Family Size and Domestic Violence in a High-Fertility Society

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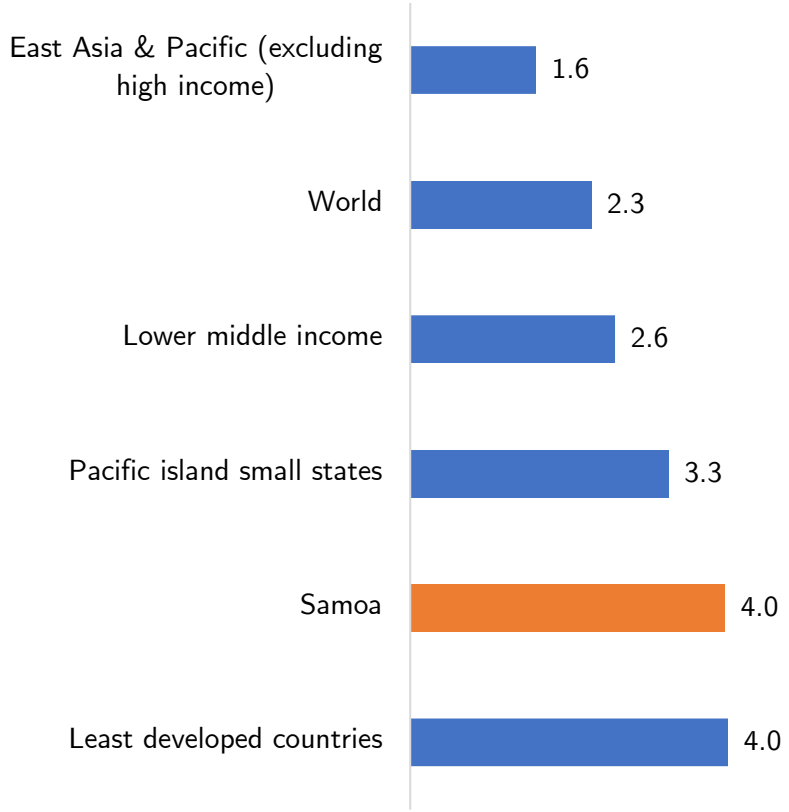
Does size matter?

- Long-standing question on how family size affects household's socio-economic circumstances (Becker and Lewis, 1973; Becker and Tomes, 1976)
- Previous studies on children quantity-quality trade off mainly focuses on the effect of fertility on children's health condition and educational attainment (see Hanushek, 1992; Leibowitz, 1974; Parish & Willis, 1993; Rosenzweig & Wolpin, 1980)
- I seek to broaden the discussion by examining the impact on domestic violence against women in a high fertility society, using Samoa as a case study

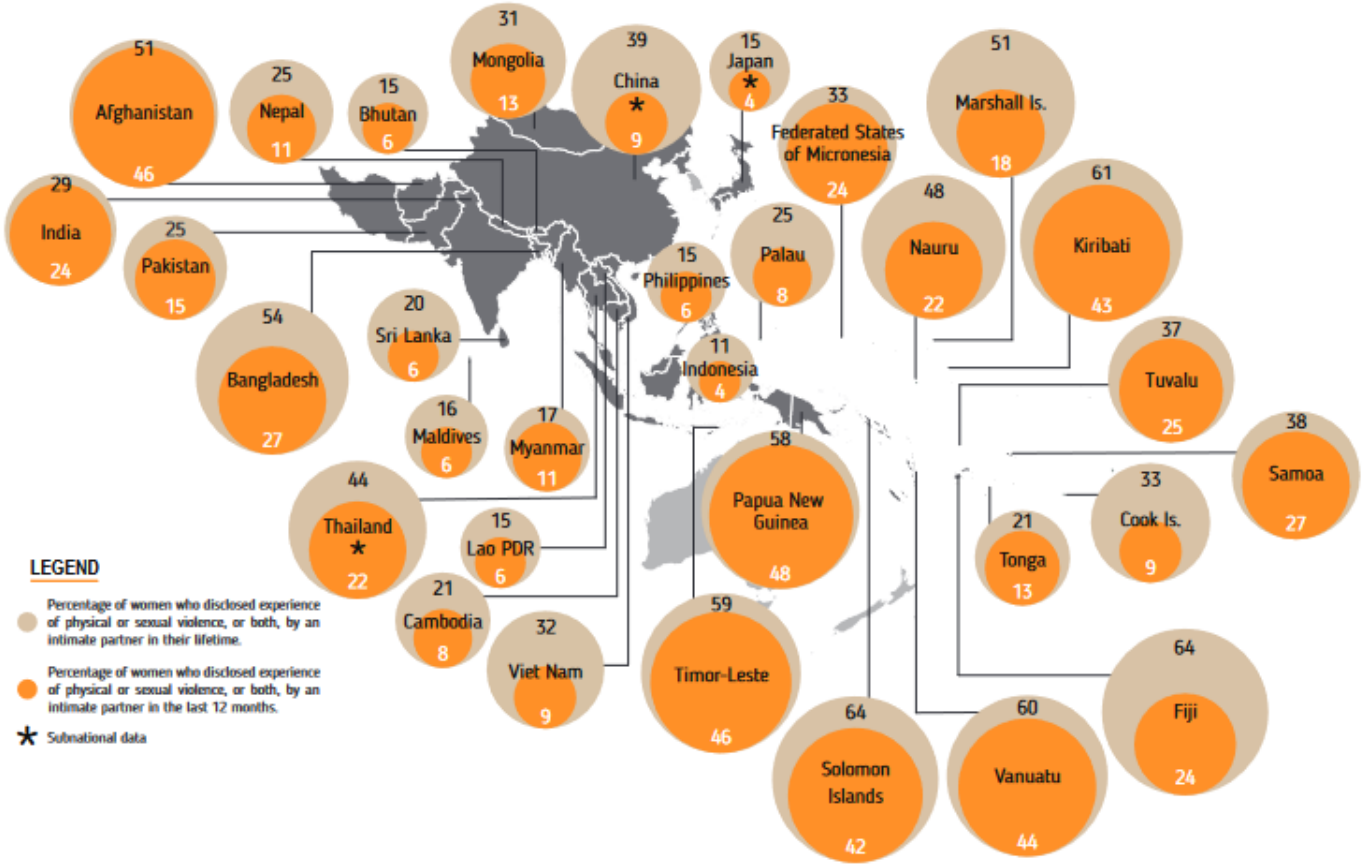
Fertility & domestic violence in Samoa

Figure 1: Total fertility rate (births per women), 2021



Source: United Nations Population Fund (2022)

Figure 2: Women who experience intimate partner violence (IPV), 2000-22



Fertility is positively correlated with IPV

Figure 3: Fertility and intimate partner violence (IPV)

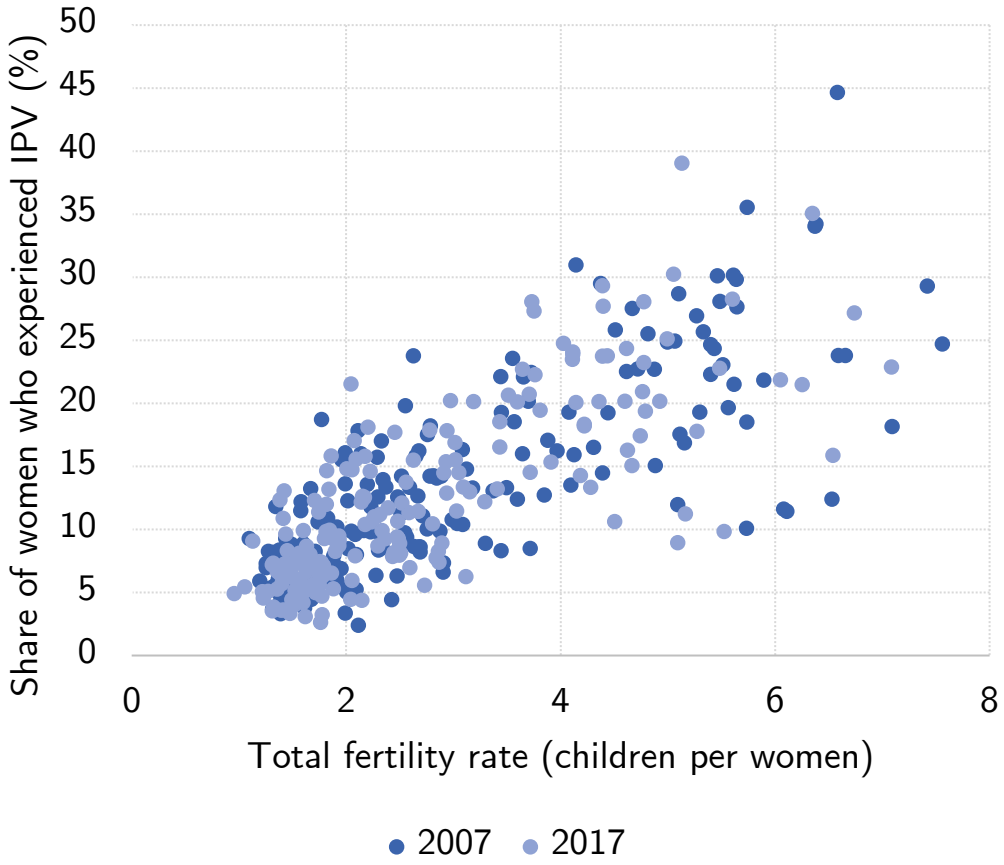
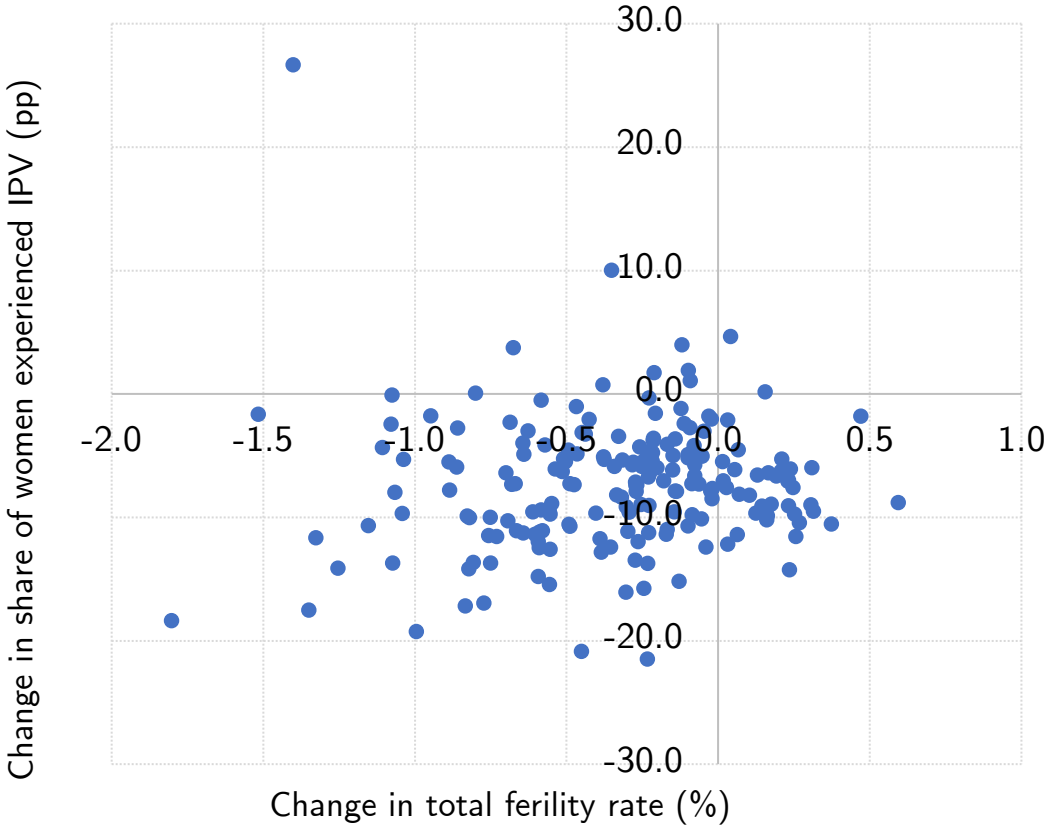


Figure 4: Change in fertility and intimate partner violence, 2007-2017



Source: Institute for Health Metrics and Evaluation (IHME) and United Nations - Population Division (2022)

Outline

1. Motivation
2. Context
3. Literature
4. Data
5. Empirical approach
6. Results
    a. Main results
    b. Additional result
    c. Effect heterogeneity
7. Conclusion

Why might fertility be related to IPV?

- Resource dilution theory (Blake, 1981): As family size increases, the available resources for both parents and children, such as finances, time, and attention, become increasingly scarce
- This dilution of resources may exacerbate family stressors, such as financial difficulties, marital conflict, and parenting challenges, leading to increased family tension and conflict, which in turn, can escalate to domestic violence (Pagelow, 1981; Browker, 1983; Hoffman, Demo and Edwards, 1994)
- An increase in the number of children in a family can also create significant obstacles for a victim attempting to leave an abusive relationship, which can perpetuate the cycle of violence and harm the entire family (Anderson and Saunders, 2003; Fugate et al., 2005)

Data

- Nationally representative survey data from the Multiple Indicator Cluster Surveys (MICS) in Samoa
- This paper focuses on domestic violence against women inflicted by their spouse/partner
- The survey selected one eligible woman per household sampled—aged between 15-49 who is, or has been, married, or who is, or has been, living with a man in an intimate relationship
- A total of 1,567 women aged 15-49 years were interviewed for the spousal violence questionnaire, yielding a response rate of 100%

IPV-related variables

Variables	Description	Unit
Emotional violence	Emotional violence refers to a pattern of degrading and humiliating conduct towards a person in a manner to intimidate or harass under threats, verbal abuse, or constant humiliation.	Dummy [Yes=1; 0=otherwise]
Physical violence	Physical violence refers to any act or conduct which causes bodily pain, harm or danger to life and impair the health of a person.	Dummy [Yes=1; 0=otherwise]
Sexual violence	Sexual violence is used to describe any act of a sexual nature that is abusive, humiliating, degrading, or otherwise infringes upon the dignity of the victim.	Dummy [Yes=1; 0=otherwise]
Attitudes towards domestic violence	Women's views on domestic violence, specifically whether or not they believe their husbands or partners are justified in hitting or beating them in various situations (including if she goes out without telling him, if she neglects the children, if she argues with him, if she refuses sex with him, or if she burns the food).	Dummy [Yes=1; 0=otherwise]

Source: Samoa DHS-MICS 2019-20

Empirical approach

- To address potential endogeneity, I use three distinct and plausibly exogenous instruments for additional fertility:

  1) same-sex sibling pairs in families with two or more children

  2) multiple births (twin)

  3) a female firstborn

- The IV regression is estimated using two-stage least squares (2SLS).

- In the *first stage*, number of children less than or equal to 17 years old, F_i, is regressed on the instruments, Z_i, which are the exogenous variation of F_i affecting Y_i and uncorrelated with ε_i.

$$\widehat{F_i} = \delta_0 + \boldsymbol{X_i'\delta_1} + \boldsymbol{Z_i'\tau} + v_i$$

- And, the *second stage* is as follows:

$$V_i = \alpha_0 + \boldsymbol{X_i'\alpha_1} + \beta\widehat{F_i} + \varepsilon_i$$

Instrumental variables

Same-sex sibling pairs

- Parents are significantly more likely to have another child if the first two children are of the same sex due to their preference for a mixed sibling sex composition (Angrist & Evans, 1998; Ben-Porath & Welch, 1976)
- Potential OVB: Economies of scale for household resources

Multiple births (twin)

- Exogenous variation of family size since it is unlikely to depend on family background and for parents to plan or manipulate
- Potential OVB: (1) Use of IVF or other forms of assisted reproduction; (2) Zero child spacing for twins

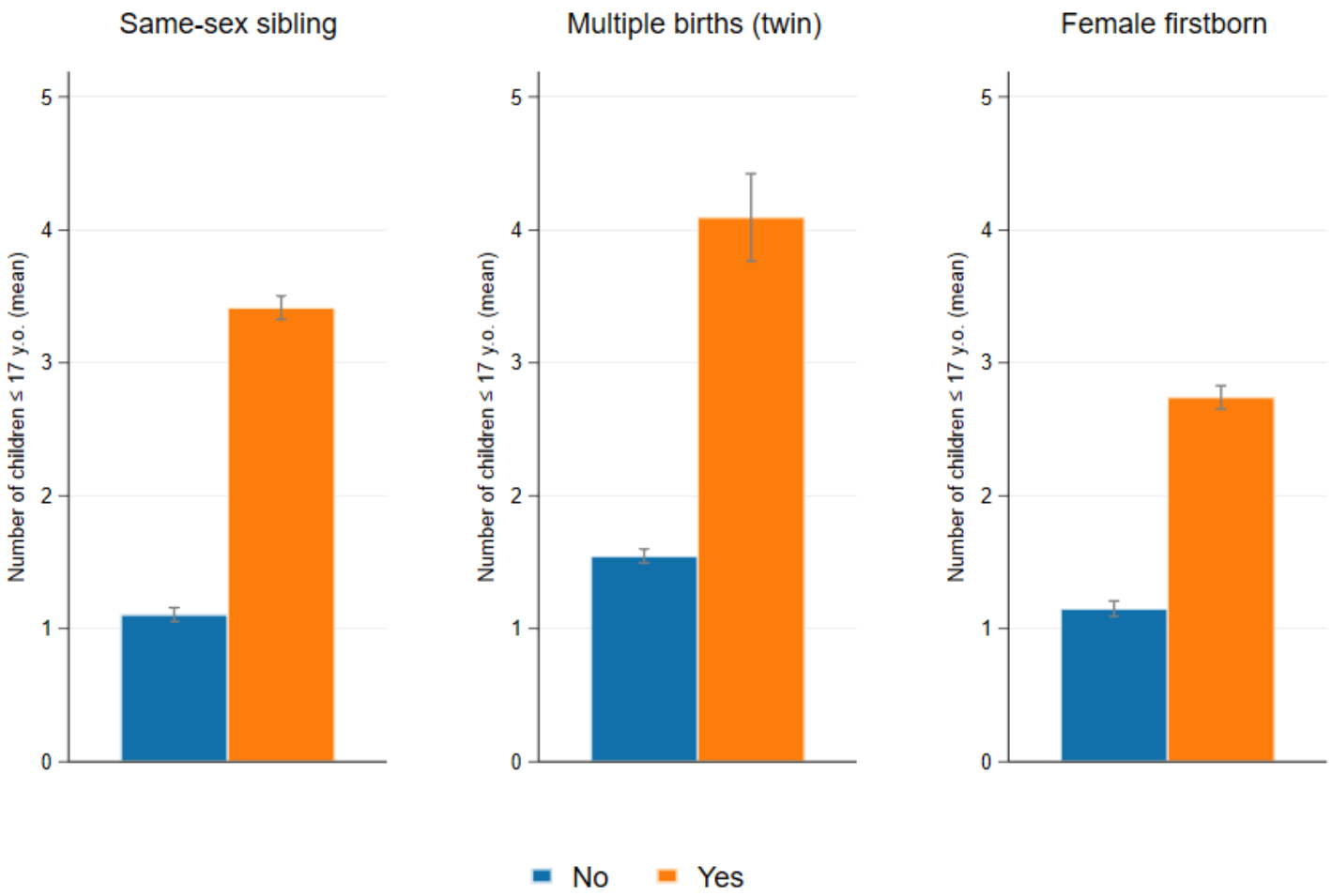
Female firstborn

- When the society has preference over sons than daughters, if the first child is not a son and the parents would prefer to have at least one son, they are more likely to attempt to have another child (Lee, 2007)
- Potential OVB: Negative stigma that surrounds having a daughter

To address the omitted-variable bias in part, the regressions also control for characteristics such as age, education level, under-age marriage, marital status, homogamous education, and household wealth index quintile

Instrumental variables

Figure 5: Correlation between the instruments and endogenous treatment

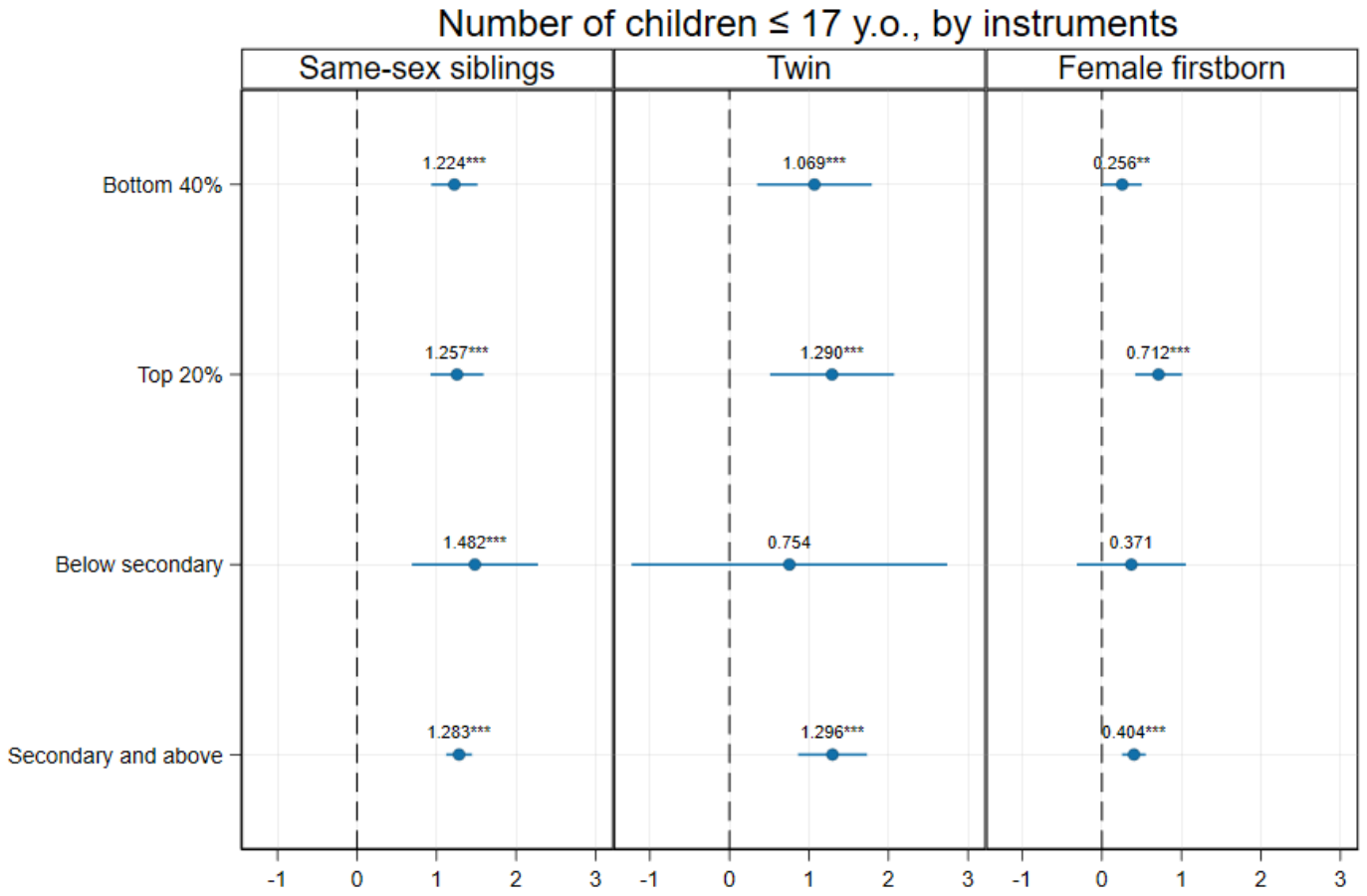


Instrumental variables: First stage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: No. of children (≤ 17 y.o.)							
Same-sex siblings	1.445***	1.368***					1.384***	1.310***
	(0.080)	(0.081)					(0.080)	(0.082)
Twin			1.699***	1.621***			1.340***	1.278***
			(0.212)	(0.206)			(0.224)	(0.216)
Female firstborn					0.476***	0.474***	0.408***	0.411***
					(0.081)	(0.080)	(0.075)	(0.074)
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1567	1567	1567	1567	1567	1567	1567	1567
Cluster	204	204	204	204	204	204	204	204
Kleibergen-Paap rk Wald F stat	323.66	283.09	64.11	61.68	34.59	35.12	124.68	109.07
Cragg-Donald Wald F-stat	288.37	266.98	59.88	57.12	28.18	29.56	124.76	117.01

Instrumental variables: First stage

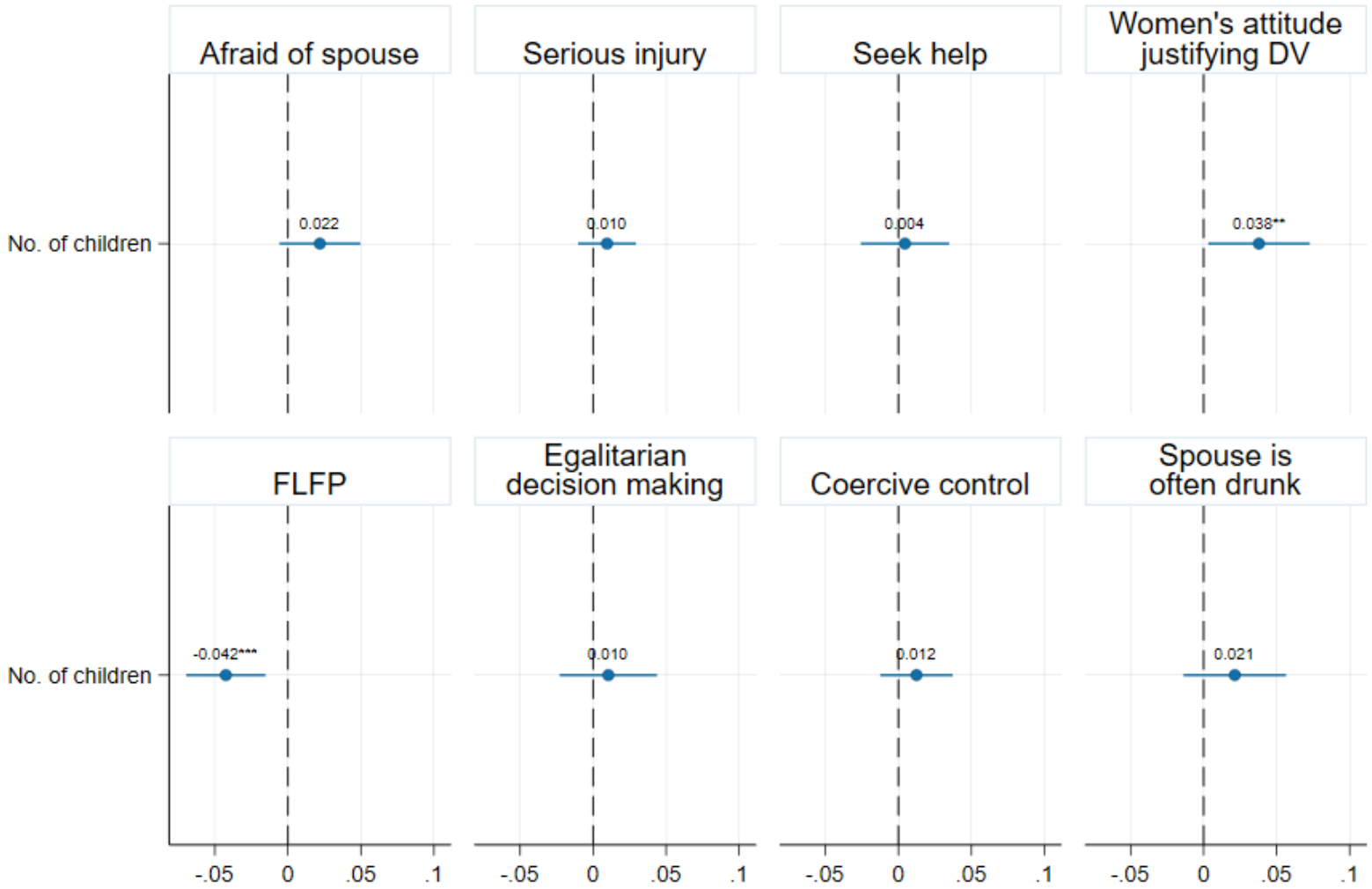
Figure 6: First-stage heterogeneity in response to the instrument



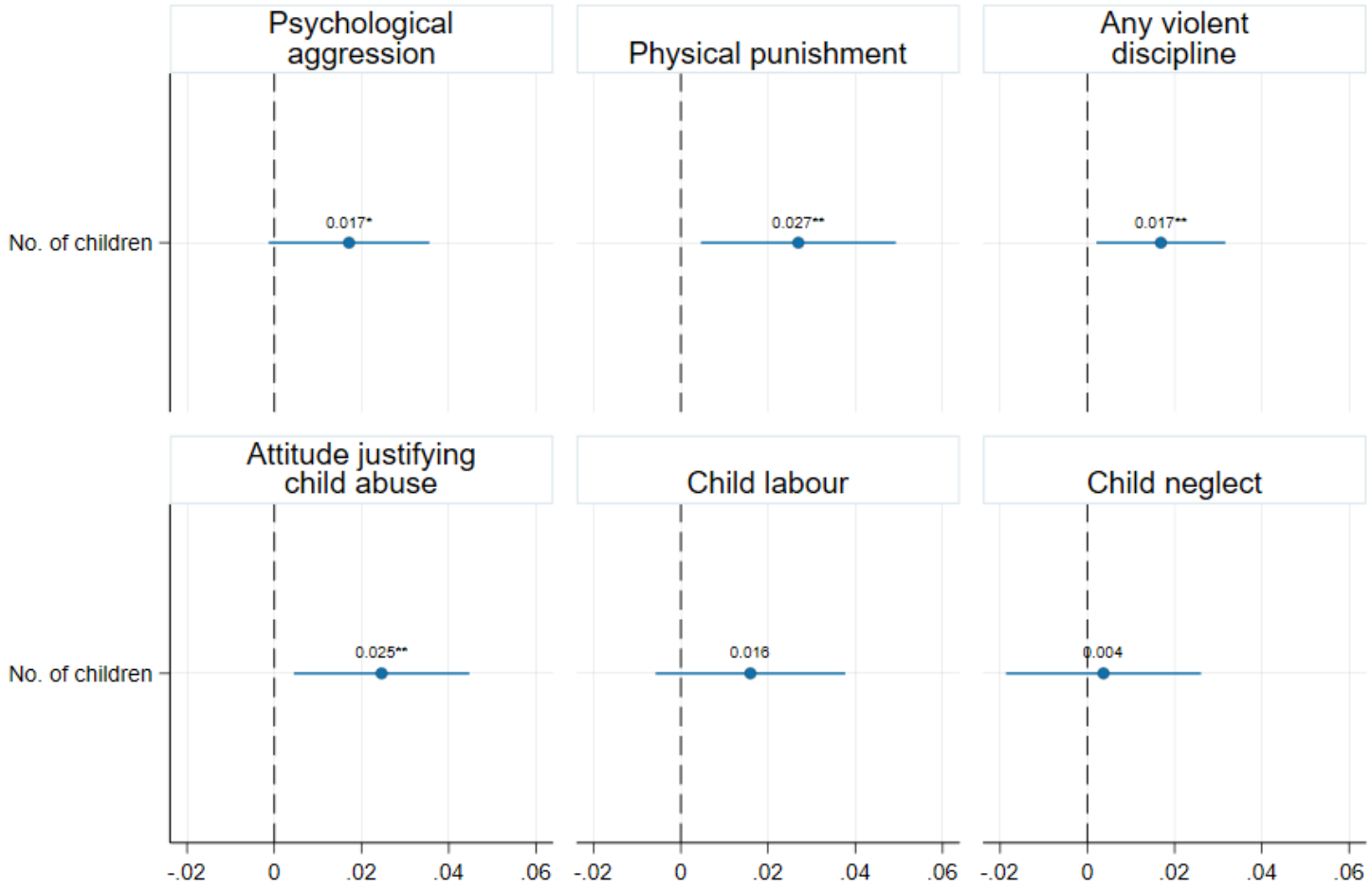
Main results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A. Experienced any IPV (emotional, physical, or sexual) during a lifetime							
Instrument:	Same-sex sibling		Twin		Female first child		Three instruments	
No. of children	0.043***	0.048***	0.035	0.038	0.078	0.079	0.045***	0.050***
	(0.017)	(0.017)	(0.037)	(0.038)	(0.054)	(0.054)	(0.016)	(0.017)
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1567	1567	1567	1567	1567	1567	1567	1567
Cluster	204	204	204	204	204	204	204	204
F-stat	3.68	4.24	2.18	3.64	2.41	3.92	3.86	4.29
Overidentification test (p-value)							0.78	0.80
Endogeneity test (p-value)	0.06	0.03	0.57	0.52	0.23	0.22	0.04	0.02
	B. Experienced any IPV (emotional, physical, or sexual) in the last 12 months							
Instrument:	Same-sex sibling		Twin		Female first child		Three instruments	
No. of children	0.022	0.025	0.063*	0.071**	0.089*	0.086*	0.033**	0.037**
	(0.016)	(0.017)	(0.036)	(0.036)	(0.050)	(0.050)	(0.015)	(0.016)
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1567	1567	1567	1567	1567	1567	1567	1567
Cluster	204	204	204	204	204	204	204	204
F-stat	2.23	4.58	2.33	4.31	2.46	4.88	2.85	4.88
Overidentification test (p-value)							0.25	0.27
Endogeneity test (p-value)	0.85	0.70	0.21	0.14	0.14	0.15	0.37	0.24

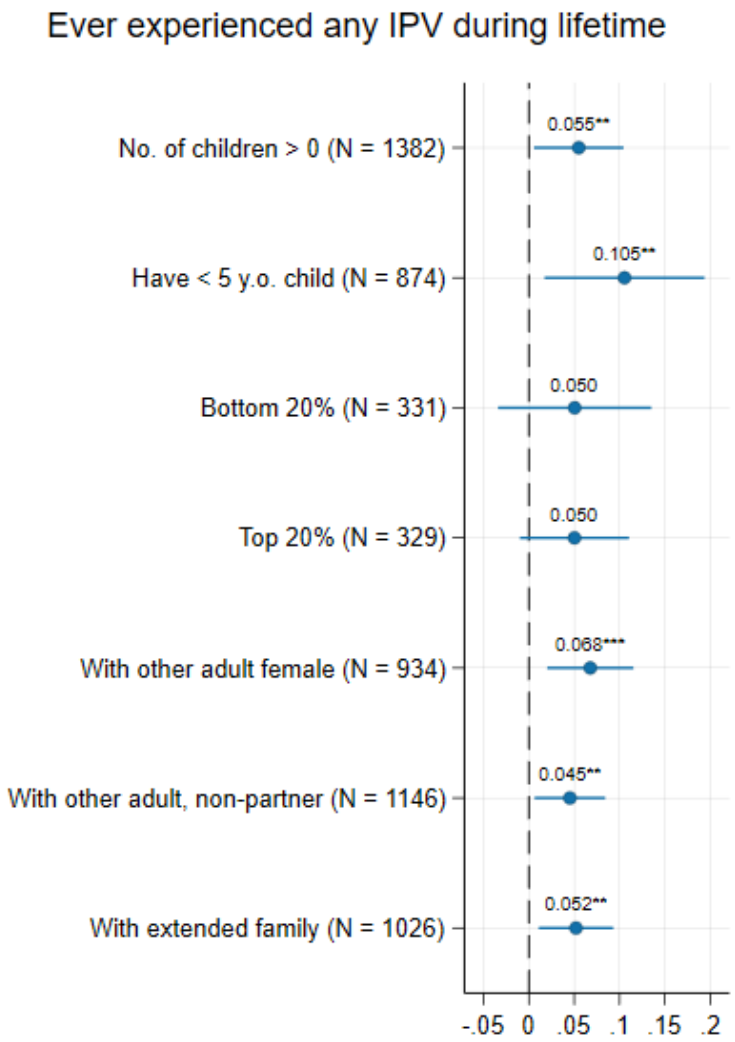
Additional results

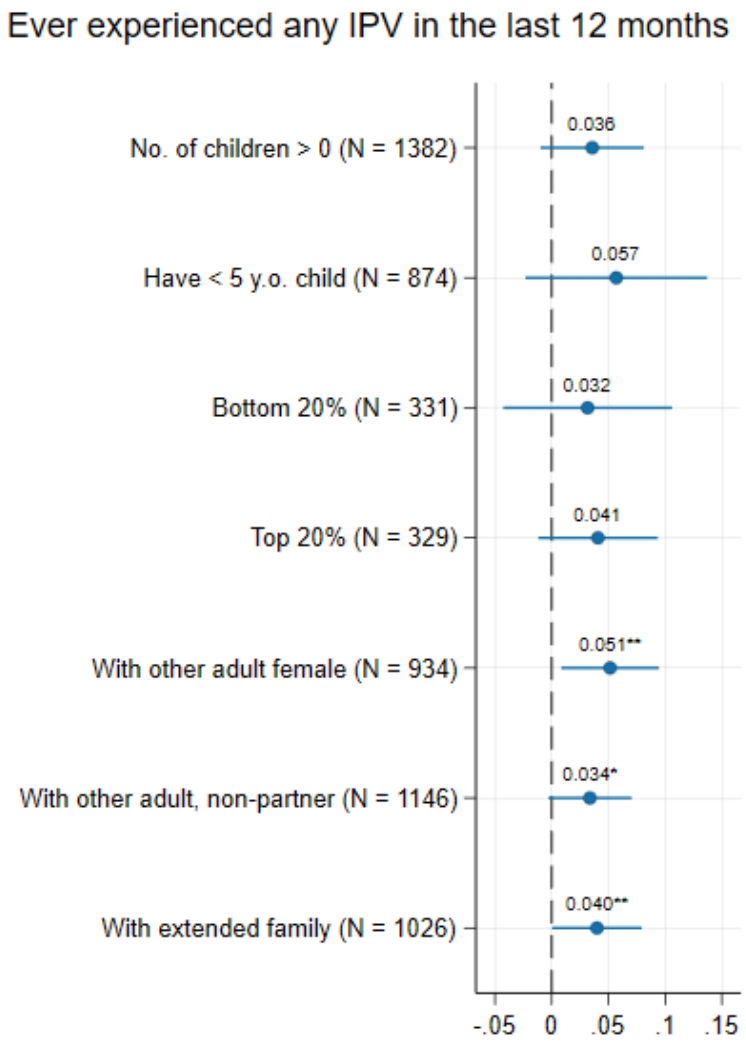


Additional results: Child abuse & neglect

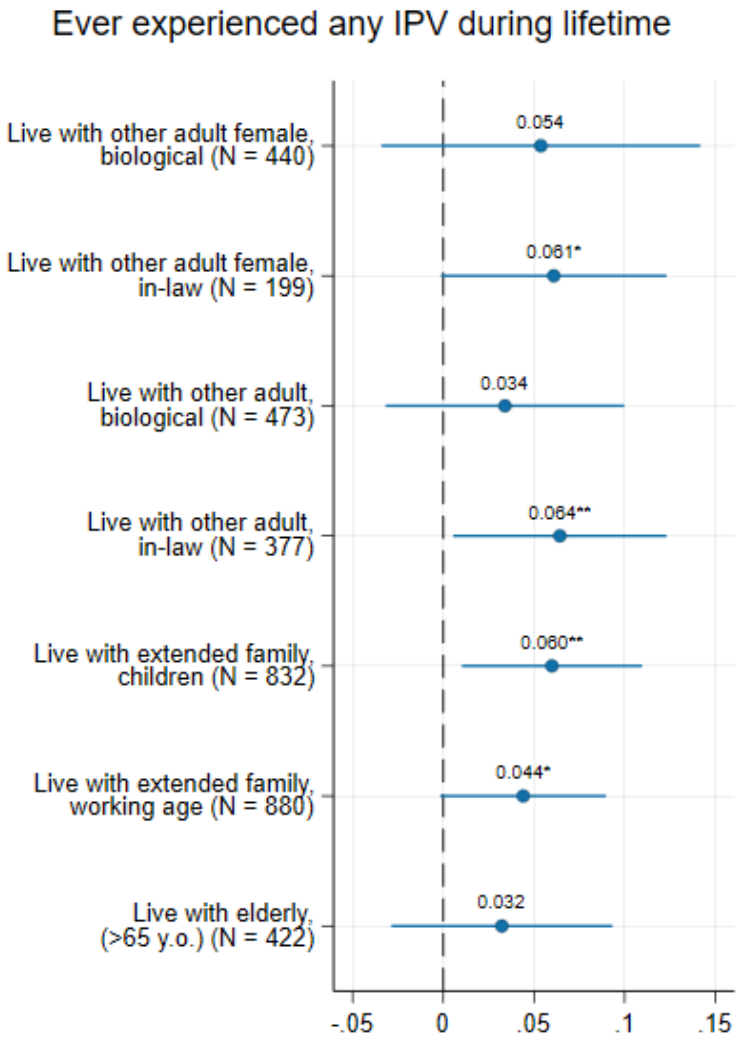


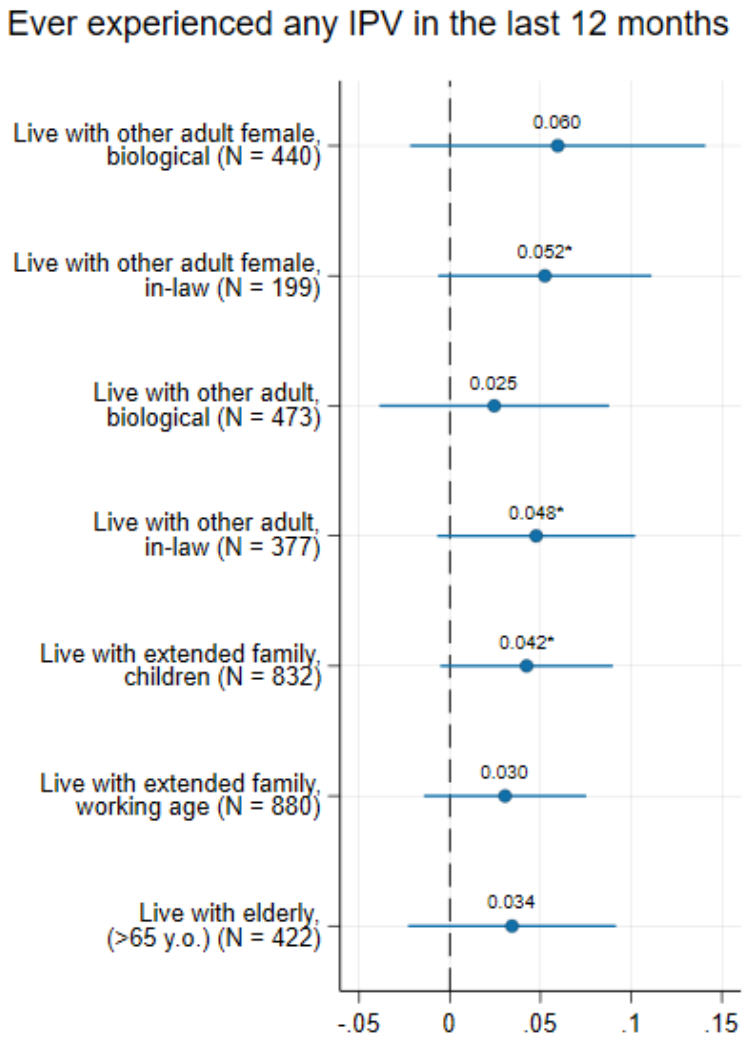
Effect heterogeneity: Household characteristics





Effect heterogeneity: Role of extended family





Size matters

- On average, a 5pp increase in domestic violence, equivalent to a 13% increase from the mean value, directly attributable to family size
- The IV estimate is larger than the OLS estimate, indicating an underestimation of the true effect
- Significant effect on IPV is primarily driven by physical or sexual forms of abuse, often associated with serious injuries to the victim
- Larger families tend to have attitudes that condone violent behaviour
  - The normalisation of violent behaviour in larger families is potentially linked to a lack of resources available to effectively address and resolve conflicts, ultimately contributing to an increased likelihood of violent incidents
- Having more children in a family is linked to a decrease in the likelihood of women being in the labour force by 4pp, a 15% reduction from the average value
- The need for greater awareness of the potential victimisation risks for larger families and the importance of integrated family planning and domestic violence prevention efforts

Thank You

	(1)	(2)	(3)	(4)	(5)	(6)
	A. Experienced any IPV (emotional, physical, or sexual) during a lifetime					
	OLS		Reduced form		2SLS	
No. of children	0.015**	0.014**			0.045***	0.050***
	(0.007)	(0.007)			(0.016)	(0.017)
Same-sex siblings			0.060**	0.063***		
			(0.024)	(0.023)		
Twin			0.042	0.043		
			(0.062)	(0.061)		
Female first child			0.034	0.035		
			(0.025)	(0.024)		
Covariates	No	Yes	No	Yes	No	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	1567	1567	1567	1567	1567	1567
Cluster	204	204	204	204	204	204
F-stat	3.51	3.96	2.87	4.12	3.86	4.29
Overidentification test (p-value)					0.78	0.80
Endogeneity test (p-value)					0.04	0.02
	B. Experienced any IPV (emotional, physical, or sexual) in the last 12 months					
	OLS		Reduced form		2SLS	
No. of children	0.019***	0.019***			0.033**	0.037**
	(0.007)	(0.007)			(0.015)	(0.016)
Same-sex siblings			0.027	0.029		
			(0.024)	(0.023)		
Twin			0.096	0.103*		
			(0.060)	(0.058)		
Female first child			0.039*	0.038*		
			(0.023)	(0.023)		
Covariates	No	Yes	No	Yes	No	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	1567	1567	1567	1567	1567	1567
Cluster	204	204	204	204	204	204
F-stat	3.82	4.94	2.24	4.63	2.85	4.88
Overidentification test (p-value)					0.25	0.27
Endogeneity test (p-value)					0.37	0.24

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	IV 2SLS (with three instruments)							
	A. Experienced IPV during a lifetime							
	Emotional		Physical		Sexual		Physical or sexual	
No. of children	0.019	0.022	0.027*	0.033**	0.017	0.017	0.033**	0.038**
	(0.014)	(0.014)	(0.015)	(0.015)	(0.012)	(0.013)	(0.015)	(0.016)
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1567	1567	1567	1567	1567	1567	1567	1567
Cluster	204	204	204	204	204	204	204	204
2SLS F-stat	1.26	3.08	2.49	3.93	1.33	4.19	2.97	4.52
Overidentification test (p-value)	0.62	0.62	0.42	0.44	0.60	0.67	0.63	0.59
Endogeneity test (p-value)	0.47	0.36	0.21	0.14	0.78	0.66	0.14	0.09
	B. Experienced IPV in the last 12 months							
	Emotional		Physical		Sexual		Physical or sexual	
No. of children	0.021	0.023*	0.011	0.016	0.012	0.012	0.023*	0.028**
	(0.014)	(0.014)	(0.013)	(0.014)	(0.011)	(0.012)	(0.013)	(0.013)
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1567	1567	1567	1567	1567	1567	1567	1567
Cluster	204	204	204	204	204	204	204	204
2SLS F-stat	1.20	2.99	0.89	5.64	1.51	4.18	2.37	5.18
Overidentification test (p-value)	0.28	0.32	0.23	0.27	0.64	0.68	0.67	0.69
Endogeneity test (p-value)	0.55	0.44	0.86	0.67	0.79	0.87	0.51	0.38