Characterizing typologies of overlapping IPV & VAC in the home: Findings from DRC, Ethiopia, and South Africa

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ABSTRACT

Background: While intimate partner violence (IPV) and caregiver-perpetrated violence against children (VAC) are recognized as global epidemics, gaps persist in understanding the nature of co-occurring violence within the home.

Objective: This study seeks to characterize the nature and overlap of concurrent IPV and caregiver-perpetrated VAC in families across three African contexts.

Participants and setting: A sample of adult women and children was obtained from the [study name redacted] Wave 1 (2018–2019), [study name redacted] DRC baseline (2019–2020), and [study name redacted] South Africa Wave 3 (2022–2024) studies.

Methods: Latent class analysis (LCA) distinguished groups of families by nature and overlap of IPV and VAC. Violence was conceptualized as one construct in DRC and South Africa and two constructs in Ethiopia.

Results: Co-occurring IPV and VAC affected 18.3 % of families in South Africa, 34.3 % in Ethiopia, and 56.1 % in DRC. Twenty percent of Ethiopian families, 15.3 % in DRC, and 4.5 % in South Africa, were characterized by emotional IPV alongside both physical and psychological VAC. In Ethiopia, two classes were distinguished by presence of economic abuse related to either women's earnings (4.1 %) or men's earnings (4.3 %). Systematic violence, characterized by overlap of multiple domains of IPV alongside VAC, affected 15.5 % of families in DRC, 8.2 % in South Africa, and 3.2 % in Ethiopia.

Conclusions: Efforts to measure and address IPV and VAC should include emotional and economic IPV, and consider variation of types and intensity across families. More substantial investment in GBV and VAC services are needed to address shared drivers and ensure coordinated response.

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1. Introduction

Intimate partner violence (IPV) and violence against children (VAC) are under-recognized epidemics which overlap in the home and have large consequences for individuals, families, and societies (Devries et al., 2018; World Health Organization, 2013). Intimate partner violence affects 1 in 4 women globally and 10–16 % of women per year (Sardinha et al., 2022). Caregiver-perpetrated VAC affects an estimated 1 in 2 children globally and 40–70 % of children aged 2–14 per year (Devries et al., 2018; Hillis et al., 2016). At the societal level, physical, psychological, and sexual violence against children may cost a country up to 8 % of its GDP in productivity losses (Pereznieto et al., 2014) and child welfare system expenditures in South Africa were 1.58 billion Rand in 2015 ($102 million) (Fang et al., 2017). Economic costs of gender-based violence exceed $1 billion in Ethiopia, or 1.2 % of the country's GDP (UN Women Ethiopia, 2022), and $1.5 billion in South Africa, or 0.90 % of country GDP (Muller et al., 2014). Recognizing these consequences, the Sustainable Development Goals prioritize elimination of both IPV and VAC (United Nations, 2017).

Violence does not occur in silos – between 8 % and 56 % of children witness IPV against their mothers (Fulu et al., 2017), which is conceptualized as a form of psychological child abuse (Parsons et al., 2020) associated with risk of VAC (Pearson et al., 2023) and more severe VAC which results in injury (Hamby et al., 2010). Shared risk factors for IPV and VAC may include macro-level social norms and individual attitudes which support gender inequality, violent masculinities, violent conflict resolution, and family privacy (Falb, Blackwell, Hategekimana, Roth, & O'Connor, 2022; Guedes et al., 2016), exposure to political conflict and neighborhood violence (Buffarini et al., 2021; Mootz et al., 2019), caregiver alcohol use (Carlson et al., 2020), and relationship quality between intimate partners in the home including power inequities (Carlson et al., 2020; Falb, Blackwell, Hategekimana, Roth, & O'Connor, 2022). These factors may be intergenerational, as witnessing or directly experiencing violence in one's home of origin are associated with subsequent IPV victimization (Velloza et al., 2022), use of VAC in adulthood (Crombach & Bambonyé, 2015), and co-occurring violence in the home (Bott et al., 2022; Falb, Blackwell, Hategekimana, Sifat, et al., 2022). Possible mechanisms for intergenerational continuity of violence include learned acceptance of use of violence through observation (Bandura, 1977) and internationalization of social norms which prioritize violent conflict resolution (Bandura, 1977; Thrasher & Handfield, 2018), unhealthy parent-child attachment patterns which affect relationships in adulthood (Bowlby, 1978), and/or social fragmentation through structural inequality and poverty (Sen, 2008). While low education, mental health, and poverty are shared risks in high-income countries (Sijtsema et al., 2020), evidence is less consistent in lower- and middle-income countries (Pearson et al., 2023). At the individual and family levels, violence exposure can exacerbate cycles of poverty, lower educational attainment, and poor health by affecting children's school attendance and women's ability to keep or obtain a job (Gupta et al., 2018; Scolese et al., 2020; Woldehanna et al., 2021).

Despite shared risk factors and consequences and multi-decade improvements in IPV and VAC measurement, persistent gaps in research and interventions to address shared risk factors (see Pearson et al., 2023) in lower- and middle-income countries (LMICs) are underpinned by a number of methodological gaps in ascertaining violence. The first is the tendency to focus on either one woman or child's direct exposure to violence, resulting in missed opportunities to conceptualize shared risks and the nature of violence within the home. Secondly, within this one-woman or one-child approach, research on VAC often prioritizes caregiver reports of perpetration over children's self-report (e.g. Carlson et al., 2020; Nkuba et al., 2018). Third, studies tend to operationalize IPV as exposure to any physical and/or sexual IPV (Ellsberg et al., 2008; Sardinha et al., 2022) which excludes emotional abuse, the most prevalent form of IPV, alongside economic abuse. Methodological gaps on VAC further include inconsistencies in measured domains and indicators of violence (Pearson et al., 2023). While forms and severity of violence may differ between families in which IPV and VAC co-occur, research in LMICs has thus far only categorized households as experiencing overlapping co-occurrence or not (Carlson et al., 2020; Falb, Blackwell, Hategekimana, Roth, & O'Connor, 2022). As such, a more thorough understanding of the patterns of violence occurring within families which illuminates overlapping forms and intensity of household-perpetrated violence against women and children, may improve the development and evaluation of more targeted approaches to prevent and respond to violence in the home.

Latent class approaches can help address the aforementioned IPV and VAC measurement gaps by uncovering nuances in overlaps and experiences of violence. Latent class analysis is a person-centered approach which distinguishes between groups, or classes, of people based on a specific outcome, and can be used with binary or categorical indicators (see Weller et al., 2020). To date, this approach has been used separately with IPV and VAC to understand the nature of women's and children's violence experiences and has distinguished groups by either form or frequency of violence. For example, multi-country studies have generated recommendations to operationalize emotional IPV based on violence intensity (Heise et al., 2019) and distinguished groups of women by intensity of IPV experience in Latin America and the Caribbean (high, moderate, and none) (Restrepo et al., 2022). In contrast, analyses in Mexico City and Rwanda distinguished women's experiences by overlap in domains of IPV rather than intensity of violence exposure (Gupta et al., 2018; Sipsma et al., 2015). Similar differences are seen in VAC studies. Patterns of violence exposure among refugee adolescents varied by level rather than type of exposure (Meyer et al., 2017). This study also found differences by context, with two patterns in Rwanda (high/low violence), but three in Uganda (high/low/no violence) (Meyer et al., 2017). In contrast, a study of adolescent boys in Austrian juvenile detention centers found differences by type of violence exposure: 18 % experienced physical and emotional violence, and 8 % experienced physical, emotional, and sexual violence (Aebi et al., 2015).

Using data on IPV and VAC from three contexts on the African continent and, when available, self-reports of violence exposure from both women and children, this study presents three case studies on the typologies of IPV and VAC present in the home over the same period of time, allowing for overlap of different domains of IPV and VAC. We hypothesized that families would be characterized by differences in both domains and intensity of both IPV and VAC and that these differences would show forms of overlap beyond those which would be specified via a four-category measure which groups families by presence of no violence, IPV only, VAC only, or joint IPV & VAC (e.g., Falb et al., 2022).

2. Methods

2.1. Study setting and population

This secondary analysis uses cross-sectional data from three studies on violence in African contexts (Table 1): a randomized trial with voluntarily enrolled heterosexual adult couples in eastern Democratic Republic of the Congo (2019–2020, N = 391 individuals from 199 dyads), a cohort study with caregiver-child dyads from randomly sampled households in [study name redacted] in three regions and one administrative city in Ethiopia (2018–2019, N = 4195 dyads), and a cohort of young adults from the [study name redacted] in Mpumalanga Province, South Africa (2022–2024, N = 224 caregiver-child dyads). The [study name redacted] cohort was originally comprised of the oldest child residing in households within randomly sampled enumeration areas in Mpumalanga province. These three case studies are presented without implication that the contexts are identical: while all studies focus on populations experiencing marginalization within their respective countries, DRC is the site of protracted conflict with a history of violent colonization, the Ethiopia study includes both conflict-affected and non-affected sites, and South Africa is thirty years post-apartheid.

Individuals (DRC) and dyads (Ethiopia and South Africa) acting as a primary caregiver for the index (DRC) or interviewed child (Ethiopia and South Africa) were selected because they could reasonably be expected to have responsibility for guiding and/or disciplining the child. Since social norms on pre-marital or non-marital sexual intimate partner relationships are more restrictive in DRC and Ethiopia than South Africa, the DRC source study included married women caring for a child alongside their husbands and in Ethiopia, women were included if they reported that their child and the male caregiver also lived in the home.

All source studies used face-to-face interviews, had referral networks and procedures for violence disclosures, and received approvals from ethical review boards (for detailed information, see Falb et al., 2023; Hicks et al., 2019; Meinck et al., 2023).

2.2. Measures

2.2.1. Intimate partner violence

All source surveys contained items representing emotional, physical, and sexual IPV (Table 1). The Ethiopia survey also included four questions on economic IPV. Items in DRC and South Africa were from the World Health Organization Multi-Country Study on Women's Health and Domestic Violence Against Women (García-Moreno et al., 2005). Ethiopia items were from the Tanzania International Men and Gender Equality Survey (IMAGES) Women's Questionnaire and economic IPV items asked about men's and women's earnings (Levtov et al., 2018). The wording of question items on each form of IPV were similar, if not identical, across contexts (see Table 1 for each item); where items differed or additions items were present (for example, five emotional IPV items in Ethiopia as compared to four in DRC and South Africa), the study erred on the side of inclusion to comprehensively unpack each context's patterns of IPV/VAC. In South Africa and Ethiopia, since past-year prevalence of individual IPV items were generally below 10 %, binary IPV items were included in analysis. Due to smaller sample size and higher prevalence of IPV in DRC, ordinal composite variables (moderate/high intensity, low intensity, or none) captured frequency of exposure to emotional, sexual, and moderate physical IPV domains. Within each domain, the moderate/high category represented multiple forms of violence occurring at greater frequency (see Table 1). Across contexts, items representing severe physical IPV (kicking, choking, burning, being attacked or threatened with a weapon) were combined into one binary indicator due to low prevalence, prior research demonstrating risk of injury and death, and greater weighting of these items in IPV danger assessments (Campbell et al., 2009).

2.2.2. Violence against children

Harsh physical discipline and psychological aggression were assessed in all contexts, and deprivational neglect was assessed in Ethiopia and South Africa. In DRC, eight items adapted from the Multiple Indicator Cluster Survey (MICS) Discipline Module captured women's self-reported frequency (none, once, few, or many) of three-month perpetration of moderate physical discipline, harsh physical discipline, and psychological aggression against an index child aged 6–12. One ordinal composite variable (none, low-intensity, or moderate/high-intensity) was generated for each domain (see Table 1). In Ethiopia, three items captured children aged 10–12's self-reported twelve-month frequency (never, once, or more than once) of exposure to harsh physical discipline, psychological aggression, and deprivational neglect from any adult in the home. In South Africa, three items adapted from the Comprehensive Early Childhood Parenting Questionnaire (CEPAQ) (Sleddens et al., 2014) captured children aged 6–17's self-reported frequency (never, sometimes, a lot) of harsh physical discipline, psychological aggression, and deprivational neglect from any adult in the home; each of these items were recategorized into binary indicators. Since younger children have greater difficulty with event recall (Badinlou et al., 2018), recall periods were not specified, and reports are assumed to reflect exposure at the time of the study.

2.3. Analysis

Cross-sectional tabulations, histograms, chi-squared and t-tests were used to determine baseline frequencies for demographic and family violence variables, overlap between violence items within and across domains of IPV and VAC. Kuder Richardson-20 (KR-20) were used to determine correlations between binary family violence variables, and Pearson's correlation coefficient and chi-squared tests were used to assess variations in categorical and continuous family violence variables. Latent class analysis (LCA) was used to determine patterns of IPV and VAC. Family violence was modelled as one latent construct which included items on both IPV and VAC in DRC and South Africa, whereas IPV and VAC were modelled as separate latent constructs in Ethiopia. Descriptions of models for each context are presented below; further information on Ethiopia is available via Supplemental File 2.

Table 1

Study design, sample characteristics, and family violence item construction, by context.

Criteria	Democratic Republic of the Congo (DRC)	Ethiopia	South Africa
Context	Four villages in North Kivu province	Afar, Amhara, and Oromia regions, and Dire Dawa city administration	Rural and peri-urban areas within one health district in Mpumalanga province
Study design and data source	Cross-sectional, randomized controlled trial baseline survey with a community sample of adults interested in participating in a family-focused intervention.	Cross-sectional, systematic random sample of households with a child aged 10–12.	Cross-sectional, ten-year follow-up from a systematically sampled baseline study of children, now young adults aged 21–33 years with an oldest child age 6 to 17 years.
Sample size and characteristics	198 women Female caregiver mean age 32.9 years (sd 8.95, range 19–61), 7.2 household members (sd 2.15, range 3–13), 11 % (n = 45) currently displaced, 78.8 % (n = 156) have at least a mild disability, 14.7 % (n = 29) completed secondary education.	4195 female caregiver-child dyads Female caregiver mean age 37.4 years (sd 8.1, range 17–78), 6.5 household members (sd 1.70, range 3–13).	224 female caregiver-child dyads Female caregiver mean age 26.4 (sd 2.09, range 22–31), 6.4 household members (sd 2.89, range 2–18), 52.7 % (n = 118) completed secondary education.
	Index child mean age 10.0 (sd 2.38, range 6–12), 54.0 % (n = 107) female.	Child mean age 10.9 (sd 0.80, range 10–12), 55.9 % (n = 2347) female, 84.9 % (n = 3559) enrolled in school.	Child mean age 8.7 (sd 2.5, range 6–17), 58.0 % (n = 130) female, 99.6 % (n = 221) enrolled in school.
Prevalence of IPV & VAC	Co-occurring IPV/VAC: 56.1 % (n = 111) IPV only: 2.5 % (n = 5) VAC only: 27.8 % (n = 55) No violence: 13.6 % (n = 27)	Co-occurring IPV/VAC: 34.3 % (n = 1439) IPV only: 7.7 % (n = 321) VAC only: 32.8 % (n = 1376) No violence: 25.0 % (n = 1048)	Co-occurring IPV/VAC: 18.3 % (n = 41) IPV only: 5.8 % (n = 13) VAC only: 57.1 % (n = 128) No violence: 18.3 % (n = 41)
Violence reporting method and recall period	IPV: Women's self-report of 3-month victimization VAC: Women's self-report of 3-month perpetration	IPV: Women's self-report of 12-month victimization VAC: Child self-report of 12-month victimization	IPV: Women's self-report of 12-month victimization VAC: Child self-report of victimization

Violence domain	Item	Response categories	Item	Response categories	Item	Response categories
Violence against children	(Instructions, Caregiver questionnaire) Please tell me if you have used this method with (CHILD) in the past three months:		(Instructions, child questionnaire) How often within the past 12 months were you…. by a parent or other adult in your household?		(Instructions, child questionnaire) Your caregiver…	
Harsh physical discipline	Shook (him/her) Spanked, hit or slapped (him/her) on the bottom with bare hand Hit (him/her) on the bottom or elsewhere on the body with something like a belt, hairbrush, stick or other hard object Hit or slapped (him/her) on the hand, arm, or leg	Never, moderate intensity (summary score of 1–6), high intensity (summary score of 7–12)	Pushed, slapped, hit, beaten or otherwise physically hurt?	Never/ once/ more than once	Hits you when you have done something wrong	Yes/no
Severe physical discipline	Hit or slapped (him/her) on the face, head or ears. Beat (him/her) up, that is hit him/her over and over as hard as one could.	Never, moderate intensity, high intensity	N/A		N/A	
Psychological aggression	Shouted, yelled at or screamed at (him/her) Called (him/her) dumb, lazy or another name like that	Never, moderate intensity, high intensity	Yelled at or called names?	Never/ once/ more than once	Shout or scream at you when you have done something wrong	Yes/no
Deprivational abuse	N/A		Treated poorly in another way, which as withholding food from you when others were fed?	Never/ once/ more than once	Takes away your food when you have done something wrong	Yes/no

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Table 1 (*continued*)

Criteria	Democratic Republic of the Congo (DRC)		Ethiopia		South Africa	
Intimate partner violence	(Caregiver questionnaire) How often in the last 3 months has your husband/partner…		(Caregiver questionnaire) In the last 12 months, has a male spouse/partner…		(Caregiver questionnaire) Has your current husband/ partner, or any other partner, done the following things to you in the last 12 months….	
Emotional	Insulted you or made you feel bad about yourself?	Never, moderate intensity (summary score of 1–6), high intensity (summary score of 7–12)	Insulted you or made you feel bad about yourself?	Yes/no	Insulted you or made you feel bad about yourself?	Yes/no
	Did things to scare or intimidate you on purpose (i.e. by the way he looked at you, by yelling or smashing things)?		Done things to scare or intimidate you, for example by the way he looked at you, or by yelling and smashing things?	Yes/no	Did things to scare or intimidate you on purpose (e.g. by the way he looked at you, by yelling and smashing things)?	Yes/no
	Belittle or humiliated you in front of other people?		Belittled or humiliated you in front of other people?	Yes/no	Belittled or humiliated or made you feel small or ashamed you in front of other people	Yes/no
	Threatened to hurt you or someone you care about?		Threatened to hurt you or someone who is important to you?	Yes/no	Threatened to hurt you or someone you care about?	Yes/no
	N/A		Hurt people you care about as a way of hurting you or damaged things of importance to you?	Yes/no	N/A	
Moderate physical	Slapped you or thrown something at you that could hurt you?	Never, moderate intensity, high intensity (both items present: both occurred a few times, or at least one occurring many times)	Slapped you, hit you with a fist, thrown something at you that would hurt you, pushed or shoved you?	Yes/no	Slapped you or thrown something at you that could hurt you?	Yes/no
	Pushed you or shoved you?				Pushed you or shoved you?	Yes/no
					Hit you with his fist or with something else that could hurt you?	Yes/no
Severe physical	Kicked you, dragged you or beaten you up?	Yes/no	Dragged, beaten, choked or burned you, or threatened to use or actually used a gun, knife or other weapon against you?	Yes/no	Kicked, dragged, or beaten you up?	Yes/no
	Choked or burnt you on purpose?				Choked or burnt you on purpose?	
	Threatened to use or actually used a gun, knife or other weapon against you?				Threatened to use or actually use a gun, knife or other weapon against you?	
	Hit you with his fist or with something else that could hurt you?					
Sexual	Physically forced you to have sexual intercourse when you did not want to?	Never, moderate intensity, high intensity	Forced you to have sex or do something sexual when you did not want to?	Yes/no	Physically forced you to have sexual intercourse when you did not want to?	Yes/no
	Did you have sexual intercourse you did not want because you were afraid of what he might do?				Had sexual intercourse you did not want because you were afraid of what he might do?	
	N/A		N/A		Forced you to do something sexual that you found degrading or humiliating?	
Economic: women's work and earnings	N/A		Kept you from getting a job, going to work, trading or earning money?	Yes/no	N/A	
	N/A		Taken your earnings against your will?	Yes/no	N/A	
Economic: men's earnings	N/A		Refused to give you money for essential	Yes/no	N/A	

Table 1 (*continued*)

Criteria	Democratic Republic of the Congo (DRC)	Ethiopia		South Africa
	N/A	household food purchases? Kept money from his earnings for personal use when he knew you were finding it hard to pay for your personal expenses or household needs?	Yes/no	N/A

In DRC, family violence was modelled as one latent construct including IPV and VAC items (Table 1). Three ordinal indicators each represented frequency of women's three-month exposure to emotional, moderate physical, and sexual IPV, one binary indicator represented exposure to any severe physical IPV, and 3 ordinal indicators represented three-month frequency of perpetration of moderate physical discipline (VAC), harsh physical discipline, and psychological aggression (see Table 1). No exogenous factors were examined due to small sample size and use of women's self-report for both IPV victimization and VAC perpetration.

In Ethiopia, IPV and VAC were modelled as separate latent constructs since large sample size and available items and frequency distributions in the study differed between IPV and VAC among the study sample such that IPV classes could be distinguished by item but not frequency, whereas VAC could be distinguished by frequency but not by forms of violence within a specific domain. Twelve binary indicators represented women's twelve-month exposure to emotional, physical, sexual, and economic IPV, and 3 ordinal indicators represented children's twelve-month exposure to harsh physical discipline, psychological aggression, and deprivational neglect. Binary indicators were used due to low prevalence of each distinct item in the sample, and two items representing severe physical IPV were combined into one binary indicator. Adolescent sex was included as a binary exogenous variable impacting VAC class construction and membership, and IPV was modelled as an endogenous latent variable affecting VAC class membership.

In South Africa, family violence was modelled as one latent construct with both IPV and VAC items. Nine binary indicators represented women's twelve-month exposure to emotional, physical, and sexual IPV, and 3 binary indicators represented children's exposure to harsh physical discipline, psychological aggression, and deprivational abuse. Similar to Ethiopia, most IPV domains were represented by multiple items which were each included as a separate indicator to allow for more nuanced exploration. Age group was examined as an exogenous variable (children aged 6–9 versus adolescents aged 10–17) but excluded from the final model since child age did not significantly affect latent class construction or membership.

Model fit statistics, class sizes, and theoretical interpretation, guided the selection of the number and characteristics of classes. Akaike's Information Criteria (AIC), Bayesian Information Criteria (BIC), and sample size adjusted Bayesian Information Criteria (aBIC) were examined to assess accuracy of model fit (lower values indicate better fit), and aBIC was prioritized due to greater accuracy in describing model fit across varying sample sizes and unbalanced class membership (Swanson et al., 2012). The Vuong-Lo-Mendell-Rubin (VLMR) adjusted likelihood ratio test and Bootstrapped Likelihood Ratio Test (BLRT) assessed if K classes provided a significantly better fit than K-1 classes, and entropy ($\geq$ 0.80) assessed accuracy of the classes to the data. Initial frequency explorations and variable operationalization was completed in Stata 15.1 and LCA was conducted in MPlus 8.4.

3. Results

3.1. DRC

In DRC, 58.6 % (n = 116) of women reported any IPV victimization and 83.8 % (n = 166) reported any VAC perpetration in the three months preceding the survey: 56.1 % (n = 111) reported any co-occurring IPV and VAC, 27.8 % (n = 55) reported only VAC, 2.5 % (n = 5) reported only IPV, and 13.6 % (n = 27) reported no violence. Model fit statistics indicated that a four- or five-class model was appropriate to the data (Supplementary file 1, Table 1), and the five-class model is presented here because it provided theoretically distinct classes and was favored by model AIC, sample size-adjusted BIC (aBIC), and BLRT statistics. The five-class model distinguished families by presence of 1) *high-intensity IPV & high-intensity VAC* (n = 30.6, 15.5 %), 2) *emotional IPV & high-intensity VAC* (n = 30.2, 15.3 %), 3) *low-intensity VAC* (n = 64.8, 32.7 %), 4) *low-intensity IPV & low-intensity VAC* (n = 19.9, 10.1 %), 5) *no/low IPV & no/low VAC* (n = 52.5, 26.5 %). For ease of interpretation, Fig. 1 only presents probabilities for moderate/high-intensity IPV and VAC for most violence domains, and Table 2 presents probabilities for both moderate/high-intensity and low-intensity violence, and Table 4 describes the classes in more detail.

3.2. Ethiopia

In Ethiopia, 49.1 % (n = 1760) of women reported IPV victimization and 67.1 % of children (n = 2815) reported VAC victimization in the twelve months preceding the survey: 34.3 % (n = 1439) of dyads reported co-occurring IPV & VAC, while 7.7 % (n = 321) reported only IPV, 32.8 % (n = 1376) reported only VAC, and 25.0 % (n = 1048) reported no violence. Model AIC, BIC, aBIC, entropy, Vuong LMR, and BLRT tests jointly indicated a five- or six-class solution for IPV (Supplementary file 1, Table 2) and a three-class solution for VAC (Supplementary file 1, Table 3). For IPV, the six-class solution is presented here because it provides a more nuanced description of how specific forms of emotional violence overlap with economic and physical IPV which may be pertinent for

researchers and practitioners. The six-class solution for IPV (Fig. 2) characterized groups by: 1) *no/low IPV* (n = 2630.58, 62.7 %), 2) *insults* (n = 945.52, 22.5 %), 3) *insults & withholding of men's earnings* (n = 179.52, 4.3 %), 4) *abuse of women's earnings* (n = 170.31, 4.1 %), 5) *insults, intimidation, & moderate physical IPV* (n = 184.11, 4.4 %), and 6) *systematic emotional, physical, & economic IPV* (n = 84.96, 2.0 %). See Table 4 for further details on each class.

The three-class model for VAC (Fig. 3) distinguished groups of families by: 1) *no VAC* (n = 1876.13, 44.7 %), 2) *low-intensity VAC* (n = 469.26, 11.2 %), and 3) *moderate or high-intensity VAC* (n = 1849.61, 44.1 %). Further details are in Table 4.

In a joint SEM model which included IPV and VAC and accounted for variation in latent class construction and membership by child gender, 43.7 % (n = 1835) of dyads belonged to the *no/low IPV* and *no VAC* classes (see Fig. 4 for overlapping patterns of interest); 20 % (n = 841) belonged to the *insults* (IPV) and *moderate or high-intensity VAC* classes; 15.6 % belonged to the *no/low IPV* and *moderate or high-intensity VAC* classes; and 1.2 % (n = 51) belonged to both the *systematic emotional, physical & economic IPV* class and the *moderate or high-intensity VAC* class. Few dyads belonged to the *insults & withholding of men's earnings* and the *moderate/high-intensity VAC* (n = 92, 2.2 %), *abuse of women's earnings* and *moderate/high VAC* (n = 50, 1.2 %), *insults, intimidation & moderate physical IPV* and *moderate/ high VAC* (n = 82, 2.0 %), and *systematic IPV* and *moderate/high VAC* (n = 51, 1.2 %) classes.

Direct effects of IPV on VAC, as assessed in the mixture model which included adolescent sex as an exogenous variable affecting VAC latent class construction and membership, are presented in Table 3. Compared to the *systematic emotional, physical, & economic IPV* class, women in the insults IPV class had 3.3 times greater odds (p 0.006), and all other IPV classes had lower odds, of having an adolescent in the *moderate or high-intensity VAC* class. In particular, dyads with caregivers in the *no/low IPV* and *abuse of women's earnings* classes were 79 % and 74 % less likely, respectively, to have adolescents in the *moderate or high-intensity VAC* class. Dyads with caregivers in the no/low IPV class were also 74 % less likely to be in the *low-intensity VAC* class (p 0.008) when compared to the *systematic emotional, physical, & economic IPV* class.
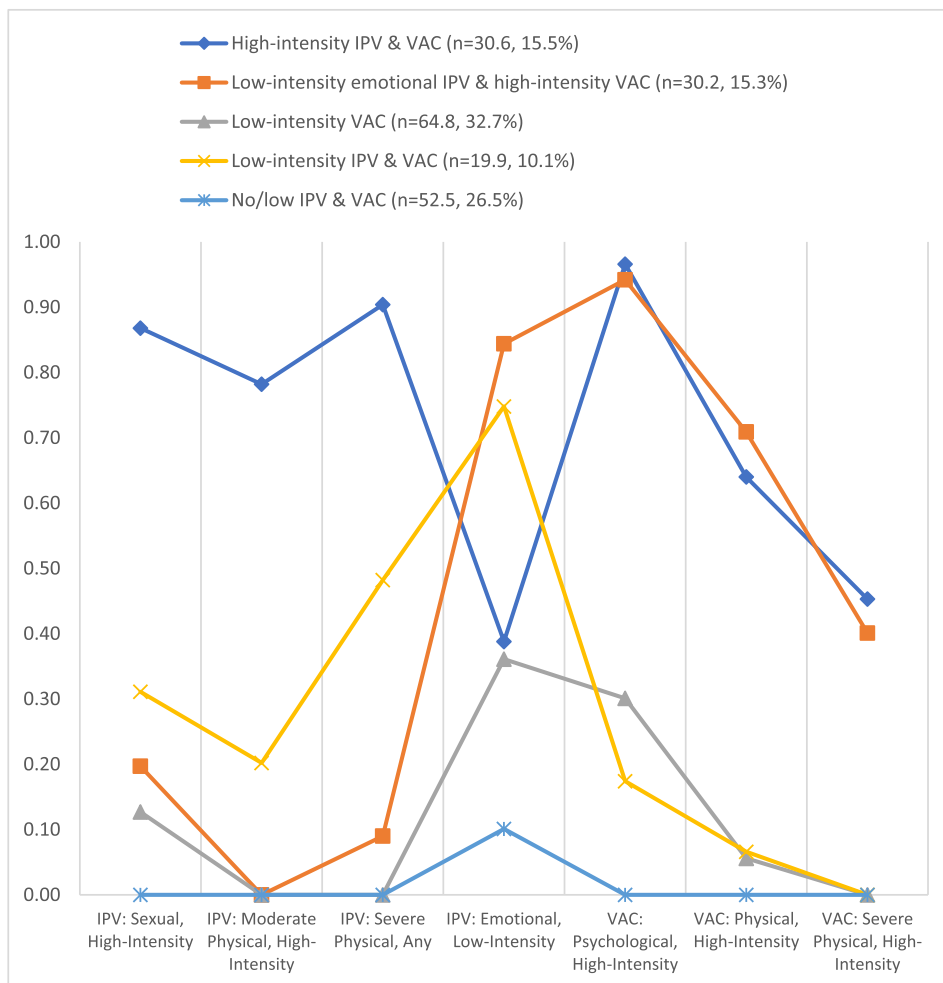

Fig. 1. DRC: Latent class patterns of overlapping intimate partner violence (IPV) and violence against children (VAC), N = 198 women surveyed 2019–2020.
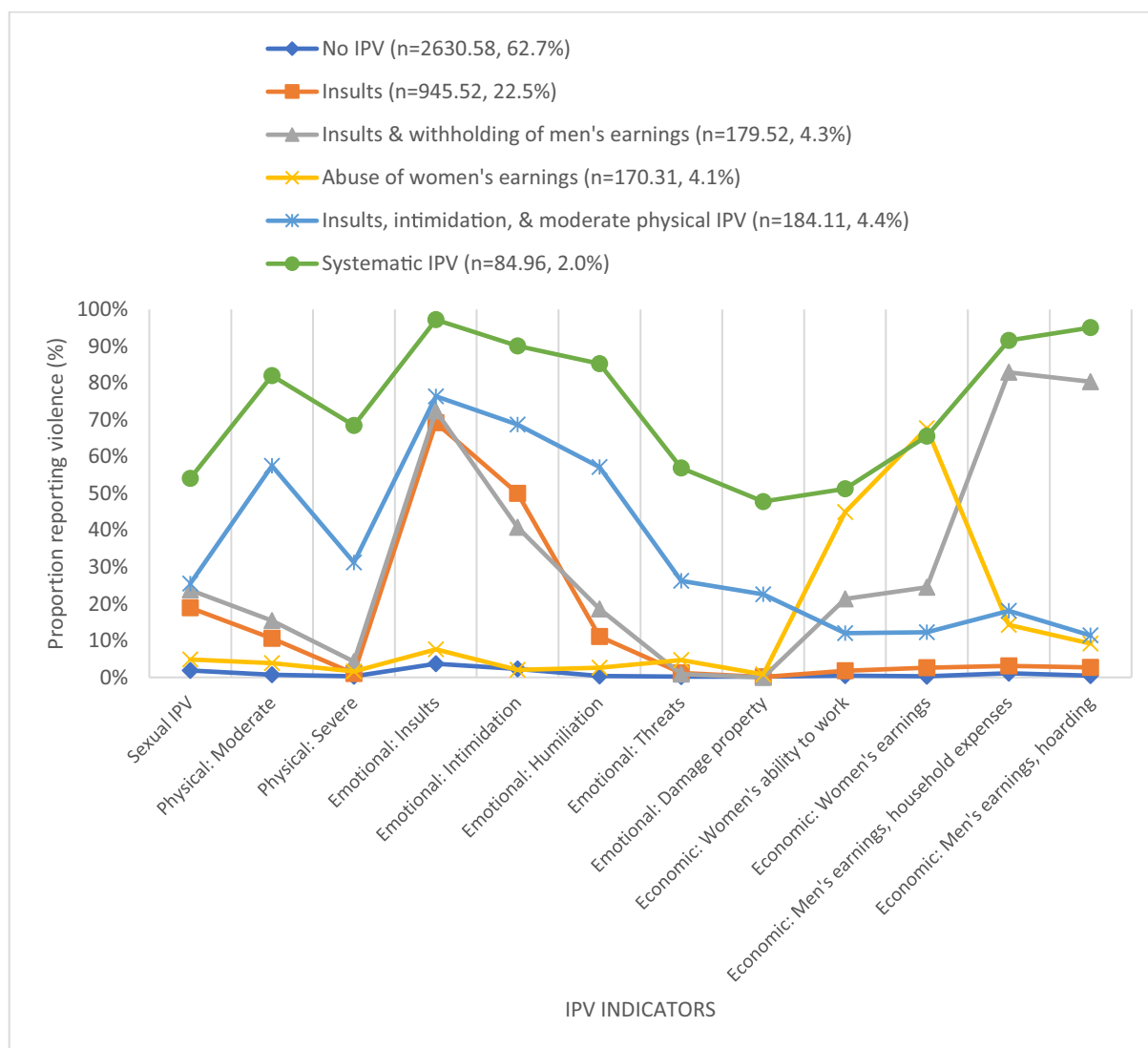
Fig. 2. Ethiopia: Latent class patterns of intimate partner violence (IPV) at baseline, N = 4195 women surveyed 2018–2019.

3.3. South Africa

In South Africa, 24.1 % (n = 54) of women reported past-year IPV victimization and 75.4 % (n = 169) of children reported VAC victimization: 18.3 % (n = 41) of dyads each reported co-occurring IPV and VAC and no violence, while 57.1 % (n = 128) reported only VAC and 5.8 % (n = 13) reported only IPV. Model AIC, aBIC, VLMR, and BLRT statistics favored a four-class model (Supplementary file 1, Table 4), which produced theoretically meaningful and distinguishable (entropy >0.80) classes. Over 80 % of dyads belonged to two classes characterized by no or low IPV (see Fig. 5): *no IPV & low VAC* (n = 92.2, 41.1 %) had low probability of physical VAC, and *no IPV with physical & emotional VAC* (N = 103.7, 46.3 %) had near-universal emotional VAC alongside very high probability of physical VAC. Further details are presented in Table 4.

4. Discussion

Using data from three African contexts, this study addresses persistent knowledge gaps in the overlap and nature of IPV and VAC within families. Importantly, this study contributes learning on prevalence using self-reports from adult women and children in their care in two contexts. In Ethiopia, where adult women and adolescents aged 10–12 self-reported victimization, 34.3 % of families had overlapping IPV and VAC within the past year. In South Africa, where adult women self-reported twelve-month victimization and children aged 6–17 self-reported sans recall period, 18.3 % of families had overlapping IPV and VAC. Prevalence rates from our systematic samples in Ethiopia and South Africa indicate that using children's proxy report may underestimate IPV prevalence: a

Table 2

Democratic Republic of the Congo, probability of endorsing intimate partner violence (IPV) victimization and violence against children (VAC) perpetration by class membership.

Family violence domain	Frequency n (%)	High-intensity IPV & high-intensity VAC (n = 30.6, 15.5 %)	Low-intensity emotional IPV & high-intensity VAC (n = 30.2, 15.3 %)	Low-intensity VAC (n = 64.8, 32.7 %)	Low-intensity IPV & low-intensity VAC (n = 19.9, 10.1 %)	No/low IPV & no/low VAC (n = 52.5, 26.5 %)
Intimate partner violence (IPV)						
Sexual						
High-intensity	47 (23.7)	0.87	0.20	0.13	0.31	0.00
Low-intensity	22 (11.1)	0.13	0.44	0.04	0.00	0.04
Moderate physical						
High-intensity	28 (14.1)	0.78	0.00	0.00	0.20	0.00
Low-intensity	29 (14.6)	0.22	0.32	0.00	0.64	0.00
Any severe physical	40 (20.2)	0.90	0.09	0.00	0.48	0.00
Emotional						
High-intensity	26 (13.1)	0.58	0.04	0.03	0.25	0.00
Low-intensity	81 (40.9)	0.39	0.84	0.36	0.75	0.10
Violence against children (VAC)						
Psychological						
High-intensity	81 (40.9)	0.97	0.94	0.30	0.17	0.00
Low-intensity	68 (34.3)	0.03	0.00	0.64	0.83	0.17
Moderate physical						
High-intensity	46 (23.2)	0.64	0.71	0.06	0.07	0.00
Low-intensity	100 (50.5)	0.36	0.29	0.80	0.70	0.28
Severe physical						
High-intensity	26 (13.1)	0.45	0.40	0.00	0.00	0.00
Low-intensity	52 (26.3)	0.49	0.56	0.28	0.09	0.00

Table 3

Ethiopia, odds ratios for direct associations between intimate partner violence (IPV) and violence against children (VAC) classes.

Intimate Partner Violence Class	OR	95 % CI	p-Value
Moderate/high-intensity VAC			
No/low IPV	0.21	0.10 - 0.42	0.000
Abuse of women's earnings	0.26	0.10 - 0.70	0.007
Insults	3.30	1.41 - 7.71	0.006
Insults & withholding of men's earnings	0.63	0.22 - 1.82	0.389
Insults, intimidation, & moderate physical IPV	0.83	0.24 - 2.89	0.772
Index child sex (1 = Girls)	0.97	0.80 - 1.16	0.706
Low-intensity VAC			
No/low IPV	0.26	0.09 - 0.70	0.008
Abuse of women's earnings	1.35	0.31 - 5.84	0.691
Insults	0.95	0.26 - 3.56	0.942
Insults & withholding of men's earnings	0.45	0.10 - 2.04	0.300
Insults, intimidation, & moderate physical IPV	1.31	0.37 - 4.67	0.678
Index child sex (1 = Girls)	0.64	0.47 - 0.86	0.003

Reference classes for the above comparisons are systematic emotional, physical, & economic intimate partner violence (IPV) and no/low violence against children (VAC). Index child sex is included as an exogenous variable influencing VAC class construction and membership.

global study found a 16.5 % global prevalence of witnessing physical domestic violence, with 38.5 % prevalence in Africa (Whitten et al., 2023), while our study found past-year IPV prevalence of 49.1 % in Ethiopia and 24.1 % in South Africa. A systematic review drawing largely from North American and European studies with single-individual estimates (i.e. women report IPV victimization and VAC perpetration) found a 10–30 % prevalence of overlapping IPV and VAC (Sijtsema et al., 2020); in the present study, 56.1 % of adult women in DRC reported three-month IPV victimization and VAC perpetration. Higher prevalence of co-occurring IPV and VAC in Ethiopia and DRC may be partially due to political conflict exposure within study communities, as political conflict exposure has been associated with IPV and VAC exposure (Catani et al., 2008; Kelly et al., 2018).

Using latent class analysis, this study confirms groups of families in DRC, Ethiopia, and South Africa are distinguished by overlap in types and domains of concurrent IPV and VAC. These groupings validate the importance of including emotional IPV in co-occurrence research to avoid misclassifying families as experiencing only VAC when IPV is present. In all three contexts, one class was characterized primarily by presence of emotional IPV alongside multiple forms of VAC. About 20 % of families in Ethiopia, 15.3 % in DRC,

Table 4

Descriptive summary of latent classes of family violence, by context.

Context	Class categorizations	Description of each class
DRC	**Five classes with overlaps in forms and intensity of IPV and VAC, using female caregiver self-reported IPV victimization and VAC perpetration.**	
1.	High-intensity IPV & high-intensity VAC (n = 30.6, 15.5 %)	High-intensity sexual and physical IPV victimization with presence of emotional IPV victimization, alongside high-intensity perpetration of psychological VAC and presence of both moderate and severe physical VAC perpetration.
2.	Emotional IPV & high-intensity VAC (n = 30.2, 15.3 %)	Low-intensity emotional IPV victimization alongside high-intensity perpetration of psychological and harsh physical VAC and presence of severe physical VAC perpetration.
3.	Low-intensity VAC (n = 64.8, 32.7 %)	Low-intensity perpetration of psychological aggression and harsh physical discipline against children, with no IPV.
4.	Low-intensity IPV & low-intensity VAC (n = 19.9, 10.1 %)	Low-intensity physical and emotional IPV victimization, with presence of some severe physical IPV, alongside low-intensity perpetration of psychological and harsh physical VAC.
5.	No/low IPV & no/low VAC (n = 52.5, 26.5 %)	No or very low probability (<30 %) of IPV victimization, alongside no/very low probability of perpetrating any harsh physical VAC.
Ethiopia	**Six IPV classes and three VAC classes (modelled separately) with overlaps in forms and intensity of violence, using caregiver-child dyads (self-reported victimization).**	
Intimate partner violence (IPV)		
IPV 1.	No/low IPV (n = 2630.6, 62.7 %)	No presence of IPV.
IPV 2.	Insults (n = 945.5, 22.5 %)	High probability of emotional IPV victimization, specifically being insulted by male partner, with moderate probability of being intimated by partner.
IPV 3.	Insults & withholding of men's earnings (n = 179.5, 4.3 %)	High probability of emotional and economic IPV victimization, specifically being insulated (economic IPV) and having partners who refuse to provide money for household expenses and refuse to share earnings in moments of household financial hardship (economic IPV).
IPV 4.	Abuse of women's earnings (n = 170.3, 4.1 %)	High probability of being prevented from earning money by male partner, with moderate probability of male partner taking respondents' earnings taken against her will (economic IPV).
IPV 5.	Insults, intimidation, & moderate physical IPV (n = 184.1, 4.4 %)	High probability of insults and intimidation (emotional IPV), and moderate probability of humiliation and forms of physical abuse such as being pushed, shoved, slapped, or hit with a fist.
IPV 6.	Systematic emotional, physical, & economic IPV (n = 84.9, 2.0 %)	High probability of insults, intimidation, and humiliation (emotional IPV), moderate and severe forms of physical violence ranging from slapping to choking/burning and weapons use, and economic IPV related to male partners refusing to give money for household expenses or share earnings during moments of financial hardship. Moderate probability of male partners taking women's earnings against their will (economic IPV), and sexual IPV.
Violence against children (VAC)		
VAC 1.	No VAC (n = 1876.1, 44.7 %)	Negligible presence of VAC.
VAC 2.	Low-intensity VAC (n = 469.3, 11.2 %)	Low-frequency psychological and physical VAC victimization.
VAC 3.	Moderate or high-intensity VAC (n = 1849.6, 44.1 %)	High probability of frequent psychological VAC victimization, with presence of less frequent physical VAC victimization.
South Africa	**Four classes with overlaps in forms and intensity of IPV and VAC, using caregiver-child dyads (self-reported victimization).**	
1.	No IPV & low VAC (n = 92.2, 41.1 %)	No presence of IPV, very low probability of physical VAC.
2.	No IPV with physical & emotional VAC (N = 103.7, 46.3 %)	Near-universal exposure to singular episodes of psychological VAC alongside very high probability of exposure to singular episodes of physical VAC.
3.	Emotional IPV & all VAC (n = 10.0, 4.5 %)	High probability of recurring insults and humiliation and moderate probability of intimidation (emotional IPV), alongside moderate probabilities of physical and psychological VAC.
4.	Systematic physical & emotional IPV and VAC (N = 18.4, 8.2 %)	High probability of insults (emotional IPV), slapping and hitting (moderate physical IPV), and severe physical IPV (kicked, dragged, choked, burned, attacked and/or threatened with weapon), with moderate probability of humiliation, intimidation, and threats (emotional IPV). High probability of physical and psychological VAC.

and 4.5 % in South Africa belonged to classes with high probabilities of emotional IPV alongside physical and emotional VAC. Research on global IPV prevalence (Sardinha et al., 2022) and IPV/VAC co-occurrence tends to exclude emotional abuse from measurement of IPV (Fulu et al., 2017; Sijtsema et al., 2020). Similarly, research on IPV typologies tends to focus on physical and/or sexual violence (Aguerrebere et al., 2021; Gurbuz Cuneo et al., 2023; Willie et al., 2020). Inclusion of emotional IPV was previously hampered by measurement challenges which have only recently been resolved (Heise et al., 2019) and assumptions of overlap with other forms of IPV; however, this study demonstrates that a high proportion of women may experience emotional violence without physical or sexual IPV. Women in Ethiopia who experienced insults from a partner were 3.3 times more likely to have a child experiencing moderate/high intensity VAC exposure as compared to women in the systematic IPV class, which implies a direct relationship between emotional IPV exposure and greater VAC exposure in the home. Since women may be held responsible if children misbehave in the home, women experiencing emotional IPV may be more likely to perpetrate violence against their children (Falb et al., 2020). Emotional IPV and VAC exposure are associated with adverse mental health outcomes among adult women and children (Cohen et al., 2022; Vahedi et al., 2024). As such, excluding emotional IPV from research and prevention programming overlooks a substantial population of women
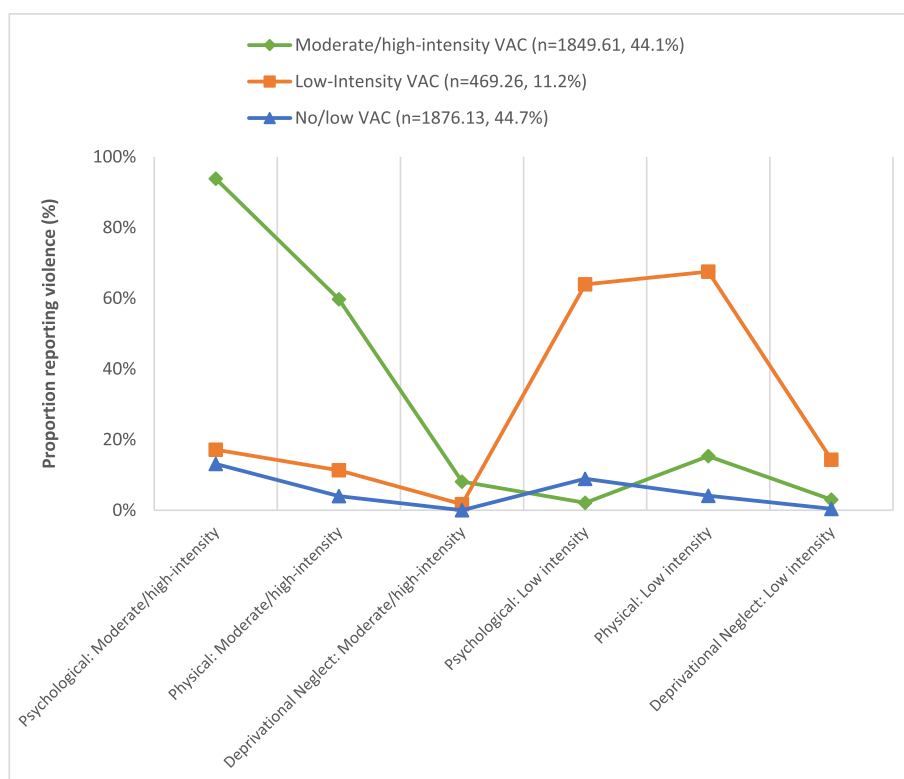
Fig. 3. Ethiopia: Latent class patterns of violence against children (VAC) at baseline, N = 4195 adolescents aged 10–12 surveyed 2018–2019.

who experience IPV and the impact of emotional IPV on health outcomes in the absence of physical or sexual IPV (Coker et al., 2002; Andrew Gibbs et al., 2018).

This study also identified a group of families with systematic co-occurring IPV and VAC, with some distinctions in forms of violence and prevalence of membership in the systematic class across contexts. These classes were consistently characterized by high probability of co-occurring physical and emotional VAC, with some differences in IPV patterns and class probabilities across contexts. Systematic IPV and VAC is loosely defined as multiple forms of violence within and across domains occurring at higher frequency, when measured. In DRC, which examined violence intensity as greater types of and frequency of violence within each domain over a three-month period among a smaller sample of conflict-affected women, 15.5 % of women were exposed to systematic IPV, characterized by high probability of sexual and physical IPV, with emotional IPV likely to occur at either high or low intensities. Unlike the other two contexts, this class was characterized by presence of high-intensity sexual IPV. In South Africa, 8.2 % of dyads belonged to a class characterized by high probability of emotional, moderate physical, and severe physical IPV, alongside psychological aggression and harsh physical VAC. In Ethiopia, 1.2 % of dyads belonged to the systematic IPV (emotional and physical IPV) and moderate/high-intensity VAC class, with another 2.0 % reporting insults, intimidation, and moderate physical IPV alongside moderate/high-intensity VAC. The differing IPV patterns of systematic IPV regarding presence of sexual violence in DRC but not in Ethiopia and South Africa, may be related to contextual differences in sexual violence prevalence as Ethiopia and South Africa had more representative samples and women reported less sexual violence than in DRC. These differences have implications for practice beyond these contexts, as establishing locally relevant patterns of violence can improve identification of families which may need more substantial intervention, inform content development for prevention programming, and aid decision-making on use of public funds to support survivors of violence. For example, greater investment in clinical management of rape to support sexual violence survivors in eastern DRC may benefit women experiencing IPV, whereas investment in psychosocial support and shelter services, including dual training on IPV and VAC for the social service workforce, may be pertinent in Ethiopia and South Africa.

Additionally, findings indicate that economic abuse should be included in measurement of IPV. In Ethiopia, the only context in which source surveys included items on economic IPV, two classes differentiated between economic abuse related to women's ability to work or to use her own earnings, and economic abuse related to a male partner withholding his own earnings. The existence of two distinct patterns of economic abuse may partly explain inconsistencies in impact of women's economic empowerment interventions on women's exposure to IPV: interference with women's ability to work may serve an example of resource theory (Cools & Kotsadam, 2017), when men react negatively to women's economic dependence, leading to abusive behaviors to retain control. Men's refusal to share their earnings may serve as an example of marital dependence theory, or men's greater ability to use abusive behaviors due to household- and societal-level factors which privilege men's earning capacity over women's (Eggers Del Campo & Steinert, 2022; Kalmuss & Straus, 1982). Researchers across contexts should consider using measures which capture both patterns of economic abuse.
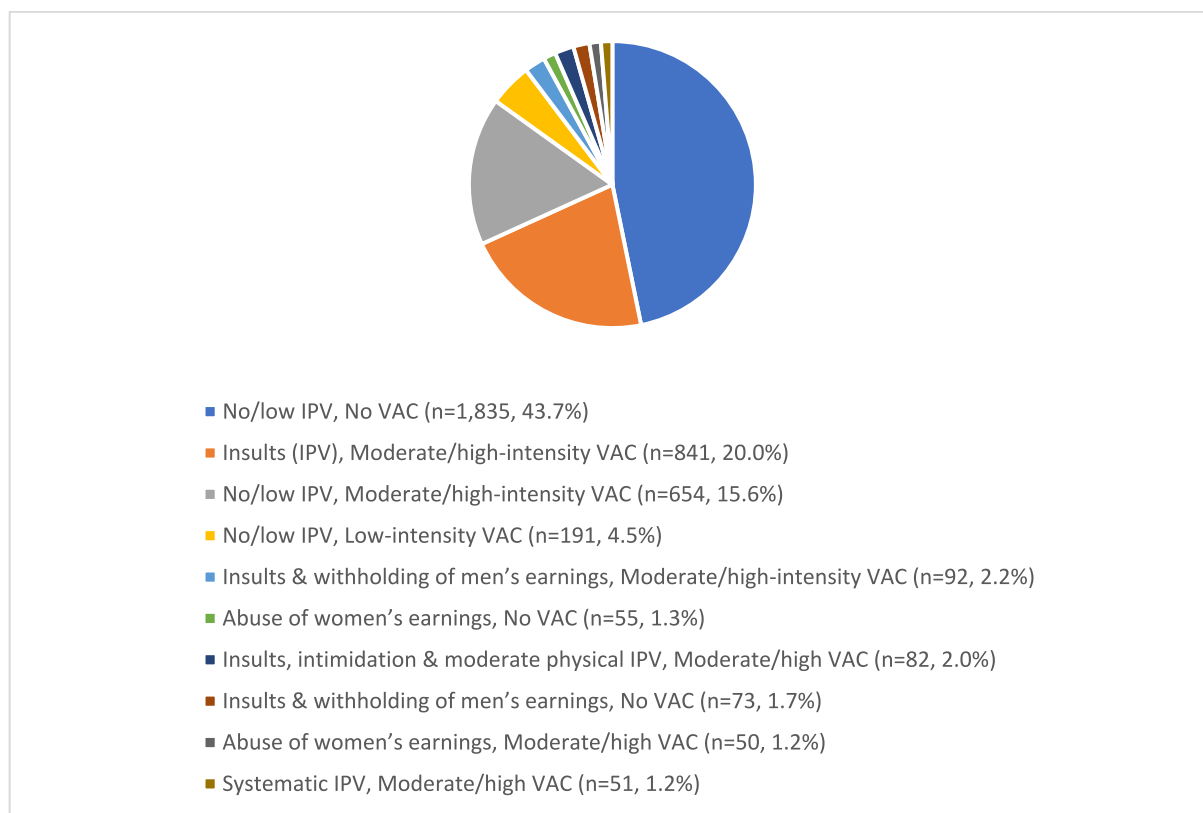
Fig. 4. Ethiopia: Proportion of caregiver-adolescent dyads in overlapping intimate partner violence (IPV) and violence against children (VAC) latent classes (N = 4195).

Additionally, initiatives which transfer cash directly to women, encourage women to earn an independent income and/or remove structural barriers to women's economic independence and mobility within the workplace may reduce the need to rely on a male partner to share money and thus remove the need to access men's earnings (e.g. Hidrobo & Fernald, 2013). However, these interventions may not address men's interference with women's ability to work or use their own earnings without components which specifically discourage these behaviors (Ismayilova et al., 2018). Women's empowerment initiatives need to integrate families and partners to prevent economic IPV and its mental health sequela, as both abuse of women's earnings and male partners financial withholding were shown to be associated with women's suicidal ideation in South Africa (Gibbs et al., 2018). For monogamous women, combining women's economic empowerment activities with a family-focused child rights curriculum may intervene on both forms of abuse by reducing women's emotional IPV exposure and increasing financial autonomy (Ismayilova et al., 2018); intervention models should also be explored for polygamous women. Large-scale social protection interventions such as national cash transfer programs have been found to reduce women's exposure to IPV when the amount of transfer is sufficient to lift families above the poverty line (Blofield et al., 2022); addressing economic issues such as food insecurity may also reduce VAC (Cluver et al., 2020) and future research should examine impacts on both forms of violence within the home.

Furthermore, this study confirms that children living in families where women experience IPV are likely to experience both physical and psychological violence, whereas women living in homes where children experience VAC are not necessarily more likely to experience IPV. Presence of VAC without IPV was a common pattern of family violence in DRC and South Africa, comprising 32.7 % and 46.3 % of families, respectively. Specifically, children in these families had near-universal probability of experiencing psychological aggression. In contrast, no patterns in these two countries were characterized by IPV in the absence of VAC. In Ethiopia, a very small proportion of women who experienced IPV had children who did not report VAC. A study in Uganda using children's report of witnessing IPV similarly found that nearly all children who reported witnessing IPV also reported experiencing VAC (Devries et al., 2017). This may be partially due to children's high risk of violence exposure across contexts: a 171-country analysis found that 60 to 70 % of children aged 2–14 experienced emotional violence, and 40 to 60 % experienced physical violence, from caregivers in a 12-month period (Devries et al., 2018). As such, expanding parenting programs to include content on IPV may be an appropriate strategy for addressing overlapping violence (Digolo et al., 2019). Additionally, child protection organizations should anticipate presence of IPV in a portion of families accessing child maltreatment services and may be able to stop intergenerational cycling of violence by facilitating mental health service access for both caregivers and children (Dittmann et al., 2024). Addressing social norms which condone use of physical violence as a disciplinary strategy both inside and outside the home may prevent IPV and VAC. Promising
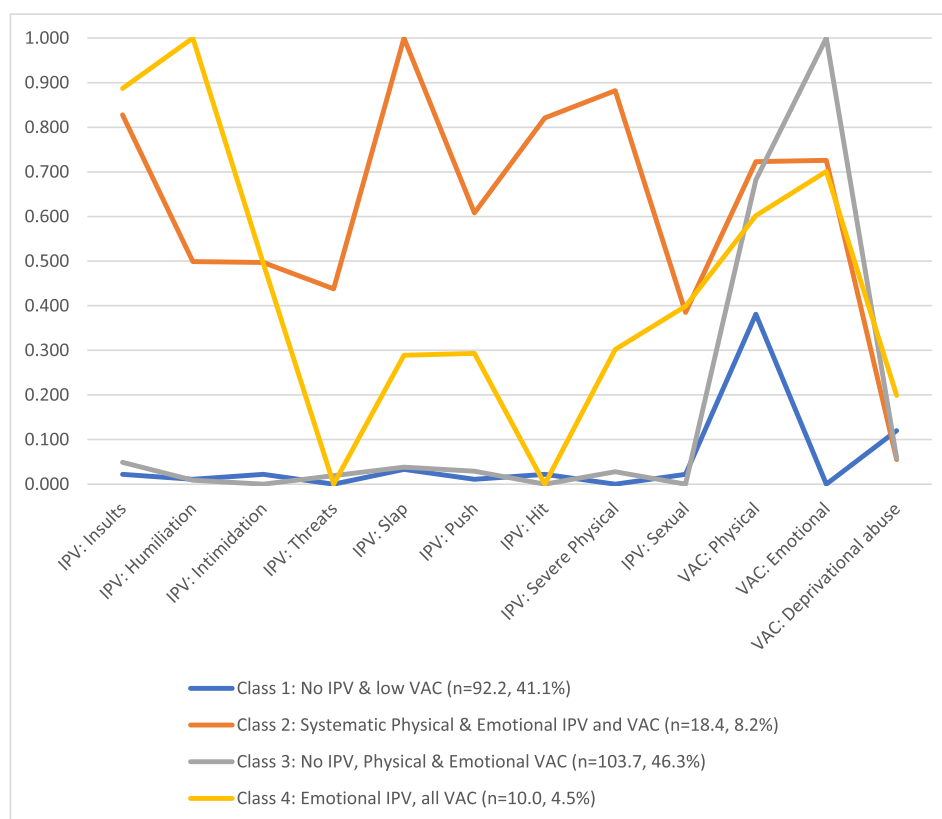
Fig. 5. South Africa: Latent class patterns of overlapping intimate partner violence (IPV) and violence against children (VAC), N = 224 female caregiver-child dyads surveyed 2022–2024.

norms-shifting strategies include reflection and dialogue processes to encourage gender-equitable attitudes with influential community leaders such as clergy and skill-building to share messages supporting gender equality and discouraging violence through spheres of influence (Boyer et al., 2022; Le Roux et al., 2020). Given the high exposure to psychological aggression across contexts in the present study, such interventions should directly address psychological VAC alongside other forms of IPV and VAC. Further research on predictors of latent class membership may illuminate additional risk factors for intervention.

Study limitations include limited VAC measures, small sample sizes, and differing domains of IPV and VAC across studies. In Ethiopia, children's surveys included only one item per VAC domain, precluding ability to gauge overlap between types of violence experienced within each domain. In DRC, small sample size precluded examination of items on physical and emotional VAC as separate indicators. Additionally, source studies in DRC and Ethiopia did not ask about caregiver-perpetrated child sexual abuse exposure and children's report of such abuse in South Africa was negligible, which reflect global measurement gaps of child sexual abuse (Devries et al., 2018). Inclusion of child sexual abuse and multiple items per abuse domain in future studies may provide a more comprehensive assessment of children's VAC experiences. Additionally, differing study designs and items for both VAC and VAC, such as exclusion of economic IPV victimization in DRC and South Africa, hampers efforts to establish pooled prevalence across studies. While limitations of self-reported data include under-reporting and recall bias, self-report is considered a valid measure of exposure to interpersonal violence and this study used shorter time-bound measures (e.g. past twelve or three months) to facilitate accurate recall. Furthermore, since these were secondary analyses and Ethiopia and South Africa studies did not ask children to report on violence perpetrated specifically by the female caregiver interviewed, this study cannot make a causal determination between women's IPV exposure and VAC perpetration, but does allow for holistic examination of children's exposure to violence in homes where their primary female caregiver experiences IPV. Future research may uncover greater nuance in understanding of overlapping IPV and VAC by including questions to women which allow for reporting on exposure to violence from other family members such as in-laws and to children that allow for reporting on experiences with multiple caregivers, and triadic research which includes questions to men in caregiving roles. Additionally, as these studies were cross-sectional, longitudinal research may illuminate whether such patterns may be consistent over time.

Even so, this study demonstrates the importance of a holistic approach to understand and unpack the nature of family violence, with inclusion of emotional and economic IPV. Importantly, despite differences in study methodologies and items, this study found shared patterns of overlapping IPV and VAC between adult women and children in their care across three contexts in Africa. Family-focused interventions to jointly prevent IPV and VAC which combine gender equality content with parenting and socio-emotional

coping and communication skills show promise in reducing both forms of violence in the home (Ashburn et al., 2017; Falb et al., 2023); our findings demonstrate the importance of including content on emotional IPV and VAC within violence prevention programming. Research in DRC and South Africa shows that IPV prevention interventions may have greater effects in homes with more severe forms of IPV (A. Gibbs et al., 2020; Gurbuz Cuneo et al., 2023), and analyses of family-focused interventions by baseline patterns of overlapping IPV/VAC may illuminate for which families such interventions are most effective. Given the resource-intensive nature of discussion-based programming, exploration of scaling-suitable core components for adaptation into radio or television programming may expand reach to larger groups of families, including men and rural dwellers (Ishengoma, 2024). Radio and brief television programming shows promise in shifting attitudes towards gendered violence and transactional sex (Donati et al., 2022; Pichon et al., 2022; Yount et al., 2023) and carefully designed web-based programs may mitigate use of violence (Yount et al., 2023). Additionally, investment in coordinated and integrated psychosocial, medical, and case management support services, capacity-building to identify and provide support to both adults and children experiencing abuse at service delivery points which primarily serve either women or children such as antenatal care, primary health care, or child immunization visits, may strengthen national capacities to respond to the true nature of IPV and VAC within households.

In conclusion, IPV and VAC co-occur in patterns beyond those identifiable through a four-category measure. Including children's self-report of VAC exposure where possible, and emotional and economic IPV, may reduce risk of misclassification and improve identification of appropriate solutions to address violence in the home. Addressing shared social norms which sustain IPV and VAC, expanding parenting interventions to address IPV, investing in social protection and the social service workforce, and ensuring mental health service access for families involved in child protection services, may holistically prevent violence and support women and children experiencing violence in the home.

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CRediT authorship contribution statement

Khudejha Asghar: Writing – original draft, Methodology, Formal analysis, Conceptualization. **Nicola Christofides:** Writing – review & editing, Supervision, Funding acquisition, Data curation. **Kathryn Falb:** Writing – review & editing, Funding acquisition, Data curation. **Nicola Jones:** Writing – review & editing, Funding acquisition, Data curation. **Franziska Meinck:** Writing – review & editing, Supervision, Funding acquisition, Data curation.

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Data availability

GAGE data available via UK Data Service; Interrupt_Violence and Safe at Home data available on reasonable request and permission from Principal Investigators.

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