An intergenerational model of domestic violence," *Journal of Population Economics*, 17 (2), 311–329.
- Sen, Amartya (1997) *On economic inequality*: Oxford university press.
- Singh, Saurabh, Laxmi Kant Dwivedi, and Somnath Jana (2024) "Fieldworker effects on quality of data collected on sensitive questions in National Family Health Surveys: An analysis based on intimate partner violence in India," *SSM-Population Health*, 25, 101557.
- Smith-Marek, Erika N, Bryan Cafferky, Prerana Dharnidharka, Allen B Mallory, María Dominguez, Jessica High, Sandra M Stith, and Marcos Mendez (2015) "Effects of childhood experiences of family violence on adult partner violence: A meta-analytic review," *Journal of Family Theory & Review*, 7 (4), 498–519.
- Stevenson, Betsey and Justin Wolfers (2006) "Bargaining in the shadow of the law: Divorce laws and family distress," *Quarterly Journal of Economics*, 121 (1), 267–288.
- Stojetz, Wolfgang and Tilman Brück (2023) "Exposure to collective gender-based violence causes intimate partner violence," *Journal of Development Economics*, 164, 103054.
- Theiss, Katherine (2024) "Time-of-day effects on disclosure of intimate partner violence," Unpublished manuscript. Available at: <https://doi.org/10.2139/ssrn.4952642>.
- Tur-Prats, Ana (2019) "Family types and intimate partner violence: A historical perspective," *Review of Economics and Statistics*, 101 (5), 878–891.
- (2021) "Unemployment and intimate partner violence: A cultural approach," *Journal of Economic Behavior and Organization*, 185, 27–49.

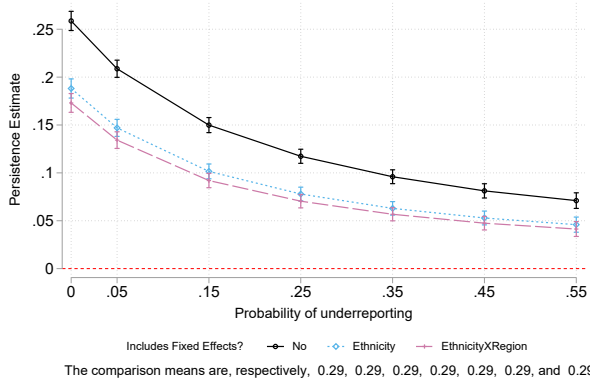
Tables and Figures

Figure 1: IPV Persistence Estimates

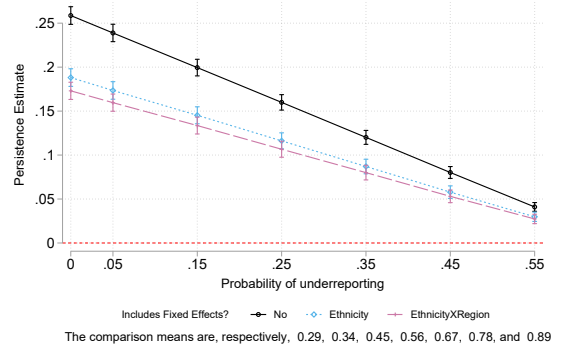


Notes: The dots represent the OLS coefficient estimates of different variations of Equation (1), and the spikes are 95% confidence intervals based on standard errors clustered at the survey-cluster level. The models in **Part A** vary the type of fixed effects included, while those in **Part B** include *Ethnicity* $\times$ *Region* $\times$ *Rural* fixed effects and gradually increase the socioeconomic controls included in the regression.

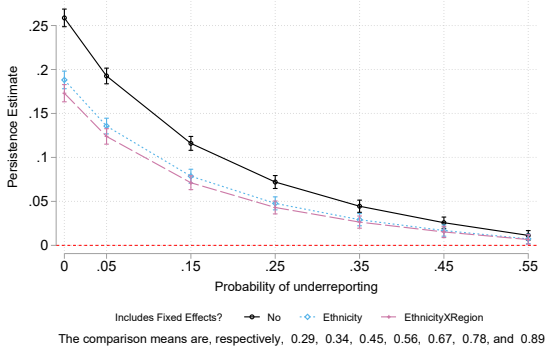
Figure 2: Monte Carlo Simulations of Measurement Error



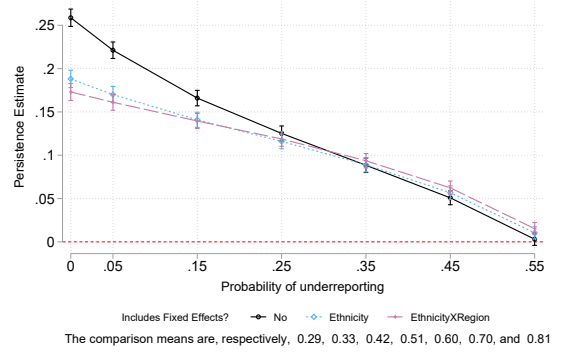
(a) Changing 0s to 1s in Parental IPV



(b) Changing 0s to 1s in Own IPV



(c) Changing 0s to 1s in Own & Parental IPV



(d) Correlated Draws with $\rho = 0.5$

Notes: This figure shows the impact of simulated measurement error on our intimate-partner violence (IPV) persistence estimates. We separately simulate the underreporting of (a) parental IPV, (b) own IPV, and (c) both, for different probabilities of underreporting. For each positive probability, we take the subsample of individuals that report not suffering IPV and draw the probability of a false negative from a Bernoulli distribution 50 times. We estimate Equation (1) by OLS in each simulated dataset. We plot the mean coefficient and 95% confidence interval across the 50 draws. At $p = 0$, we plot the estimated coefficient from Equation (1), with no simulated measurement error. Panels (a)–(c) draw the probabilities of underreporting from independent Bernoulli distributions while Panel (d) draws them from a correlated bivariate-binomial distribution, with a correlation parameter $\rho = 0.5$.

Table 1: Daughters' Attitudes Towards IPV

	Whole sample			Unpartnered sample			Matched-partner sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Parent IPV	.041*** (.004)	.044*** (.003)	.044*** (.003)	.093*** (.007)	.081*** (.007)	.069*** (.006)	.037*** (.006)	.052*** (.006)	.043*** (.005)	.043*** (.005)
Comparison mean	.25	.25	.25	.17	.17	.17	.26	.26	.26	.26
Observations	117,415	117,415	117,415	26,626	26,626	26,626	43,807	43,807	43,807	43,807
R ²	.00	.24	.24	.02	.13	.25	.00	.16	.26	.26
Daughter ethnicity FEs	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No				No	No	No	Yes

Notes: OLS coefficient estimates of Equation (1) where the dependent variable is daughters' attitudes towards intimate-partner violence (IPV) measured as the share of all questions related to attitudes towards wife beating the daughter agreed with. The regressions are run in three different samples: *Whole sample* is the entire sample of currently partnered women. *Unpartnered sample* consists of women that have never been married. *Matched-partner sample* is the subset of the *Whole Sample* for which we can observe the ethnicity and attitudes of the husband. Standard errors in parentheses are clustered at the survey-cluster level.

Table 2: IPV Attitudes by Ethnicity with Higher vs. Lower IPV Acceptability

(a) Parental IPV vs. Daughters' Attitudes

	Below-median acceptability				Above-median acceptability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Daughters' parent IPV	.031*** (.006)	.038*** (.006)	.033*** (.006)	.034*** (.006)	.074*** (.010)	.069*** (.010)	.055*** (.009)	.054*** (.009)
Comparison mean	.14	.14	.14	.14	.37	.37	.37	.37
Observations	21,898	21,898	21,898	21,883	21,909	21,909	21,909	21,900
R ²	.00	.06	.16	.17	.01	.06	.17	.17
Daughter ethnicity FEs	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No	Yes	No	No	No	Yes

(b) Daughters' vs. Sons-in-Law's Attitudes

	Below-median acceptability				Above-median acceptability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Daughters' Attitudes	.095*** (.008)	.068*** (.008)	.056*** (.008)	.058*** (.008)	.085*** (.008)	.068*** (.007)	.039*** (.007)	.039*** (.007)
Comparison mean	.06	.06	.06	.06	.13	.13	.13	.13
Observations	21,898	21,898	21,898	21,883	21,909	21,909	21,909	21,900
R ²	.02	.08	.15	.16	.01	.06	.14	.14
Daughter ethnicity FEs	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No	Yes	No	No	No	Yes

Notes: Panel (a) shows OLS coefficient estimates of a regression of daughters' attitudes towards intimate-partner violence (IPV) on parental IPV. Panel (b) shows OLS coefficient estimates of a regression of son-in-law attitudes towards IPV on daughters' attitudes towards IPV. Attitudes are measured as the share of all questions related to attitudes towards wife beating that the daughter agreed with. For both panels, the regressions are run separately for two different samples: (i) *below-median acceptability* are ethnicities in which the average share of acceptability for daughters is below the ethnicity-level median, and (ii) *above-median acceptability* are those in which the average share of acceptability for daughters is above the ethnicity-level median. Standard errors in parentheses are clustered at the survey-cluster level.

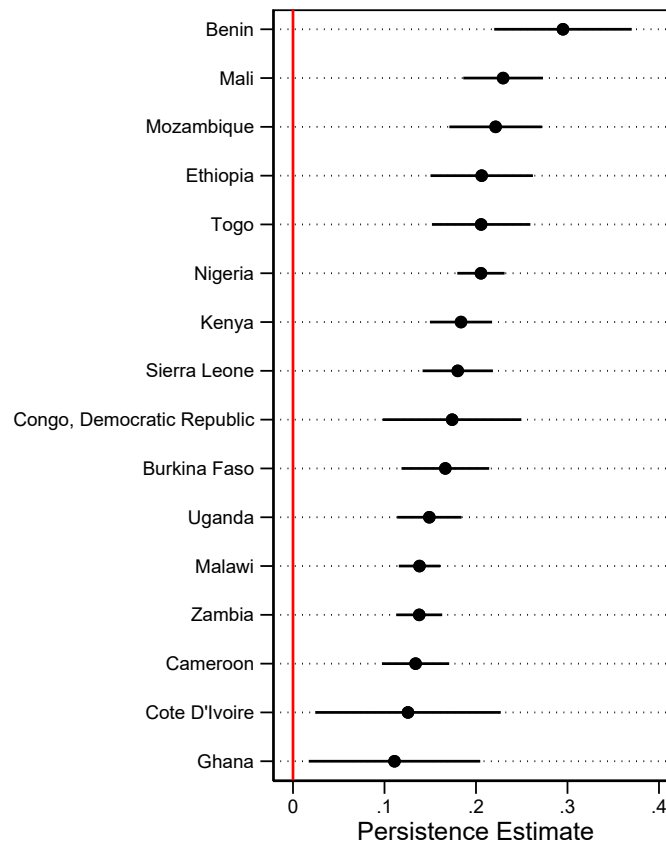
Table 3: IPV Persistence by Ethnicity with Higher vs. Lower IPV Prevalence

	Below-median IPV			Above-median IPV		
	(1)	(2)	(3)	(4)	(5)	(6)
Parent IPV	.237*** (.007)	.202*** (.007)	.185*** (.007)	.178*** (.008)	.170*** (.007)	.157*** (.007)
Comparison mean	.24	.24	.24	.45	.45	.45
Observations	82,414	82,414	82,414	35,001	35,001	35,001
R^2	.04	.06	.12	.03	.05	.11
Daughter ethnicity FEs	No	Yes	Yes	No	Yes	Yes
Daughter ethnicity $\times$ region FEs	No	No	Yes	No	No	Yes

Notes: OLS coefficient estimates of Equation (1). The regressions are run separately for two different samples: (i) *below-median IPV* are ethnicities in which the average incidence of daughter IPV is below the ethnicity-level median, and (ii) *above-median IPV* are those in which the average incidence of daughter IPV is above the ethnicity-level median. Standard errors in parentheses are clustered at the survey-cluster level.

Appendix A.

Figure A.1: IPV Persistence Estimates by Country



Notes: The dots represent the OLS coefficient estimates of Equation (1) by country, controlling for daughter's ethnicity $\times$ region fixed effects. The spikes are 95% confidence intervals based on standard errors clustered at the survey-cluster level.

Table A.1: Demographic and Health Surveys in the Sample

Country	Survey year
Benin	2017
Burkina Faso	2010*
Cameroon	2004, 2011, 2018*
Côte d'Ivoire	2012*
Democratic Republic of the Congo	2013
Ethiopia	2008*
Ghana	2008*
Kenya	2009*, 2014*
Malawi	2004*, 2010*, 2015*
Mali	2006*, 2012*, 2018*
Mozambique	2011
Nigeria	2008*, 2013*, 2018*
Sierra Leone	2013, 2019*
Togo	2014*
Uganda	2011, 2016
Zambia	2013*, 2018*

Notes: The table shows the countries included in our sample, as well as the survey years for which we observe data from each country. The stars indicate the sub-sample of surveys for which we can observe the husband's ethnicity and attitude variables.

Table A.2: Descriptive Statistics, Women Aged 15–49

	Mean	Standard Deviation
<i>Intimate-partner violence (IPV)</i>		
Ever experienced an act of emotional violence by husband/partner	0.24	0.43
Ever experienced an act of physical violence by husband/partner	0.23	0.42
Ever experienced an act of sexual violence perpetrated by husband/partner	0.09	0.29
Ever experienced an act of violence by husband/partner (physical, sexual or emotional)	0.35	0.48
Father ever beat mother (Parental IPV)	0.21	0.41
<i>Daughter's attitudes towards IPV</i>		
Going out without telling him	0.30	0.46
Neglecting the children	0.31	0.46
Arguing with him	0.29	0.45
Refusing to have sexual intercourse with him	0.25	0.43
Burning the food	0.16	0.37
<i>Sociodemographic characteristics</i>		
Age	30.47	8.37
Rural residence	0.69	0.46
Total children ever born	3.74	2.61
No education	0.41	0.49
Incomplete primary	0.23	0.42
Complete primary	0.11	0.31
Incomplete secondary	0.14	0.34
Complete secondary	0.07	0.26
More than secondary	0.04	0.20
Observations	117,415	

Notes: Sample includes women in the *whole sample*, which is the entire sample of currently partnered women, from 28 Demographic and Health Surveys in 16 countries. All questions under *daughter's attitudes towards IPV* are of the form: "Agrees that a husband is justified in hitting or beating his wife for: X."

Table A.3: IPV Persistence by Violence Type

	Type of Violence			
	(1) Any	(2) Physical	(3) Sexual	(4) Emotional
Parent IPV	.259*** (.005)	.232*** (.005)	.108*** (.004)	.167*** (.005)
Comparison Mean	.29	.18	.07	.20
Observations	117,415	117,415	117,415	117,415
R ²	.05	.05	.02	.03

Notes: OLS coefficient estimates of Equation (1). Each column considers a different type of domestic violence (DV) as the outcome variable. *Any* refers to either of the three types of DV (physical, emotional or sexual). Standard errors in parentheses are clustered at the survey-cluster level.

Table A.4: Selection Into and Out of Partnership

	X partnered?				Unpartnered due to X?	
	(1) Ever	(2) Current	(3) # times	(4) Age first	(5) Divorce/separation	(6) Widowed
Parent IPV	.005 (.004)	-.027*** (.004)	.032*** (.003)	.189*** (.043)	.023*** (.002)	.008*** (.001)
Comparison Mean	.83	.75	1.14	18.08	.05	.03
Observations	158,346	158,346	130,665	131,045	158,346	158,346
R ²	.00	.00	.00	.00	.00	.00

Notes: OLS coefficient estimates of Equation (1) where the dependent variables are Ever marrying, Being currently married, Having been married more than once, Age at first marriage, Being divorced/having separated, and Being widowed. Standard errors in parentheses are clustered at the survey-cluster level.

Table A.5: Lee Bounds for Selection Out of Partnership

	Type of Violence			
	(1) Any	(2) Physical	(3) Sexual	(4) Emotional
Lower bound	.257*** (.003)	.234*** (.003)	.111*** (.002)	.170*** (.003)
Upper bound	.258*** (.003)	.235*** (.003)	.111*** (.002)	.171*** (.003)
Comparison mean	.31	.20	.07	.21
Observations	131,349	131,349	131,349	131,349

Notes: The table shows Lee Bounds for the OLS coefficient estimates of Equation (1). Each column considers a different type of domestic violence (DV) as the outcome variable. *Any* refers to either of the three types of DV (physical, emotional or sexual). Standard errors in parentheses are clustered at the survey-cluster level.

Table A.6: Daughters' Attitudes Towards IPV—Goes out Without Telling Husband

	Whole sample			Unpartnered sample			Matched partner sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Parent IPV	.033*** (.005)	.045*** (.004)	.045*** (.004)	.094*** (.009)	.084*** (.009)	.070*** (.009)	.023** (.008)	.047*** (.007)	.038*** (.007)	.038*** (.007)
Observations	117,415	117,415	117,415	26,626	26,626	26,626	43,807	43,807	43,807	43,807
R ²	.00	.20	.20	.01	.09	.22	.00	.12	.20	.20
Daughter ethnicity FEs	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No				No	No	No	Yes

Notes: OLS coefficient estimates on parental IPV of Equation (1) where the dependent variable is an indicator of the daughter agreeing that wife beating is justified if the woman goes out without telling the husband. The regressions are run in three different samples: (i) *Whole sample* is the entire sample of currently partnered women, (ii) *Unpartnered sample* consists of women who have never been married, and (iii) *Matched-partner sample* is the subset of the *Whole sample* for which we can observe the ethnicity and attitudes of the husband. Standard errors in parentheses are clustered at the survey-cluster level.

Table A.7: Daughters' Attitudes Towards IPV—Neglects the Children

	Whole sample			Unpartnered sample			Matched partner sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Parent IPV	.070*** (.005)	.052*** (.005)	.052*** (.005)	.123*** (.010)	.099*** (.009)	.088*** (.009)	.054*** (.008)	.057*** (.007)	.046*** (.007)	.046*** (.007)
Observations	117,415	117,415	117,415	26,626	26,626	26,626	43,807	43,807	43,807	43,807
R ²	.00	.18	.18	.01	.09	.20	.00	.11	.18	.19
Daughter ethnicity FEs	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No				No	No	No	Yes

Notes: OLS coefficient estimates on parental IPV of Equation (1) where the dependent variable is an indicator of the daughter agreeing that wife beating is justified if the woman neglects the children. The regressions are run in three different samples: (i) *Whole sample* is the entire sample of currently partnered women, (ii) *Unpartnered sample* consists of women that have never been married, and (iii) *Matched partner sample* is the subset of the *Whole sample* for which we can observe the ethnicity and attitudes of the husband. Standard errors in parentheses are clustered at the survey-cluster level.

Table A.8: Daughters' Attitudes Towards IPV—Argues with Husband

	Whole sample			Unpartnered sample			Matched partner sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Parent IPV	.049*** (.005)	.052*** (.004)	.052*** (.004)	.108*** (.009)	.095*** (.009)	.082*** (.009)	.040*** (.008)	.056*** (.007)	.046*** (.007)	.046*** (.007)
Observations	117,415	117,415	117,415	26,626	26,626	26,626	43,807	43,807	43,807	43,807
R ²	.00	.21	.21	.01	.11	.22	.00	.15	.23	.23
Daughter ethnicity FEs	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No				No	No	No	Yes

Notes: OLS coefficient estimates on parental IPV of Equation (1) where the dependent variable is an indicator of the daughter agreeing that wife beating is justified if the woman argues with the husband. The regressions are run in three different samples: (i) *Whole sample* is the entire sample of currently partnered women, (ii) *Unpartnered sample* consists of women that have never been married, and (iii) *Matched partner sample* is the subset of the *Whole sample* for which we can observe the ethnicity and attitudes of the husband. Standard errors in parentheses are clustered at the survey-cluster level.

Table A.9: Daughters' Attitudes Towards IPV—Refuses to Have Sex with Husband

	Whole sample			Unpartnered sample			Matched partner sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Parent IPV	.016** (.005)	.038*** (.004)	.038*** (.004)	.067*** (.008)	.065*** (.008)	.054*** (.008)	.023** (.008)	.052*** (.007)	.044*** (.007)	.044*** (.007)
Observations	117,415	117,415	117,415	26,626	26,626	26,626	43,807	43,807	43,807	43,807
R ²	.00	.23	.23	.01	.11	.22	.00	.16	.24	.24
Daughter ethnicity FEs	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No				No	No	No	Yes

Notes: OLS coefficient estimates on parental IPV of Equation (1) where the dependent variable is an indicator of the daughter agreeing that wife beating is justified if the woman refuses to have sex with the husband. The regressions are run in three different samples: (i) *Whole sample* is the entire sample of currently partnered women, (ii) *Unpartnered sample* consists of women that have never been married, and (iii) *Matched partner sample* is the subset of the *Whole sample* for which we can observe the ethnicity and attitudes of the husband. Standard errors in parentheses are clustered at the survey-cluster level.

Table A.10: Daughters' Attitudes Towards IPV—Burns the Food

	Whole sample			Unpartnered sample			Matched partner sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Parent IPV	.036*** (.004)	.034*** (.004)	.034*** (.004)	.072*** (.007)	.060*** (.007)	.052*** (.007)	.046*** (.007)	.048*** (.006)	.039*** (.006)	.040*** (.006)
Observations	117,415	117,415	117,415	26,626	26,626	26,626	43,807	43,807	43,807	43,807
R ²	.00	.15	.15	.01	.07	.18	.00	.10	.18	.18
Daughter ethnicity FEs	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Daughter ethnicity × region FEs	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Son-in-law ethnicity FEs	No	No	No				No	No	No	Yes

Notes: OLS coefficient estimates on parental IPV of Equation (1) where the dependent variable is an indicator of the daughter agreeing that wife beating is justified if the woman burns the food. The regressions are run in three different samples: (i) *Whole sample* is the entire sample of currently partnered women, (ii) *Unpartnered sample* consists of women that have never been married, and (iii) *Matched partner sample* is the subset of the *Whole sample* for which we can observe the ethnicity and attitudes of the husband. Standard errors in parentheses are clustered at the survey-cluster level.

Table A.11: Possible Scenarios for Misreporting

Reported IPV		Real IPV		Misreporting scenario
Parental IPV	Own IPV	Parental IPV	Own IPV	
0	0	0	1	Monte Carlo
		1	0	
		1	1	Attenuation bias
1	0	0	0	Implausible due to overreporting
		0	1	
		1	1	Attenuation bias
0	1	0	0	Implausible due to overreporting
		1	0	
		1	1	Attenuation bias
1	1	0	0	Implausible due to overreporting
		1	0	
		0	1	overreporting

Note: The table shows an exhaustive description of all possible combinations of misreporting in daughter's (own) intimate-partner violence (IPV) and parental IPV. It explains how the persistence estimates would be affected by each specific type of misreporting and points out which cases are explored in the Monte Carlo Simulations of Figure 2.