



Long-Term Effects of Childhood Exposure to War on Domestic Violence

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Abstract

This paper highlights the scarring effects of early life exposure to civil war, by examining the impact of exposure to conflict in childhood on the incidence of domestic violence in adulthood among married women. To estimate these effects, we use a difference-in-differences model which exploits variation in exposure to Nigeria's 30-month-long civil war by year of birth and ethnicity. Our results, based on the 2008 Nigerian Demographic Health Survey, show that women exposed to the war during childhood are more likely to be victims of domestic violence in adulthood compared to those not exposed to the war, with larger effects observed for those exposed at younger ages. Additionally, we explore the mechanisms through which exposure to civil war might affect domestic violence and find some support for both the normalisation of violence and weakened bargaining power hypotheses. Understanding the root causes of domestic violence is important given the high prevalence in developing countries and the deleterious consequences for women and their children.

Keywords Civil war · Domestic violence · Attitudes · Bargaining power · Nigeria

Résumé

Ce document met en évidence les effets cicatrisants d'une exposition précoce à la guerre civile, en examinant l'impact de l'exposition au conflit pendant l'enfance sur

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l'incidence de la violence domestique à l'âge adulte chez les femmes mariées. Pour estimer ces effets, nous utilisons un modèle de différences en différences qui exploite la variation de l'exposition à la guerre civile nigériane de 30 mois en fonction de l'année de naissance et de l'ethnicité. Nos résultats, basés sur l'Enquête démographique de santé nigériane de 2008, montrent que les femmes exposées à la guerre pendant l'enfance sont plus susceptibles d'être victimes de violence domestique à l'âge adulte par rapport à celles qui n'ont pas été exposées à la guerre, avec des effets plus importants observés pour celles exposées à des âges plus jeunes. De plus, nous explorons les mécanismes par lesquels l'exposition à la guerre civile pourrait affecter la violence domestique et trouvons un certain soutien pour les hypothèses de normalisation de la violence et d'affaiblissement du pouvoir de négociation. Comprendre les causes profondes de la violence domestique est important étant donné la prévalence élevée dans les pays en développement et les conséquences délétères pour les femmes et leurs enfants.

Resumen

Este documento destaca los efectos perjudiciales de la exposición en los primeros años de vida a la guerra civil, examinando el impacto de la exposición al conflicto en la infancia sobre la incidencia de la violencia doméstica en la adultez entre mujeres casadas. Para estimar estos efectos, utilizamos un modelo de diferencias en diferencias que explota la variación en la exposición a la guerra civil de Nigeria de 30 meses de duración por año de nacimiento y etnia. Nuestros resultados, basados en la Encuesta de Salud Demográfica de Nigeria 2008, muestran que las mujeres expuestas a la guerra durante la infancia tienen más probabilidades de ser víctimas de violencia doméstica en la adultez en comparación con aquellas que no estuvieron expuestas a la guerra, con efectos mayores observados para aquellas expuestas a edades más tempranas. Además, exploramos los mecanismos a través de los cuales la exposición a la guerra civil podría afectar la violencia doméstica y encontramos cierto apoyo tanto para las hipótesis de normalización de la violencia como para el debilitamiento del poder de negociación. Comprender las causas fundamentales de la violencia doméstica es importante dado su alta prevalencia en los países en desarrollo y las consecuencias perjudiciales para las mujeres y sus hijos.

Introduction

Since World War II, almost one-third of all countries have experienced civil war, and the incidence of armed conflict has been on the rise (Gleditsch et al. 2002). In Sub-Saharan Africa specifically, nearly three-fourths of countries in the region have experienced civil war (Gleditsch et al. 2002). These conflicts have often led to considerable loss of lives, deterioration of physical and human capital, erosion of institutional capacity, and reduced economic growth (Akbulut-Yuksel and Yuksel 2017). It has been estimated, for instance, that between 2012 and 2017, the global economic costs of conflict increased from \$12.62 trillion to \$14.76 trillion, with many of the conflict-torn countries trapped in a perpetual cycle of violence (World Development



Report 2011; World Humanitarian Data and Trends Report 2017; Institute for Economics and Peace 2018).

While the macroeconomic costs of war have long been studied in economics, literature on the microeconomic impacts of civil war, particularly in developing countries, has grown in the last 20 years especially, perhaps as more data have become available (Verwimp et al 2019). Studies have shown that exposure to conflict is negatively associated with educational attainment (Singh and Shemyakina 2016; Chamarbagwala and Moran 2011; Shemyakina 2011; Swee 2015), health outcomes (Akresh et al. 2012a, 2012b; Grimard and Laszlo 2014; Weldeegzie; 2017), social trust (Kijewski and Freitag 2018), and labour market outcomes (Galdo 2013; Islam et al. 2016).

In this paper, we add to this literature by exploring how exposure to conflict in childhood affects experiences of domestic violence among women in adulthood, using the case of the Nigerian civil war. Recent work suggests that exposure to war increases women's likelihood of experiencing intimate partner violence across a range of contexts. La Mattina (2017) finds that exposure to the genocide in Rwanda increased the incidence of domestic violence among women who married after 1994 compared to those who married before the genocide occurred, with a larger effect for women in areas with high genocide intensity. Kelly et al (2018) match district-level information on conflict-related fatalities during the civil war in Liberia from 1999 to 2003 to data on post-conflict intimate partner violence from the 2007 Demographic Health Survey (DHS). They find a strong effect of fatalities on the incidence of intimate partner violence, with 4–5 years of cumulative exposure having the strongest effect. In a similar vein, Østby et al (2019) analyse the experiences of women in Peru during and after the civil war from 1980 to 2000 and find that those living in areas with higher exposure to conflict-related violence are at increased risk of violence in the home. Svallfors (2023) analyses DHS data from 2005 to 2015 for Columbia and shows that local-level exposure to armed conflict events in the previous year especially, increased women's likelihood of experiencing intimate partner violence.

In all these studies, the focus has been on the association between conflict exposure and domestic violence in adulthood, or on temporally proximate relationships. In our reading of the literature, we could find only one very recent published paper by Torrisi (2023) which tries to uncover whether the *timing* of exposure matters, and particularly whether exposure to armed conflict during childhood has long-lasting consequences for domestic violence in adulthood. Torrisi (2023) combines DHS data with geo-referenced information on the armed conflicts that occurred in four ex-Soviet countries (Armenia, Azerbaijan, Moldova, and Tajikistan) soon after the break-up of the USSR. She finds that women who were exposed to conflict by age 19 were more likely to experience domestic violence than those never exposed or not exposed by age 19, and that this effect is driven largely by exposure in the sensitive childhood period from 0 to 10 years of age (with no significant effect for those exposed at ages 11 to 15 or 16 to 19).

We also found two working papers that explore the relationship between childhood exposure and domestic violence in adulthood (Gutierrez and Gallegos 2016; La Mattina and Shemyakina 2017). Gutierrez and Gallegos (2016) use DHS data from Peru coupled with information on geographical variation in exposure to violent



conflict to show that both women who were exposed at ages 0 to 8 and 9 to 16 experienced a higher incidence of domestic violence in adulthood compared to those not exposed. La Mattina and Shemyakina (2017) use the DHS data on selected Sub-Saharan African countries and exploit both temporal and geographical variation in conflict intensity between 1946 and 2006 across sub-national regions. Their results suggest that women who live in a region where there was an armed conflict when they were 6 to 10 years old are more likely to experience domestic violence than individuals not exposed to conflict by age 20, but they do not observe similar effects for individuals who were exposed to conflict at ages 0 to 5 or 11 to 20.

There is a common methodological thread that runs throughout all these studies: they use geo-referenced data on conflict-related violence combined with post-conflict data on domestic violence from the DHS surveys. In addition to imperfect matching at the sub-national or district level due to differences in levels of geographical disaggregation or demarcation between the two sources of data, a key concern with this approach is endogenous migration. The DHS only has information on the individual's *current* place of residence and not on their residence in childhood or at the time of conflict. There is therefore no guarantee that the women who are currently living in a previously conflict-exposed area were also living there during childhood when the conflict took place. Indeed, endogenous migration is likely to be more of a concern during times of conflict, and the direction of the effect is difficult to predict. It is possible that the most vulnerable women (and men) may be displaced or forced to flee with their families during times of conflict, but it is also possible that the least vulnerable, those with better economic resources and social networks, are the ones who can more easily relocate to places of safety. To try and address this problem, many of the studies listed above restrict their samples to those who had never moved since birth or who had not moved in the previous five years, depending on the data available in the DHS. In doing so, however, they tend to lose 50 percent or more of their initial sample (Gutierrez and Gallegos 2016; La Mattina and Shemyakina 2017; Torrisi 2023), likely leading to biased results.

Our paper makes a useful methodological contribution to this growing literature on the long-term effects of war exposure by using what we consider to be a more robust method of identifying exposure than the commonly used geographical approach. We use ethnicity and birth cohort to identify exposure to conflict in childhood during the Nigerian civil war (following the approach adopted in Akresh et al 2012a, 2023). We are able to adopt this approach because of the very specific nature of the Nigerian civil war, which occurred from 6 July 1967 to 15 January 1970, and which was restricted to the south-eastern region of Nigeria inhabited by the Igbo and other minority ethnic groups (which we will describe in more detail below). This strategy mitigates the problem of selective migration associated with the use of geography-based variables to identify exposure, a problem which is likely to be more pronounced during times of conflict.

In addition, we examine exposure in early childhood using more granular age ranges than have currently been explored, namely those exposed in utero, between the ages of 0 to 4, 5 to 8, and 9 to 12. In doing so, we add to the growing body of literature in economics which recognises that there are long-run implications of early life shocks and that adverse circumstances during the sensitive early period



of childhood can impact a range of later life outcomes (Case et al. 2005; Cunha and Heckman 2007; Almond and Currie 2011; Currie 2020). This includes increasing evidence that in utero exposure to shocks such as war, disease, and famine have long-term negative consequences on physical and mental health, educational attainment, earnings, and other socio-economic outcomes (Almond 2006; Camacho 2009; Almond and Currie 2011; Comfort 2016; Almond et al. 2018).

Finally, we try to unpack the mechanisms through which early life exposure to conflict affects experiences of domestic violence in adulthood, using the rich data available in the Nigerian Demographic Health Survey. We explore two possible channels. The first, the normalisation of violence hypothesis, relies on the well-known finding that children who witness violence at home are more likely to become a victim or perpetrator of domestic violence themselves in adulthood (Schwab-Stone et al. 1995; Gage 2005; Yount and Li 2009; Cesur and Sabia 2016; Jin et al. 2017). If war results in more intimate partner violence among married couples, as the evidence presented earlier suggests, we would expect children growing up during war to witness more violence among their parents than observably similar children. Even if children do not witness violence within their own homes, one might expect that children exposed to community-level violence through war during their formative years might also be more likely to view violence as a justifiable response to certain problems (Barnett et al. 2005; Fowler et al. 2009; Gutierrez and Galegos 2016). To examine whether exposure to violence in childhood might have affected the formation of beliefs during the critical early years, we use data in the DHS on whether war-exposed women witnessed domestic violence in their homes as children and on women's and men's attitudes towards wife-beating in adulthood (Huber 2023).

The second hypothesis we explore is reduced bargaining power in the household, which would affect women's options outside of the marriage and in turn increase their likelihood of being victims of domestic violence (Bhattacharyya et al. 2011; Heath 2014; La Mattina 2017). There are a number of reasons why women exposed to war may have fewer outside options. For instance, a number of studies in a range of countries have found evidence that civil conflict results in poorer educational outcomes (Akresh and Walque 2008; Leon 2012; Shemyakina 2011; Chamarbagwala and Moran 2011; and Dabalen and Paul 2014), and there is some evidence that exposure to conflict negatively affects girls more than boys (Singh and Shemyakina 2016). Women with lower education have fewer out-of-marriage options given their weaker labour market outcomes and increased financial dependence on their husbands, raising the likelihood of domestic violence (Lundberg and Pollak 1996; Farmer and Tiefenthaler 1997; Aizer 2010; Bhattacharyya et al. 2011; Eswaran and Malhotra 2011; Galdo 2013; Heath 2014). Moreover, war exposure can affect marriage, reproductive and health outcomes, which would have consequences for women's intra-household bargaining power (Verwimp and van Bavel 2005; Aizer 2011; Akresh 2012a; Islam et al 2016; Cetorelli and Khawaja 2017; La Mattina 2017). To measure women's bargaining power in adulthood, we use the information in the DHS on women's decision-making power in the household across a number of domains (Ajefu and Casale 2021).

Our main findings are as follows. We find that women exposed to the Nigerian civil war during childhood are more likely to be victims of domestic violence in



adulthood compared to women not exposed to the civil war. Specifically, we find that exposure to the civil war is associated with an increase in the likelihood of being a victim of domestic violence of 1.2 percentage points compared to non-exposed cohorts (or 6% given the sample mean incidence of 19.7%). These effects appear to be more pronounced the earlier on one is exposed in childhood, with particularly large effects for those exposed in utero. While it is far more difficult to identify the channels through which exposure to the civil war affects domestic violence (particularly across the cohorts), in our exploratory work, we find some evidence to support both the normalisation of violence and bargaining power hypotheses.

The rest of the paper is structured as follows. Section 2 provides background information on the Nigerian civil war. Section 3 discusses the data and the empirical identification strategy, and presents some descriptive statistics. Section 4 presents the estimation results, and Sect. 5 concludes.

Background on the Nigerian Civil War

Under British colonial rule, Nigeria comprised three regions, namely the northern, western, and eastern regions.¹ Each of these regions had a predominant ethnic group, with the Hausa in the North, the Yoruba in the West, and the Igbo in the East. Like many countries in Africa, political and social conflict in Nigeria bore both ethnic and regional dimensions (Simpson 2014). In less than seven years after becoming an independent nation (on 1 October 1960), some of these long-standing tensions between the different groups intensified and the country was plunged into a civil war, also known as the Biafran War.

While the underlying geo-political causes of the war are too complex to explain here, some of the immediate causes of the Nigerian Civil War were the military coup on 15 January 1966, organised by primarily Igbo army officers, the counter-coup of 28 July 1966, and the subsequent persecution and killing of the Igbos in the Northern part of the country (Kirk-Greene 1971; Nafziger 1972). In response to this, there was a massive return migration of Igbos seeking refuge (estimated to involve around 1.5 million people) to their homeland in the south-eastern region (Aall 1970; Akresh et al 2012a). On 30 May 1967, the south-eastern region declared itself the Republic of Biafra and this led to a full-blown civil war that began on 6 July 1967 (see Fig. 1).

Nigeria's Federal Military Government fiercely resisted the breakaway republic for two and a half years, using both their military might and their ability to impose a blockade of the landlocked territory (preventing the inflow of food, medicine, and other essential supplies). It has been estimated that between 1 and 3 million people died from the violence and mass starvation that ensued, in what was considered one of the bloodiest wars in sub-Saharan Africa (Akresh et al. 2012a; Simpson 2014).

¹ These three main regions were subsequently demarcated into six geopolitical regions, namely the northeast, northwest, north-central, south-south, south-east, and south-west, the latter being the region where the civil war was fought (Alapiki 2005). These six regions are further divided into 36 states.



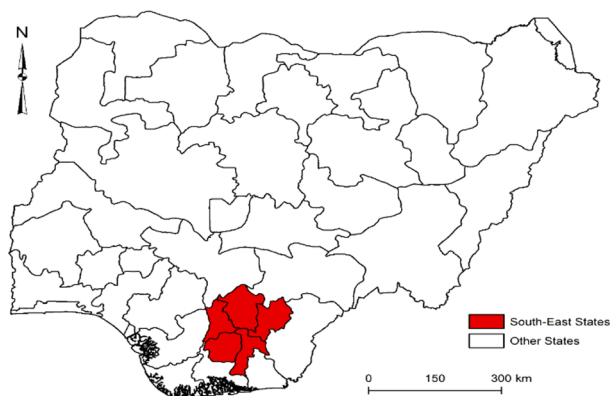


Fig. 1 Map of Nigeria indicating the south-east states. The civil war was restricted to the south-east region that declared itself the Biafra republic

The war ended on 15 January 1970 after the Republic of Biafra surrendered to the Nigerian troops.

Two key features of this devastating conflict are salient to our empirical strategy. First, because of the military blockade (which prevented movement of both people and supplies), the war was fought in the south-eastern region with direct civilian exposure largely restricted to this area (Akresh et al. 2012a). Second, at the time of the war, most Igbos were living in their native states in the south-east, and many of those living outside the area returned there before the war to seek refuge in the mass migration that occurred just before secession was declared (Aall 1970). We can therefore use ethnicity and birth cohort to identify exposure to the civil war. This identification strategy is similar to that used by Akresh et al (2012a) in their study on the impact of exposure to the Nigerian civil war on women's stature in adulthood. This strategy is preferred to using current geographical demarcation, as is the case in other studies exploring the relationship between war exposure and domestic violence, as it circumvents the problem of selective migration (ethnicity is invariant to migration).

Methods

Data

To investigate the impact of the Nigerian civil war on women's experience of domestic violence in adulthood, we use the 2008 Nigerian Demographic Health Survey (DHS). The DHS is a large nationally representative cross-sectional survey conducted in a number of developing countries. It provides information on women between the ages of 15 and 49 years on a large number of demographic and socio-economic factors. The 2008 Nigerian DHS covered 34,070 households and 33,385



women.² We use the 2008 survey in this study for two main reasons: it is the first wave of the Nigerian DHS to collect information on the incidence of domestic violence among women; and given the timing of the war, this particular survey covers the largest sample of war-exposed women, allowing us to explore the effects of exposure in utero through to exposure at 12 years of age.³

The information on domestic violence was collected through a specially designed questionnaire that was administered to one randomly selected woman in each household.⁴ Women who were (or had been) married or cohabiting were asked in private about incidents of domestic violence as follows: “(Does/did) your (last) husband ever do any of the following things to you: (a) slap you? (b) twist your arm or pull your hair? (c) push you, shake you, or throw something at you? (d) punch you with his fist or with something that could hurt you? (e) kick you, drag you or beat you up? (f) try to choke you or burn you on purpose? (g) threaten or attack you with a knife, gun, or any other weapon? (h) physically force you to have sexual intercourse with him even when you did not want to? (i) force you to perform any sexual acts you did not want to?” We measure domestic violence using a binary variable that takes the value of 1 if a woman suffered any of the above-mentioned aggressive behaviours from her husband or partner and 0 otherwise.

Empirical Identification Strategy

To estimate the causal impact of exposure to the civil war in childhood on experiences of domestic violence in adulthood, we adopt a difference-in-differences strategy. As described above, our identification strategy exploits variation in exposure to the civil war by birth cohort and ethnicity. This estimation strategy minimises the problem of selective migration associated with the use of geographical variation in conflict exposure and helps to circumvent one of the limitations of the Nigerian DHS, namely, that it only has information on the current residence of respondents but no information on their place of birth or their place of residence during the war.

We define the treatment or war-exposed group as those Igbo and other minority ethnic groups (who would have been in the south-eastern region when the war was

² The 2008 Nigerian Demographic Health survey also interviewed men aged 15 to 59 to provide information on health and other related issues, but it did not collect information on their experiences of domestic violence.

³ We were unable to analyse exposure after age 12 (or among cohorts born pre-1958) because the DHS contains information only on women aged 15 to 49 years old. In the 2008 DHS wave, the oldest woman in the sample (aged 49) therefore was born in 1958. If we use later waves of the DHS, we can only analyse a smaller sample of war-exposed women. Specifically, if we used the 2013 DHS, we would only be able to estimate the effect for those exposed in utero to age 7, and if we used the 2018 DHS, we would only be able to estimate the effect for those exposed in utero to age 2.

⁴ The DHS captures information on experiences of domestic violence using the World Health Organization's ethical and safety guidelines (Kishor and Kiersten 2004). Interviewers are trained to deal with the sensitive nature of the questions and there are strict protocols to ensure privacy during the interview. To try to minimise under-reporting of domestic violence, the DHS domestic violence questionnaire uses a modified version of the Conflict Tactics Scale (CTS). Women are asked a number of separate questions on different types of violence which reduces confusion as to what constitutes domestic violence, and gives women multiple opportunities to reveal their experiences (Kishor 2005).



Table 1 Identification of exposed and non-exposed groups

Treatment (war-exposed)		Control (non-exposed)	
Ethnicity	Year of birth cohorts	Ethnicity	Year of birth cohorts
Igbo	1958–1970 (Oct)	Igbo	1970 (Nov)–1976 (Dec)
Adoni	1958–1970 (Oct)	Adoni	1970 (Nov)–1976 (Dec)
Adun	1958–1970 (Oct)	Adun	1970 (Nov)–1976 (Dec)
Annang	1958–1970 (Oct)	Annang	1970 (Nov)–1976 (Dec)
Ekoi	1958–1970 (Oct)	Ekoi	1970 (Nov)–1976 (Dec)
Ibibio	1958–1970 (Oct)	Ibibio	1970 (Nov)–1976 (Dec)
Ijaw/Izon	1958–1970 (Oct)	Ijaw/Izon	1970 (Nov)–1976 (Dec)
		Fulani	1958–1976
		Hausa	1958–1976
		Igala	1958–1976
		Kanuri/Beriberi	1958–1976
		Tiv	1958–1976
		Yoruba	1958–1976
		Others	1958–1976

fought) born between 1958 and October 1970. These women were between 0 and 12 years old (including in utero) when the war took place between July 1967 and January 1970, and are aged 38 to 49 years in 2008 when we observe their experiences of domestic violence.

We present two distinct control groups: i) one across time, i.e. women from the war-exposed ethnicities but born in the six-year period following the war, namely from November 1970 to December 1976 (and aged 32 to 38 years in 2008),⁵ and ii) one across ethnicity, i.e. the same birth cohorts (1958–1976) but from the non-war-exposed ethnicities (predominant in the other regions of Nigeria). Table 1 summarises birth cohorts for the war-exposed and non-exposed groups, respectively.

We estimate Eq. (1) below:

$$Y_{ijt} = \alpha + \beta_1 \left(war_{ethnicity_j} * Cohort_{it} \right) + \beta_2 war_{ethnicity_j} + \beta_3 Cohort_{it} + \beta_4 X_{ijt} + \delta_r + \epsilon_{ijt} \quad (1)$$

where Y_{ijt} is equal to one (zero otherwise) if individual i belonging to ethnicity j and born in year t was a victim of domestic violence in adulthood. $war_{ethnicity_j}$ denotes Igbo or other minority ethnic groups in the south-east region and $Cohort_{it}$ includes four cohorts, namely those exposed to war in utero (born between February and October 1970), those exposed between 0 and 4 years (born 1966–1970), those exposed between 5 and 8 years (born 1962–1965), and those exposed between 9

⁵ We limit our control group to the six-year period following the war, as too broad a window of comparison increases potential confounding effects (Akresh et al 2012a). Moreover, our results are consistent when, following Akresh et al (2012a), we use an even shorter control period, namely 1970 (Nov) to 1974.



and 12 years (born 1958–1961), where the omitted category is those born between November 1970 (i.e. nine months after the war) and December 1976. The interactions of war ethnicity with each of the four cohorts are the variables of interest and capture the effect of an individual's exposure to the civil war on the incidence of domestic violence. X_{ij} is a vector of individual and household characteristics, which includes age at first marriage, religion, education, urban residence, and household wealth; δ_r is a state fixed effect; and ε_{ijt} is a random, idiosyncratic error term. We estimate the regressions using ordinary least squares (OLS) (although the results are robust to using probit regressions), and standard errors are clustered at the ethnicity level to account for serial correlation (Bertrand et al. 2004).

Summary Statistics

Table 2 reports the summary statistics for our sample of married/cohabiting women from whom domestic violence data were collected. The average age of women in this sample was 39 years, the average age at first marriage was 19 years, around 47% of women in the sample had completed at least primary education, and 32% were resident in urban areas. Among the women who were surveyed, 20% said they had experienced at least one type of domestic violence from their partner.

To explore the normalisation of violence and bargaining power hypotheses as potential mechanisms through which exposure to conflict affects the incidence of domestic violence, we also examine data on attitudes towards domestic violence, domestic violence among parents, and decision-making in the household. The summary statistics for these variables are also shown in Table 2. On average, 34% of the women in the sample responded that domestic violence is justified if the woman goes out without informing the husband/partner, 32% felt it was justified if a woman neglects the children, 29% felt it was justified if a woman argues with her husband/partner, 26% felt it was justified if a woman refuses to have sex with her husband/partner, and 17% justified violence if a woman burns the food. Nearly 13% percent of women reported witnessing domestic violence among their own parents. In terms of household decision-making, 12% of women reported having the final say on own health care, 7% reported having the final say on large household purchases, 20% reported having the final say on household purchases for daily needs, and 14% reported having the final say on visits to family or relatives.

Table 3 shows that are large and significant differences in these variables by war exposure. Just under 18% of the non-exposed group reported being victims of domestic violence, compared to 27% of the war-exposed group. Moreover, 11% of the non-exposed group witnessed domestic violence among their parents, compared to 19% of the war-exposed group. There are also statistically significant differences in attitudes towards domestic violence, with war-exposed women more likely to report that wife-beating was justified in certain circumstances. For example, 15% of the non-exposed group justified wife-beating if a woman refuses to have sex with her partner compared to 30% of the war-exposed group. In terms of household decision-making, statistically significant differences are observed in three out of the four



Table 2 Summary statistics of variables used in the analysis

Variables	Mean	SD	Min	Max	N
<i>Domestic violence outcome</i>					
Experienced domestic violence	0.197	0.397	0	1	8,243
<i>Cohort and ethnicity</i>					
In utero	0.055	0.228	0	1	8,526
Born 1966–1970	0.231	0.422	0	1	8,526
Born 1962–1965	0.168	0.374	0	1	8,526
Born 1958–1961	0.125	0.331	0	1	8,526
Born Nov 1970 – 1976 (non-exposed)	0.421	0.493	0	1	8,526
War-exposed ethnicity	0.232	0.422	0	1	8,470
Non-war-exposed ethnicity	0.768	0.422	0	1	8,470
War-exposed ethnicity*In utero	0.013	0.114	0	1	8,470
War-exposed ethnicity*Born 1966–1970	0.048	0.213	0	1	8,470
War-exposed ethnicity*Born 1962–1965	0.037	0.188	0	1	8,470
War-exposed ethnicity*Born 1958–1961	0.029	0.168	0	0	8,470
<i>Control variables</i>					
Average age	39.246	5.175	32	49	8,526
Age at first marriage	18.661	5.448	10	45	8,336
Urban residence	0.315	0.465	0	1	8,526
Completed primary education and above	0.467	0.499	0	1	8,526
Household wealth-Quintile 1	0.233	0.423	0	1	8,526
Household wealth-Quintile 2	0.198	0.399	0	1	8,526
Household wealth-Quintile 3	0.194	0.395	0	1	8,526
Household wealth-Quintile 4	0.180	0.384	0	1	8,526
Household wealth-Quintile 5	0.196	0.397	0	1	8,526
Religion-Christian	0.531	0.499	0	1	8,473
Religion-Islam	0.447	0.497	0	1	8,473
Religion-Traditional	0.020	0.141	0	1	8,473
Religion-Other	0.002	0.043	0	1	8,473
Domestic violence among parents	0.126	0.332	0	1	7,749
<i>Women's justification of domestic violence</i>					
Wife goes out without telling the partner	0.337	0.473	0	1	8,404
Wife neglects the children	0.322	0.467	0	1	8,396
Wife argues with the husband	0.287	0.452	0	1	8,365
Wife refuses to have sex with partner	0.263	0.440	0	1	8,339
Wife burns the food	0.167	0.373	0	1	8,372
<i>Women's decision-making power</i>					
-Woman's own health care	0.115	0.319	0	1	7,604
-Large household purchases	0.072	0.258	0	1	7,601
-Household purchases for daily needs	0.199	0.399	0	1	7,603
-Visit to family or relatives	0.137	0.344	0	1	7,604

Source: Authors' calculations using the 2008 Nigerian DHS



Table 3 Mean differences by war exposure

Variable	Non-exposed group (b_0)	War-exposed group (b_1)	Test $b_0 - b_1 = 0$	N
Incidence of domestic violence	0.176 (0.005)	0.271 (0.011)	-0.095*** (0.011)	8,187
Witnessed domestic violence among parents	0.112 (0.004)	0.188 (0.014)	-0.076*** (0.012)	7,097
Wife goes out without telling the partner	0.313 (0.011)	0.343 (0.006)	-0.029** (0.012)	8,350
Wife neglects the children	0.297 (0.010)	0.329 (0.006)	-0.032*** (0.012)	8,342
Wife argues with the husband	0.262 (0.010)	0.2944 (0.006)	-0.032*** (0.011)	8,312
Wife refuses to have sex with partner	0.153 (0.008)	0.295 (0.006)	-0.142*** (0.011)	8,284
Wife burns the food	0.126 (0.007)	0.179 (0.004)	-0.053*** (0.009)	8,317
Final say on own health care	0.120 (0.049)	0.107 (0.005)	0.013* (0.007)	7,604
Final say on making large HH purchases	0.074 (0.003)	0.067 (0.004)	0.007 (0.005)	7,601
Final say on purchases for daily needs	0.373 (0.012)	0.152 (0.004)	0.220*** (0.011)	7,603
Final say on visits to family or relatives	0.142 (0.006)	0.130 (0.005)	0.012* (0.007)	7,604

Source: Authors' calculations using the 2008 Nigerian DHS**Notes:** *Significant at 10%, **significant at 5%, and ***significant at 1%

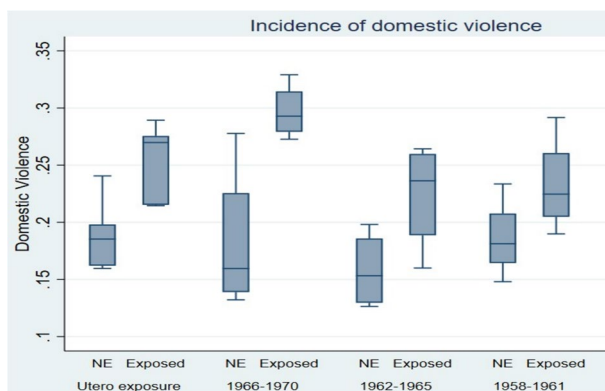


Fig. 2 Box plot showing the incidence of domestic violence across the cohorts for the exposed and non-exposed ethnicities

domains, with war-exposed women less likely to report having the final say on own health care, purchases for daily needs and visits to family and friends.

Figure 2 presents a box plot of our main variable of interest, the incidence of domestic violence, across the cohorts. Within each birth cohort, the incidence of domestic violence is clearly higher for the war-exposed ethnic groups compared to the non-exposed ethnic groups, and the difference between the two appears larger for those exposed at younger ages. However, these are unconditional estimates, and it remains to be seen whether these effects will hold in the multivariate difference-in-differences analysis, which we present in the next section.

Results

Exposure to Civil War and Domestic Violence

Table 4 presents the results from a series of equations which estimate the effect of exposure to the civil war in childhood (in utero to age 12) on the incidence of domestic violence in adulthood, without disaggregating by birth cohort. The coefficients on the interaction term suggest a positive and significant effect of war exposure in childhood on the incidence of domestic violence among women in adulthood. The size of the coefficient tends to fall as an increasing number of controls are added between columns 1 and 4. The regression in column 4 includes controls for individual and household characteristics and fixed effects for state, ethnicity, and cohort, and is our preferred specification. The coefficient from this regression suggests that exposure to the civil war increases the likelihood of being a victim of



Table 4 Impact of women's exposure to civil war on incidence of domestic violence

Dependent variable: Incidence of domestic violence				
	(1)	(2)	(3)	(4)
War cohort*war ethnicity	0.020** (0.007)	0.016** (0.007)	0.010* (0.005)	0.012** (0.005)
War ethnicity (dummy)	0.083 (0.066)	−0.013 (0.065)	−0.019 (0.011)	No
War cohort (dummy)	−0.009** (0.003)	0.014** (0.006)	0.012** (0.004)	No
Control variables	No	Yes	Yes	Yes
State FE	No	No	Yes	Yes
Ethnicity FE	No	No	No	Yes
Cohort FE	No	No	No	Yes
R-squared	0.010	0.056	0.122	0.130
Observations	8,187	8,143	8,143	8,143

Source: Authors' calculations using the 2008 Nigerian DHS

Notes: *Significant at 10%, **significant at 5%, and ***significant at 1%. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the ethnicity level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), education (dummy for completed primary education and above), urban residence, and a wealth index. The sample is restricted to married women aged 32–49 that were interviewed in the domestic violence module

domestic violence by 1.2 percentage points (or 6% given the sample mean incidence of 19.7%).⁶

In Table 5, we disaggregate exposure to the civil war by birth cohort to test whether the effects of civil war exposure on domestic violence vary by the age at which the women were exposed to the war in childhood. The categories represent those exposed in utero (born between February 1970 and October 1970), those exposed between the ages of 0–4 (born 1966–1970), those exposed between the ages of 5–8 (born 1962–1965), and those exposed between the ages of 9–12 (born 1958–1961). From the estimates, we find that the effects are largest for those exposed at younger ages. Specifically, exposure to the civil war in utero increases the probability of experiencing domestic violence in adulthood by 7.4 percentage points, and exposure to the civil war between 0 and 4 years increases the probability of experiencing domestic violence by 1.7 percentage points (specification 4).

These results are consistent with the increasing evidence described earlier that there are long-run implications of early life shocks and that adverse circumstances during the sensitive early period of childhood impact later life outcomes (Case et al. 2005; Cunha and Heckman 2007; Currie 2020). This includes a growing body of

⁶ If the immediate post-war environment in the south-eastern region did not experience a full recovery, then these impacts of war exposure would be underestimated, and our findings would represent a lower-bound effect.



Table 5 Impact of women's exposure to civil war on incidence of domestic violence; disaggregated birth cohorts

Dependent variable: Incidence of domestic violence				
	(1)	(2)	(3)	(4)
In utero*War ethnicity	0.077** (0.028)	0.086*** (0.028)	0.074** (0.031)	0.074** (0.030)
Born 1966–1970 * War ethnicity	0.016* (0.009)	0.018* (0.008)	0.015 (0.011)	0.017* (0.010)
Born 1962–1965 * War ethnicity	–0.003 (0.032)	–0.011 (0.031)	–0.012 (0.025)	–0.011 (0.025)
Born 1958–1961 * War ethnicity	0.033*** (0.011)	0.015 (0.012)	0.0037 (0.010)	0.003 (0.010)
War ethnicity (dummy)	0.083 (0.066)	–0.013 (0.065)	–0.021* (0.011)	No
War cohort (dummies)	Yes	Yes	Yes	No
Control variables	No	Yes	Yes	Yes
State FE	No	No	Yes	Yes
Ethnicity FE	No	No	No	Yes
Cohort FE	No	No	No	Yes
R-squared	0.011	0.057	0.123	0.130
Observations	8,187	8,143	8,143	8,143

Source: Authors' calculations using the 2008 Nigerian DHS

Notes: *Significant at 10%, **significant at 5%, and ***significant at 1%. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the ethnicity level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), education (a dummy for completed primary education and above), urban residence, and a wealth index. The sample is restricted to married women aged 32–49 that were interviewed in the domestic violence module

literature showing that in utero exposure to shocks such as war, drought, and famine have long-term negative consequences.

This literature draws on the 'fetal origins' hypothesis, which proposes that conditions in utero, particularly nutrition, 'program' the foetus with particular metabolic features that can result in disease later on in life (Barker; 1990, 1995). Studies have found evidence to link events or circumstances in utero to birth weight, adult height, disability, heart disease, and obesity, suggesting latent and long-lasting consequences on health outcomes (Ravelli et al 1976; Dunn 2007; Camacho 2009; Almond and Currie 2011; Comfort 2016). In addition, there is evidence to suggest negative effects on mental health and cognitive function as well as on education, employment, and adult earnings, implying potential neurological involvement (Hoek et al 1998; Almond 2006; Almond et al. 2018).

Almond et al (2018) summarise a number of 'biological' or direct mechanisms through which foetal-origin effects can be generated, including nutritional insults, infectious disease, maternal stress, and alcohol and tobacco use, all of which would likely be more prevalent during times of war. In addition to the direct biological



Table 6 Placebo testing using alternative treated groups

Dependent variable: Incidence of domestic violence		
	(1) Change war ethnicity (to those in Northern region)	(2) Change war cohort (to those born after war 1971–1976)
War cohort*war ethnicity	0.005 (0.006)	0.033 (0.028)
Control variables	Yes	Yes
State FE	Yes	Yes
Ethnicity FE	Yes	Yes
Cohort FE	Yes	Yes
R-squared	0.144	0.120
Observations	6,365	6,766

Source: Authors’ calculations using the 2008 Nigerian DHS

Notes: *Significant at 10%, **significant at 5%, and ***significant at 1%. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the regional level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), education (a dummy for completed primary education and above), urban residence, and a wealth index

mechanisms, there may be social and economic factors at play that reinforce the negative outcomes. However, as Almond and Currie (2011) and Almond et al (2018) point out in their extensive reviews of this wide-ranging literature, more work is needed to disentangle the biological from the more indirect socio-economic mechanisms. Some of examples of these during war could include lack of access to health and policing services, disruption of markets and other key institutions, disturbance of family life, established norms and social networks, and changes to parenting behaviour. We reflect on some of these issues further below when looking at the mechanisms through which exposure to war might affect domestic violence in adulthood.

Robustness Checks

To test the robustness of our difference-in-differences strategy which assumes parallel trends, we estimate two placebo regressions (using similar methods to for e.g. Akresh et al. 2012a; Gutierrez and Gallegos 2016 and Weldeegzie 2017). In the first test (column 1 of Table 6), we exclude the main war-exposed ethnicities (Igbo and other ethnic minorities) and placebo-treat the ethnic groups in the northern part of the country (Kanuri, Hausa, and Fulani), with the remaining ethnicities used as the control group. We choose the northern part of the country given the geographical distance from the area where the war was fought. In the second test (column 2), we



Table 7 Impact of women's exposure to civil war on incidence of domestic violence using the 2013 data and the 2008 and 2013 pooled data

Dependent variable: Incidence of domestic violence			
	(1) 2013	(2) 2008 & 2013	(3) 2008 & 2013
War cohort*war ethnicity	0.047* (0.017)	0.054* (0.029)	
In utero*War ethnicity			0.051* (0.027)
Born 1966–1970 * War ethnicity			– 0.007 (0.009)
Born 1962–1965 * War ethnicity			– 0.003 (0.029)
Born 1958–1961 * War ethnicity			0.046** (0.022)
Control variables	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Ethnicity FE	Yes	Yes	Yes
Cohort FE	Yes	Yes	Yes
Survey Year FE	No	Yes	Yes
R-squared	0.203	0.120	0.140
Observations	6,184	13,967	13,967

Source: Authors' calculations using the 2008 and 2013 Nigerian DHSs

Notes: *Significant at 10%, **significant at 5%, and ***significant at 1%. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the ethnicity level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), education (a dummy for completed primary education and above), urban residence, and a wealth index. The sample is restricted to married women aged 32–49 that were interviewed in the domestic violence module

placebo-treat the cohort born immediately after the civil war (from 1971 to 1976), with the cohort born from 1977 to 1980 used as the control group.⁷ We would not expect an effect for women born after the civil war. Neither of the coefficients on the placebo-treated interaction term in Table 6 is statistically significant, providing support in favour of our identification strategy.⁸

Although we chose to use the DHS 2008 for this study, as it provides the largest sample of women exposed to the war in childhood (from in utero to age 12), we also check whether our main results hold using the later round of the DHS from 2013. Column 1 of Table 7 shows the estimated effect of war exposure in childhood

⁷ To validate the placebo result, we conducted further robustness checks using equal intervals of years for the treatment and control groups (1971–1974 and 1975–1978). We find statistically insignificant effects of exposure to civil war on domestic violence in these additional checks.

⁸ Akresh et al (2012a) run slightly different placebo tests on ethnic group and cohort but similarly find no significant effects. They also use estimated ethnic mortality during the war instead of ethnicity itself in their regressions to test for the validity of the identification strategy and find remarkably similar results. This leads them to conclude that the strategy to use ethnicity to identify exposure “while simple, is accurate and powerful” (Akresh et al. 2012a: 275).



(without disaggregating across the cohorts) when only the 2013 sample is used, and column 2 of Table 7 shows the estimated effect when the 2008 and 2013 samples are pooled. The results remain robust, with the effect even larger at 5.4 percentage points in column 1 and 4.7 percentage points in column 2 (compared to the 1.2 percentage points estimated in column 4, Table 4, using the same specification).

In column 3 of Table 7, we disaggregate the war-exposed women into the four birth cohorts using the pooled sample from 2008 and 2013.⁹ Again, we find the strongest effect from exposure in utero of 5.1 percentage points (compared to 7.4 percentage points in column 4 of Table 5, using the same specification). However, in the pooled sample, we also find a significant effect of exposure by those exposed between 8 and 12 years. On the whole, though, our robustness checks support our main findings, namely that war exposure in childhood results in a higher incidence of domestic violence among women in adulthood, and that exposure in utero appears to have the strongest effect.

Potential Mechanisms Through Which Civil War Affects Domestic Violence

Normalisation of Violence

This section explores two potential mechanisms through which exposure to civil war during childhood may affect the incidence of domestic violence in adulthood. The first is the normalisation of violence hypothesis, which has also been referred to as the intergenerational transmission of violence hypothesis or the model of social learning. Exposure to violence at home during a child's formative years is known to result in a greater likelihood of being a victim or perpetrator of domestic violence in adulthood (Schwab-Stone et al. 1995; Gage 2005; Mihalic and Elliott 2007; Yount and Li 2009; Cesur and Sabia 2016; Jin et al. 2017). Along the same lines, one might expect that children exposed to community-level violence during war might also be more likely to view violence as a justifiable response to certain problems (Barnett et al. 2005; Fowler et al. 2009). In Table 8, we estimate the effect of women's exposure to the civil war on the justification of domestic violence to test whether women who were exposed to the conflict in childhood have different attitudes towards domestic violence in adulthood.

Most of the coefficients are positive, many are statistically significant, and some are quite large. In general, the results suggest that, across the birth cohorts, women exposed to the war in childhood are more likely to justify the use of wife-beating than non-exposed women, particularly if the woman argues with her husband, refuses to have sex with him, or burns the food. For example (from row 1), women exposed to war in utero were 2.4 percentage points more likely to justify wife-beating if the

⁹ Because the DHS only interviews women aged 15 to 49, the oldest women included in the 2013 survey would have been born in 1964, and therefore, we can only capture war exposure from in utero through to age 7. To estimate the exposure by birth cohort, we therefore only show the results using the pooled 2008 and 2013 datasets. We did not attempt to include the 2018 DHS in the robustness checks, as the sample of war-exposed women would have shrunk even further to those women who were exposed in utero through to 2 years of age.



Table 8 Exposure to civil war and justification of domestic violence – women

Dependent variable: Wife beating is justified if she...

	Argues with him	Refuses to have sex with him	Burns the food	Neglects the children	Goes out without telling him
In utero*War ethnicity	0.024* (0.013)	0.008 (0.022)	0.060*** (0.015)	0.012 (0.033)	– 0.025 (0.049)
Born 1966–1970 * War ethnicity	0.066*** (0.021)	0.090** (0.041)	0.056** (0.025)	0.025 (0.022)	0.016 (0.036)
Born 1962–1965 * War ethnicity	0.060** (0.027)	0.035 (0.032)	0.005 (0.033)	0.003 (0.027)	– 0.002 (0.024)
Born 1958–1961 * War ethnicity	0.083** (0.030)	0.086** (0.031)	0.049*** (0.015)	0.053* (0.025)	0.015 (0.034)
Control variables	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Ethnicity FE	Yes	Yes	Yes	Yes	Yes
Cohort FE	Yes	Yes	Yes	Yes	Yes
R-squared	0.129	0.161	0.124	0.118	0.141
Observations	8,087	8,061	8,089	8,117	8,125

Source: Authors' calculations using the 2008 Nigerian DHS

Notes: *Significant at 10%, **significant at 5%, and ***significant at 1%. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the regional level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), education (a dummy for completed primary education and above), urban residence, and a wealth index. The sample is restricted to married women aged 32–49 that were interviewed in the domestic violence module

woman argues with her husband and 6 percentage points more likely to justify wife-beating if she burns the food, compared to the non-exposed group. The effects are similarly large (and in some cases larger) among those exposed between the ages of 0–4, 5–8, and 9–12, depending on the question asked.

In Table 9, we use the matched couple's recode data from the DHS¹⁰ to investigate the effect of husbands' exposure to the civil war on the justification of domestic violence in adulthood. This recognises that domestic violence involves both a perpetrator and a victim. Given the high degree of assortative mating by ethnicity in Nigeria, the majority of women who were exposed to the civil war are married to men who were also exposed to the civil war. Indeed, the DHS data indicate that 93.4% of war-exposed women were married to war-exposed men (with only 6.3% of non-exposed women married to war-exposed men).¹¹ Because the DHS interviews men aged 15–59, we can disaggregate exposure into in utero, between the ages of

¹⁰ The DHS couple's recode data contain information on the husbands/partners (aged 15–59) for the sample of women who were married/cohabiting and living with their partners during the interview.

¹¹ The high level of intra-ethnic marriage is consistent with low levels of migration across states, with most migration in Nigeria occurring within states from rural to urban areas (Federal Office of Statistics 1999; 2000).



Table 9 Exposure to civil war and justification of domestic violence – men

Dependent variable: Wife beating is justified if she...						
	Argues with him	Refuses to have sex with him	Burns the food	Neglects the children	Goes out without telling him	
In utero*War ethnicity	0.071 (0.053)	0.123** (0.040)	0.075** (0.034)	0.034 (0.092)	− 0.021 (0.044)	
Born 1966–1970 * War ethnicity	0.051 * (0.026)	0.021 (0.023)	− 0.021 (0.020)	0.043 (0.043)	0.011 (0.028)	
Born 1962–1965 * War ethnicity	0.012 (0.046)	0.001 (0.016)	− 0.002 (0.011)	0.002 (0.046)	− 0.000 (0.062)	
Born 1958–1961 * War ethnicity	0.020 (0.019)	0.001 (0.018)	0.046 (0.0381)	0.043** (0.018)	0.085** (0.030)	
Born 1948–1957 * War ethnicity	0.128*** (0.039)	0.079** (0.033)	0.012 (0.011)	0.156** (0.058)	0.084* (0.046)	
Control variables	Yes	Yes	Yes	Yes	Yes	
State FE	Yes	Yes	Yes	Yes	Yes	
Ethnicity FE	Yes	Yes	Yes	Yes	Yes	
Cohort FE	Yes	Yes	Yes	Yes	Yes	
R-squared	0.131	0.193	0.130	0.112	0.133	
Observations	6,405	6,375	6,414	6,432	6,436	

Source: Authors' calculations using the 2008 Nigerian DHS

Notes: *Significant at 10%, **significant at 5%, and ***significant at 1%. Underlying data from the Couple's Recode (CR) of the 2008 Nigerian DHS. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the regional level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), an education dummy (completed primary education and above), urban residence, and a wealth index



0–4 (born 1966–1970), between the ages of 5–8 (born 1962–1965), between the ages of 9–12 (born 1958–1961), and between the ages of 13–22 (born 1948–1957). The results suggest that compared to non-exposed men, war-exposed men are more likely to justify the use of wife-beating. Although the pattern is not entirely consistent across the five columns, the effect is largest for cohorts of men exposed in utero and between the ages of 9–12 and 13–22.

In addition to being exposed to more community-level violence growing up during war, and marrying men similarly exposed as children, the women exposed to war in childhood may also have been witness to more domestic violence in their own childhood homes or more violent forms of parenting. This could be the case if the stresses and violence of war and the disruption to social norms and family life in turn led to more violence among the parents. The literature summarised in the introduction certainly suggests that intimate partner violence rises during times of war and conflict among married or partnered couples (La Mattina 2017; Kelly et al. 2018; Østby et al 2019; Svallfors 2023). The questionnaire asks women if they were aware of domestic violence among their parents, specifically whether the father ever ‘beat’ the mother. We find that 11 percent of women not exposed to the war in childhood were aware of domestic violence among their parents, compared to 19 percent of war-exposed women. This is a substantial and significant difference.

We include this variable as an explanatory variable in the regression and we also interact this variable with the war exposure variables to test whether the effect is stronger for those growing up in the midst of the war. Indeed, in Table 10, we find a strong positive effect of witnessing domestic violence among one’s parents on the likelihood of becoming a victim oneself in adulthood, and particularly for those exposed to the war in utero. This is a striking result and could suggest that the levels of violence in those war-exposed families where the mother was pregnant were particularly severe, as the combined stresses of war and having another child on the way took their toll. It is also possible that the final months of the war (when these exposed women would have been in utero) were particularly intense, and so the effect on family life more substantial. Finally, disruptions during war to the resources that would ordinarily help mitigate the negative effects of intimate partner violence, such as health and policing services and established social networks, might have exacerbated the experiences of pregnant mothers in particular.

Bargaining Power Hypothesis

The second mechanism we explore is the intra-household bargaining power hypothesis. Women with limited resources tend to have fewer outside options which can result in an increased likelihood that they will be victims of domestic violence (Gelles 1976; Aizer 2010). The literature on the effects of conflict provides a number of reasons why women exposed to war may have fewer outside options. Civil conflict results in poorer educational outcomes (Akresh and Walque 2008; Leon 2012; Shemyakina 2011; Chamrbagwala and Moran 2011; and Dabalen and Paul 2014), and there is evidence that exposure to conflict negatively affects girls more than boys in terms of educational outcomes (Singh and Shemyakina 2016). Women with lower education have fewer out-of-marriage options given their weaker labour market outcomes and increased financial



Table 10 Violence among Women's Parents and Experience of Domestic Violence

Dependent variable:	Domestic violence
In utero during War*War Ethnicity*DV parents	0.184** (0.072)
Born_1966-1970 * War Ethnicity*DV parents	-0.029 (0.058)
Born_1962-1965 * War Ethnicity*DV parents	0.020 (0.006)
Born_1958-1961 * War Ethnicity*DV parents	0.044 (0.054)
In utero during War*War Ethnicity	0.027 (0.038)
Born_1966-1970 * War Ethnicity	0.032* (0.016)
Born_1962-1965 * War Ethnicity	0.015 (0.027)
Born_1958-1961 * War Ethnicity	0.005 (0.024)
Domestic violence among parents	0.243*** (0.028)
Control variables	Yes
State FE	Yes
Ethnicity FE	Yes
Cohort FE	Yes
R-squared	0.163
Observations	7,409

Source: Authors' calculations using the 2008 Nigerian DHS

Notes: * Significant at 10%, **significant at 5%, and *** significant at 1%. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the regional level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), education (a dummy for completed primary education and above), urban residence, and a wealth index. The sample is restricted to married women aged 32–49 that were interviewed in the domestic violence module

dependence on their husbands (Lundberg and Pollak 1996; Farmer and Tiefenthaler 1997; Aizer 2010; Bhattacharyya et al. 2011; Eswaran and Malhotra 2011; Galdo 2013; Heath 2014). Furthermore, war exposure can affect marriage, reproductive and health outcomes, which would have consequences for women's intra-household bargaining power and experiences of domestic violence (Verwimp and van Bavel 2005; Akresh 2012a; Grimard and Laszlo 2014; Islam et al 2016; Cetorelli and Khawaja 2017; La Mattina 2017).

We test whether war-exposed women have lower bargaining power compared to non-exposed women using the information on decision-making in the household as a proxy. Specifically, we examine whether war-exposed women are less likely to have the final say on certain key decisions in the household compared to non-exposed women.



Table 11 Women's exposure to civil war and decision-making power

Dependent variable: Woman has final say on...

	Woman's own health care	Large HH purchases	HH purchases for daily needs	Visit to family or relatives
In utero*War ethnicity	−0.054* (0.024)	−0.012 (0.035)	−0.080*** (0.024)	−0.021 (0.022)
Born 1966–1970 * War ethnicity	−0.023 (0.017)	0.010 (0.015)	−0.005 (0.030)	0.035 (0.020)
Born 1962–1965 * War ethnicity	−0.013 (0.037)	−0.036* (0.020)	−0.052* (0.025)	−0.056** (0.023)
Born 1958–1961 * War ethnicity	−0.017 (0.049)	−0.039* (0.023)	−0.027 (0.040)	−0.025 (0.073)
Control variables	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Ethnicity FE	Yes	Yes	Yes	Yes
Cohort FE	Yes	Yes	Yes	Yes
R-squared	0.111	0.067	0.203	0.135
Observations	7,508	7,505	7,508	7,522

Source: Authors' calculations using the 2008 Nigerian DHS

Notes: *Significant at 10%, **significant at 5%, and ***significant at 1%. All equations are estimated by OLS using the sample weights accordingly and standard errors are clustered at the regional level. Control variables used in the regression include age at first marriage, religion dummies (Catholic, other Christian, Muslim, with Traditional the omitted category), education (a dummy for completed primary education and above), urban residence, and a wealth index. The sample is restricted to married women aged 32–49 that were interviewed in the domestic violence module

The results in Table 11 show that while most of the coefficients are negative, as predicted, not all are significant. The strongest results are for those exposed in utero; exposure to the civil war decreases the probability of these women having a final say on their own health care by 5.4 percentage points, and on household purchases of daily needs by 8 percentage points. There are also some significant effects, ranging between 3.6 and 5.6 percentage points, for those exposed to the war between the ages of 5–8 and 9–12 for a number of the outcomes.

Conclusions and Policy Implications

In this paper, we examine the impact of exposure to war during childhood on women's experience of domestic violence in adulthood. Unlike other studies that use current geography-based variables to identify exposure to conflict, we are able to use ethnicity and birth cohort given the nature of the Nigerian civil war, thereby mitigating concerns of selective migration. Our results indicate that exposure to



the Nigerian civil war during childhood increases the likelihood of women being victims of domestic violence in adulthood, with larger effects for those exposed at younger ages, and particularly large effects for those exposed in utero. This is consistent with evidence to suggest that the early childhood period, including the time in utero, is particularly important for later life outcomes and that shocks during this period can have long-lasting effects.

Understanding the mechanisms through which civil war affects domestic violence is equally as important as identifying the effect itself, especially if effective post-war policies are to be designed to mitigate the deleterious consequences of conflict in developing countries. However, identifying the mechanisms is a much more difficult task with the data available, and therefore, our results can only be interpreted as suggestive.

First, we find that both the women in our sample and their husbands who were exposed to the war during childhood are more likely to perceive domestic violence to be an acceptable behaviour in adulthood than those not exposed to the war. This is in line with the normalisation of violence hypothesis that predicts that those exposed to violence in childhood are more likely to become either perpetrators or victims of domestic violence in adulthood. In addition, we find war-exposed women were more likely to witness domestic violence in their own childhood homes than non-exposed women, and that witnessing domestic violence among their parents is positively correlated with experiencing domestic violence themselves in adulthood particularly among those exposed in utero. It is possible that the combined stresses of war and having another child on the way led to more violent behaviour in the home, or that the final months of war (when these exposed women would have been in utero) were particularly intense, and so the effect on family life more marked.¹²

Second, our findings suggest that women who were exposed to the war in childhood also have lower intra-household bargaining power compared to non-exposed women, which would make them more vulnerable to incidents of domestic violence. Relative to the non-exposed group, we found women who were exposed to the conflict in childhood have less decision-making power in their households in adulthood, and again the effect appears stronger among those in utero (although there is evidence also for the other cohorts). This might be the case if war exposure affected women's educational, health, and reproductive outcomes in ways that placed them in a more precarious position relative to men in the marriage market.

However, this is a subject for further study given the complexity of the potential pathways and mechanisms. The large effects measured for children who were exposed to the war in utero in particular warrant further investigation. These results are consistent with the evidence from a large literature showing that conditions and events in utero can have long-lasting consequences for the individual's physical and mental health as well as their education, employment, and earnings outcomes (Ravelli et al 1976; Hoek et al 1998; Almond 2006; Dunn 2007; Camacho 2009; Almond

¹² Unfortunately, we are unable to test more formally for a relationship between the intensity of conflict and domestic violence. To do so would require data on the variation in the number of deaths caused by the civil war across districts and time, and to the best of our knowledge, no such data exist (there are only estimates of the total number of deaths caused by the war).



and Currie 2011; Comfort 2016). However, much more work is needed to disentangle the biological from the social mechanisms in order to better understand both the direct and more indirect channels through which foetal-origin effects are generated (Almond and Currie 2011; Almond et al. 2018).

The relevance of our study and the need for further work in this area is underscored by the pervasiveness of domestic violence. A recent study estimated the global prevalence of intimate partner violence to be around 30%, and for the sub-Saharan African region specifically, closer to 37% (WHO 2017). Moreover, the consequences of domestic violence, both human and economic, are substantial. Domestic violence results in direct physical and mental harm to women, with research pointing to poorer health outcomes and a greater likelihood of depressive symptoms and substance abuse among victims (Coker et al. 2002; Silverman et al. 2006; Ackerson et al. 2008; Ellsberg et al. 2008; Meekers et al. 2013). Domestic violence can also result in substantial economic costs related to policing, health expenditure, and reduced economic productivity (Walby 2004). Lastly, children of women who experience domestic violence have worse outcomes, such as lower birth weight, lower IQ scores, a greater likelihood of emotional and behavioural problems, and a higher probability of acquiring HIV (Sternberg et al. 1993; Koenen et al. 2003; Aizer 2011; WHO 2013; Rawlings and Siddique 2014, 2018; Currie et al 2022). Understanding both the causes and longer-term implications of domestic violence is imperative to designing appropriate policy responses and support mechanisms.

Data availability The dataset used to obtain the results for this paper can be made available upon request.

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