Drought increases the risk of violence exposure against adolescents: findings from the VAC surveys in five Southern African countries.

Authors:

Dr. Bothaina Eltigani,

Dr. Roman Hoffman,

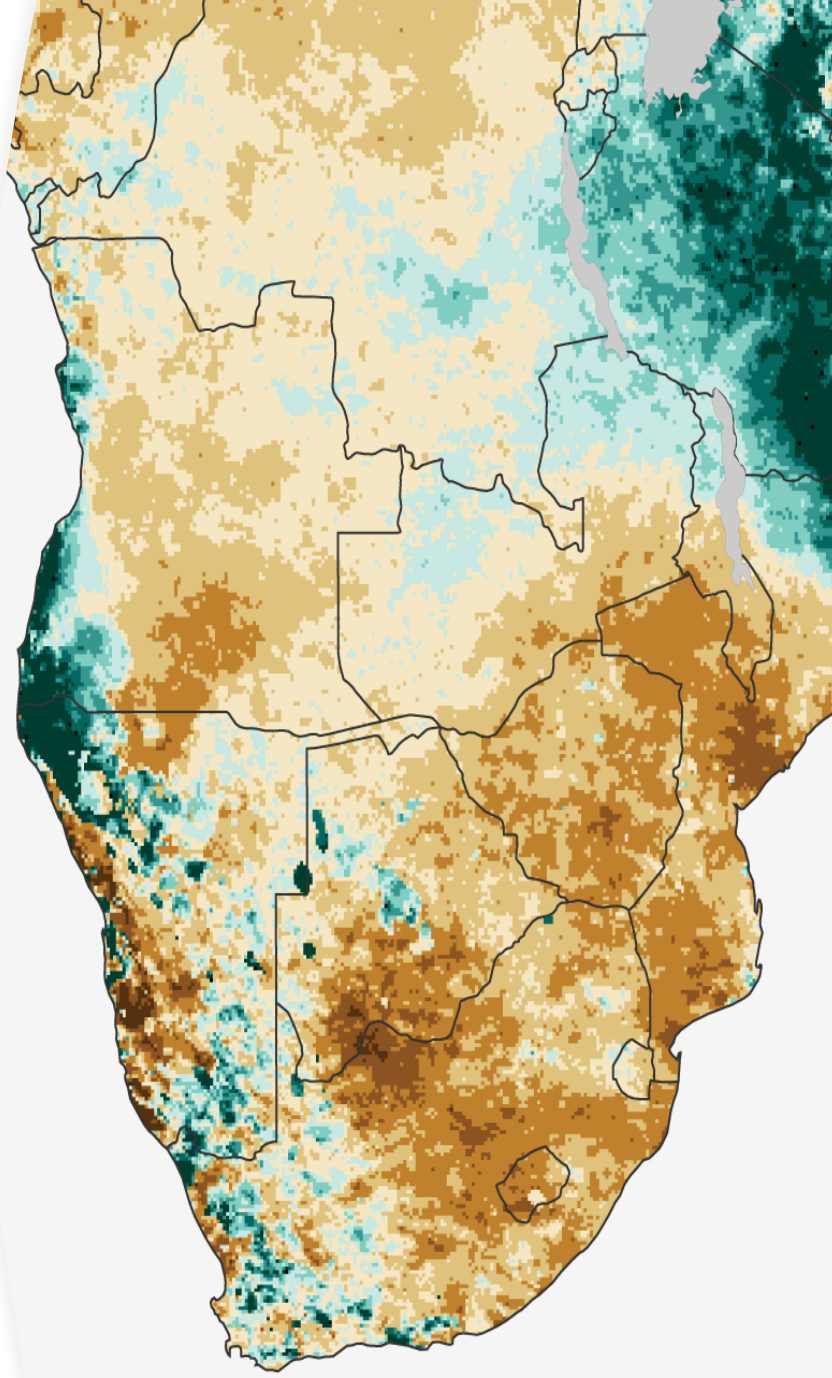
Prof. Lucie Cluver.

Background – Global evidence

- **The climate crisis is a significant global issue**, according to the IPCC, 3.7 billion people are at risk from climate-related disasters, including droughts, floods, heatwaves, and landslides.
- **Droughts, in particular, carry harmful consequences:** reduced agricultural productivity, water scarcity, the death of livestock, loss of livelihoods and forced migration.
- **Threat multiplier:** This exacerbates existing vulnerabilities and creates conditions that foster the perpetration of violence.
- **Adolescents are particularly at risk** as they go through a critical period of development, characterized by rapid physical, social, emotional, and cognitive growth, deeming them sensitive to adversities and environmental shocks.

Droughts in Southern Africa

- **El-Niño is a climatic phenomenon characterised by warming of sea surface temperatures** in the central and eastern equatorial Pacific Ocean. Changes in atmospheric pressure which disrupts weather patterns in the Southern region of Africa leading to reduced rainfalls and increased temperatures represented in drought and heatwaves.
- **As 70% of the Southern African region depends on rain-fed agriculture** for food, income and employment. This translates to crops failure, livestock losses, and water shortages aggravating poverty and food insecurity.
- **Against a background of disproportionate violence** rates against adolescents, this warrants a careful investigation of the climate violence nexus in this region.



Problem

01

Despite the importance of adolescence as a period of social and cognitive development, the growing body of research on the climate and violence nexus **has not yet explored the victimisation impacts on this age group (13-24)**.

02

While emerging research has focused the impact of drought on GBV, **almost no quantitative evidence exists on** other forms of violence including **emotional and physical.**

03

The age and gender specific impacts of droughts on the risk of violence are still unknown, as well as the **role of rural residence**. This study aims to fill these gaps.

Research objectives

- To understand the relationship between drought and violence against adolescents (sexual, physical and emotional) in Lesotho, Zimbabwe, Namibia, Mozambique and Zambia.
- To determine whether gender, age and rural residence influence the relationship between drought and violence.

Variables of interest and definitions:

Type	Variable name	Definition
Outcome	**Sexual violence**	Participants were asked whether they experienced **any completed, attempted, and unwanted non-consensual sex acts.** Including any **unwanted sexual touching, unwanted attempted sex, pressured or coerced sex, or physically forced sex in the past year** by any perpetrator.
	Emotional violence	Participants were asked whether they were **told that they wished they were never born or dead.** They were asked whether they were **insulted, humiliated and/or threatened to be physically harmed.**
	Non-partner physical violence	Participants were asked if they were exposed to **intentional use of physical force with the potential to cause death, disability, injury or harm** perpetrated by a caregiver, or community members or peers.
	Physical IPV	Participants were asked if they were exposed to **intentional use of physical force with the potential to cause death, disability, injury or harm** perpetrated by an intimate partner.
Confounding factors	Age, gender, Head of household (Female), Rural residence, living in Informal settlement, Education attainment.	

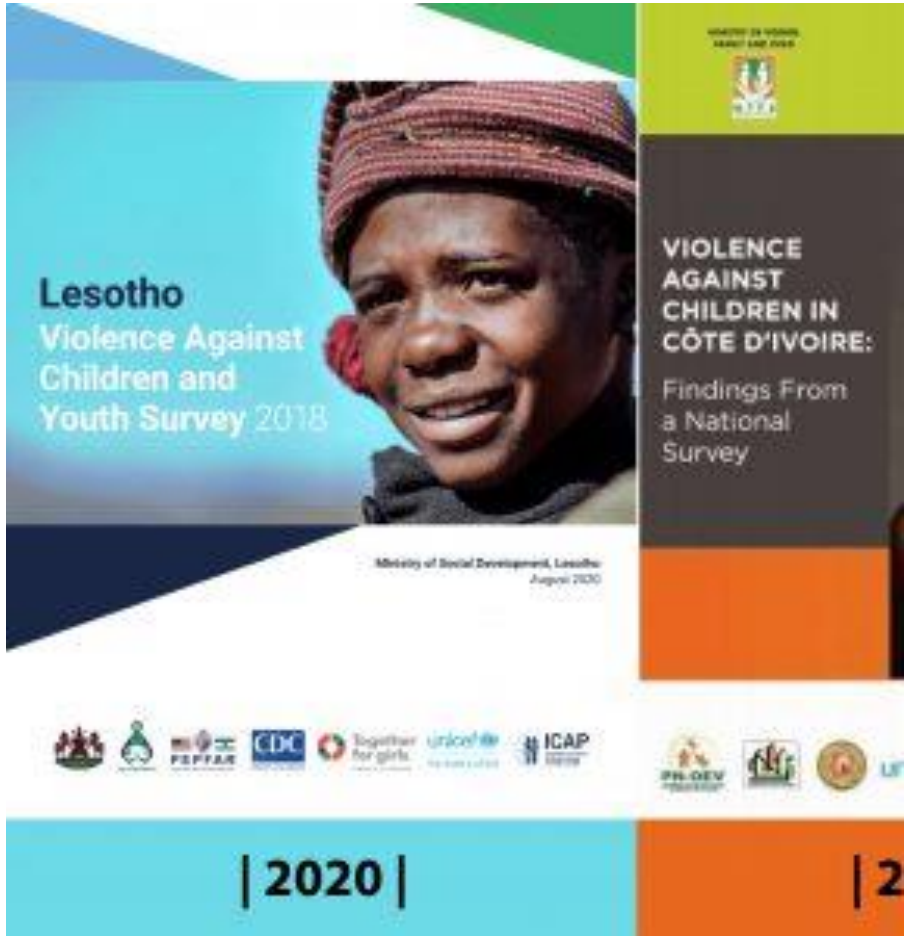
Drought measure: Standard Precipitation and Evapotranspiration Index (SPEI)

- **PDSI** uses temperature and precipitation data to estimate relative dryness, cannot capture short term drought, not comparable across regions.
- **SPI**, recommended by WHO, captures short- and long-term drought, comparable across regions. Cons: depends on precipitation only, doesn't capture increased temperature.
- **SPEI** (Vicente et al): a new index that combines the multiscalar feature of SPI while accounting for both precipitation and evapotranspiration. Short and long term, comparable across regions (climate change).
- Only con: requires more data to be calculated than SPI.

Methodology

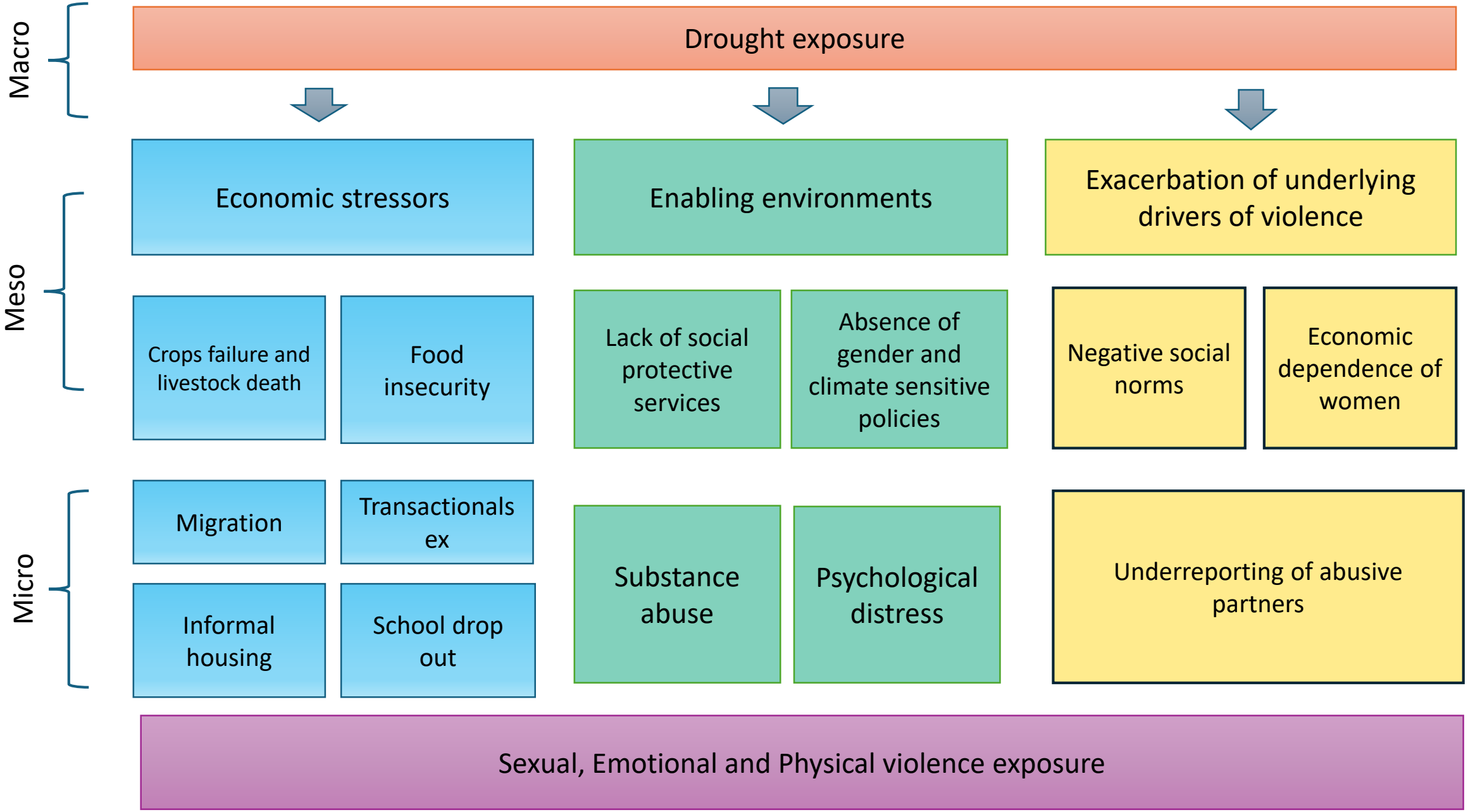
Data used:

- **The Violence against Children Surveys (VACS)** are cross-sectional nationally representative household surveys of non-institutionalised females and males aged between 13-24 years. The surveys are designed to measure the burden of childhood sexual, physical, and emotional violence.
- Host countries assign key experts in violence against children to contextualize the questionnaires according to country-specific factors.
- The study includes data for **27,200 participants** from five Southern African countries: **Lesotho, Zimbabwe, Namibia, Mozambique, Zambia.**



Theories and conceptual framework

- **Feminist political ecology theory**
    - Recognises the differential vulnerabilities and experiences of women and girls in environmental change contexts, emphasising their roles as both agents and subjects of environmental change.
    - Highlights the importance of understanding how gendered power structures shape responses to environmental stressors. Represented in disparities in labour routines, and their inaccessibility to climate resilience resources and protective services.
    - Also including the potential escalation of violence within households and communities.



Adapted from a conceptual framework of hypothesised pathways from natural disasters to VAGW by Thurston AM et al. to align with Drought as the main exposure. here

Methodology

- **Study design:** Multi-country, cross-sectional study.
- **Analysis plan:**
  - Exploratory data analysis: descriptive statistics and visualisation.
- **Regression analysis:**
  - Multivariable logistic regression to assess the relationship between drought and violence exposure adjusting for individual and household-level covariates.
  - Country fixed effects included to control for unobserved heterogeneity and potential bias that could arise from within country differences such as demographic characteristics, social norms and country economies.
  - Robust standard errors at the cluster level applied to account for the nested nature of the datasets.

Geospatial analysis

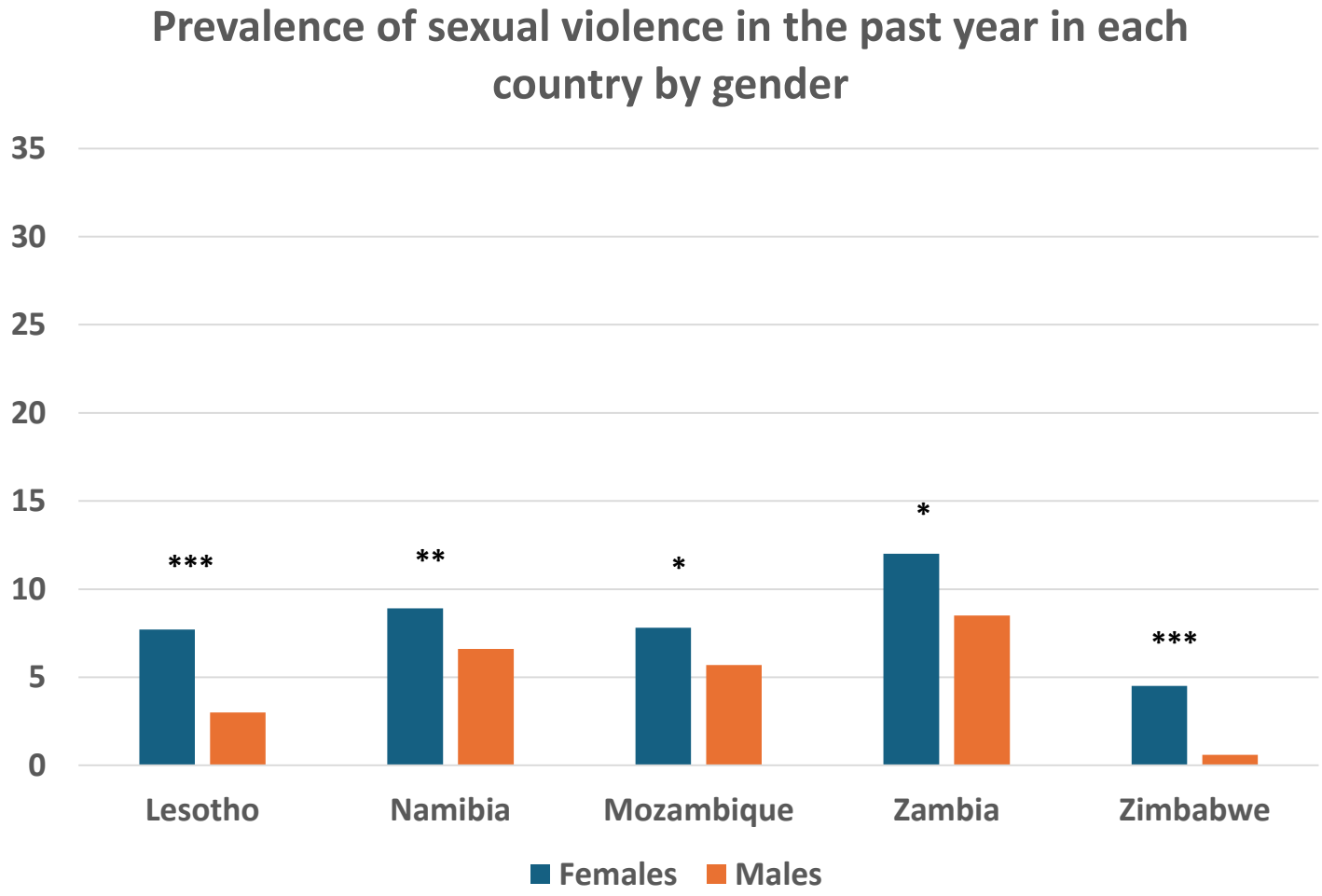
- Shapefiles (spatial boundaries) of the five countries were loaded in R and merged together.
- Merging of shapefiles and SPEI data on the admin level 1.
- Merging the (drought datasets + shapefiles) with the pooled survey data based on common identifiers: id.country, id.region, id.month, id.year.

Table 1. Baseline characteristics of study sample

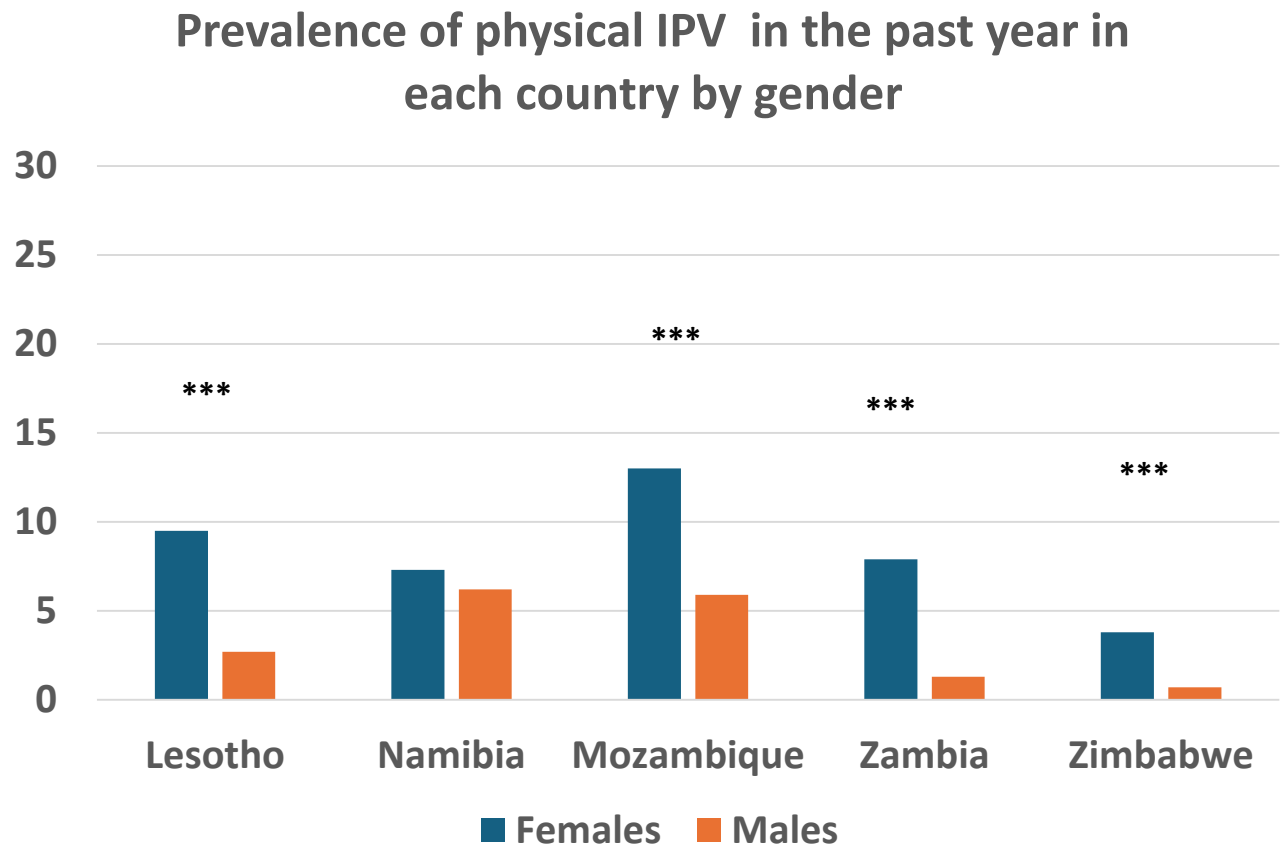
Characteristic	Overall, N = 27,200[1]
Sex	
Males	5,009 (18%)
Females	22,191 (82%)
Mean Age	18.2 (13.0, 24.0)
Mean drought	0.67 (0.70)
Residence	
Urban	9080 (40%)
Rural	13620 (60%)

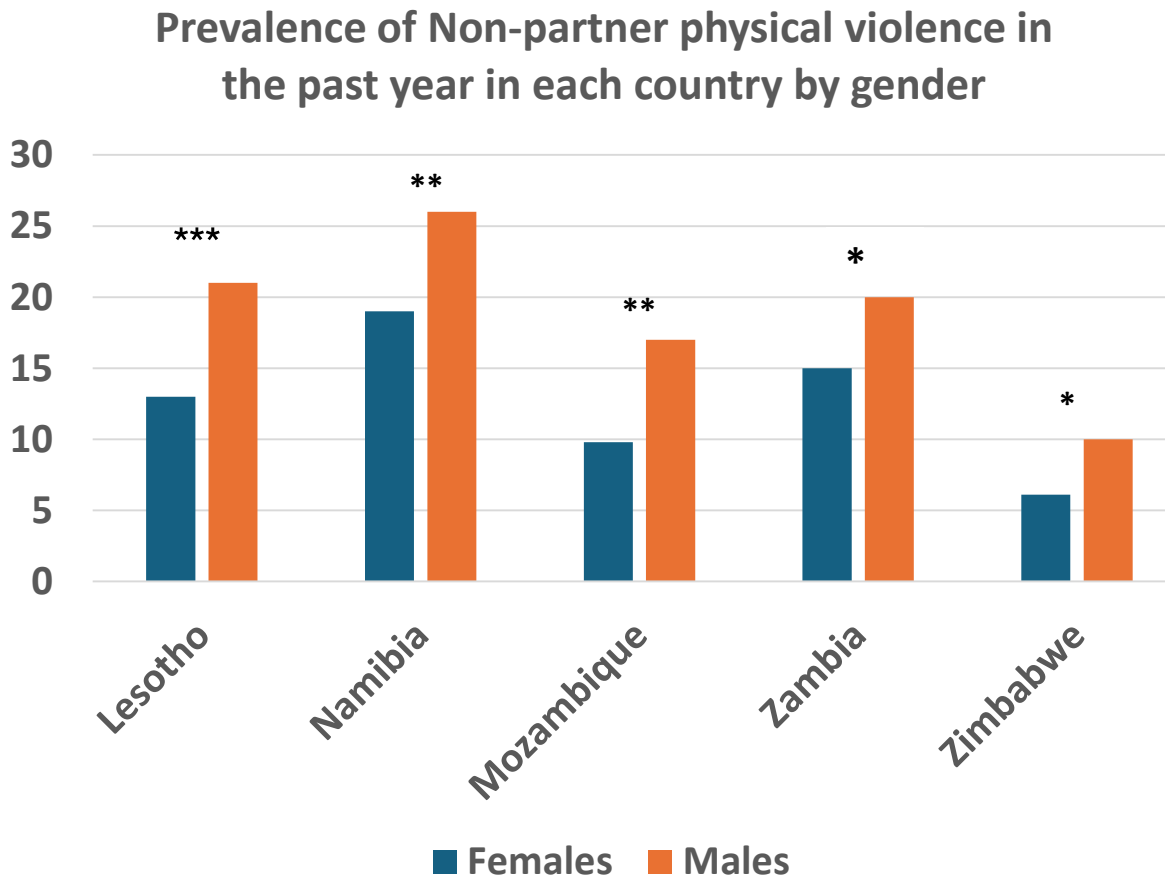
Results

- Figure 1. Descriptive statistics of violence prevalence and drought exposure in five countries:

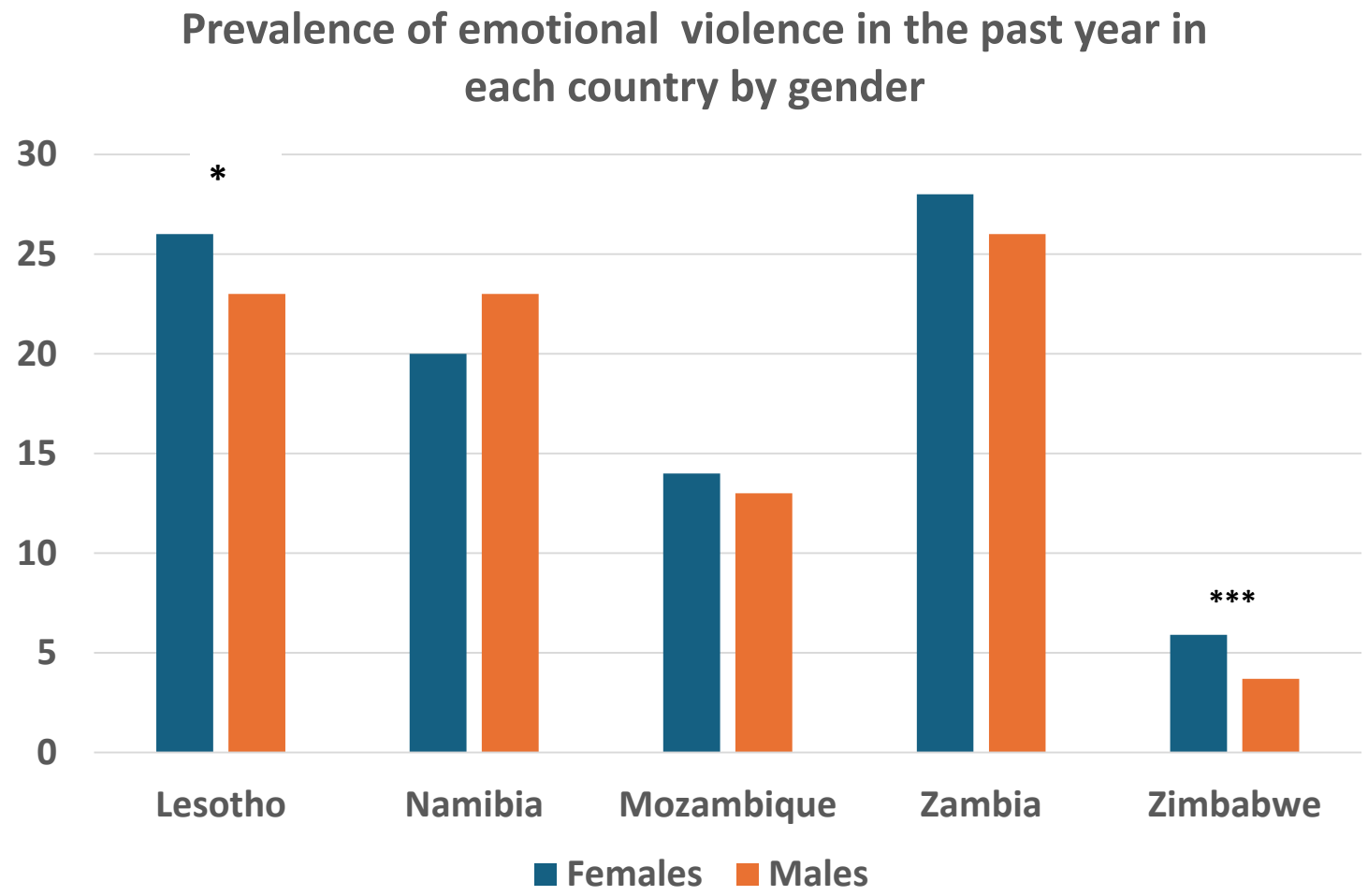


- Figure 2. Descriptive statistics of violence prevalence and drought exposure in five countries:





- Figure 3. Descriptive statistics of violence prevalence and drought exposure in five countries:



- Table 1. Multivariable logistic regression of Mean drought (SPEI) exposure and the risk of experiencing, any, sexual, physical, and emotional violence in the past year against adolescents in five Southern African countries. N = 27,200.

	Any violence	Sexual violence	Emotional violence	Non-partner physical violence	Physical IPV
Mean drought	**1.214** [1.077, 1.368]**	0.973 [0.810, 1.169]	**1.282** [1.103, 1.490]**	1.106 [0.945, 1.294]	**1.182** [1.041, 1.342]**
Sex (Female)	0.967 [0.859, 1.087]	1.787*** [1.490, 2.142]	1.050 [0.911, 1.210]	0.553*** [0.482, 0.635]	0.840** [0.744, 0.948]
Age group (18-24)	0.889*** [0.835, 0.948]	1.135* [1.012, 1.274]	0.812*** [0.749, 0.881]	0.371*** [0.339, 0.406]	0.771*** [0.715, 0.831]
Rural residence	0.745*** [0.669, 0.829]	0.560*** [0.486, 0.646]	0.699*** [0.616, 0.792]	0.793*** [0.697, 0.902]	0.850** [0.766, 0.943]
Head of household (Female)	1.027 [0.967, 1.092]	1.164** [1.048, 1.294]	0.995 [0.924, 1.071]	1.132** [1.046, 1.225]	1.038 [0.968, 1.112]
Informal housing	1.005 [0.896, 1.127]	0.845 [0.712, 1.003]	0.883 [0.770, 1.012]	1.110 [0.953, 1.293]	1.199** [1.050, 1.370]
Education attainment	1.034 [0.957, 1.116]	0.919 [0.799, 1.058]	1.053 [0.962, 1.153]	0.768*** [0.683, 0.864]	1.137** [1.037, 1.247]

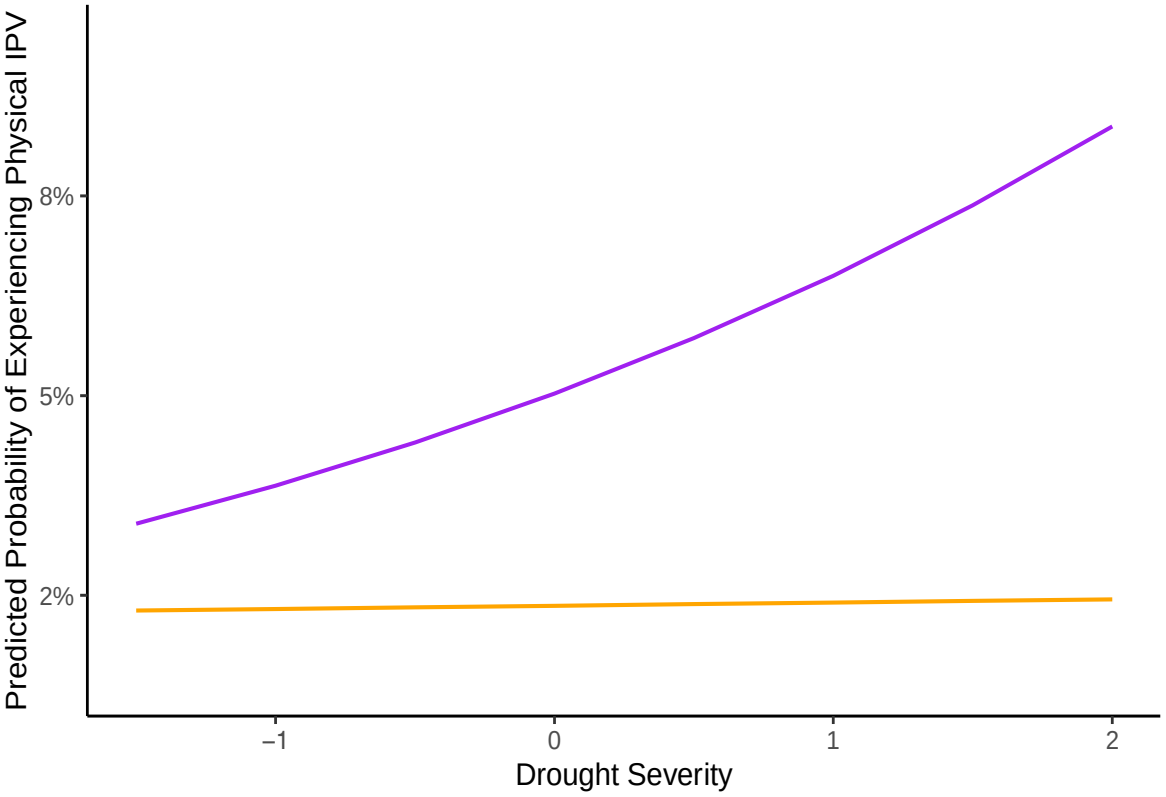
- Table 2. **Gender moderation** of multivariable logistic regression of Mean drought (SPEI) exposure and the risk of experiencing violence in the past year against adolescents in five Southern African countries. Gender as interaction term.

	Any violence	Sexual violence	Emotional violence	Non-partner physical violence	Physical IPV
SPEI drought anomaly x Female	0.945 [0.811, 1.101]	**1.245* [1.011, 1.534]**	0.984 [0.835, 1.160]	0.920 [0.784, 1.080]	**1.291* [1.029, 1.621]**
Mean drought	1.221* [1.043, 1.430]	**0.771* [0.618, 0.964]**	1.245* [1.038, 1.493]	1.231* [1.043, 1.454]	**1.017 [0.808, 1.281]**
Sex (Female)	1.904*** [1.356, 2.673]	1.757* [1.050, 2.938]	2.213*** [1.440, 3.399]	1.664* [1.125, 2.461]	**2.181*** [1.713, 2.777]**

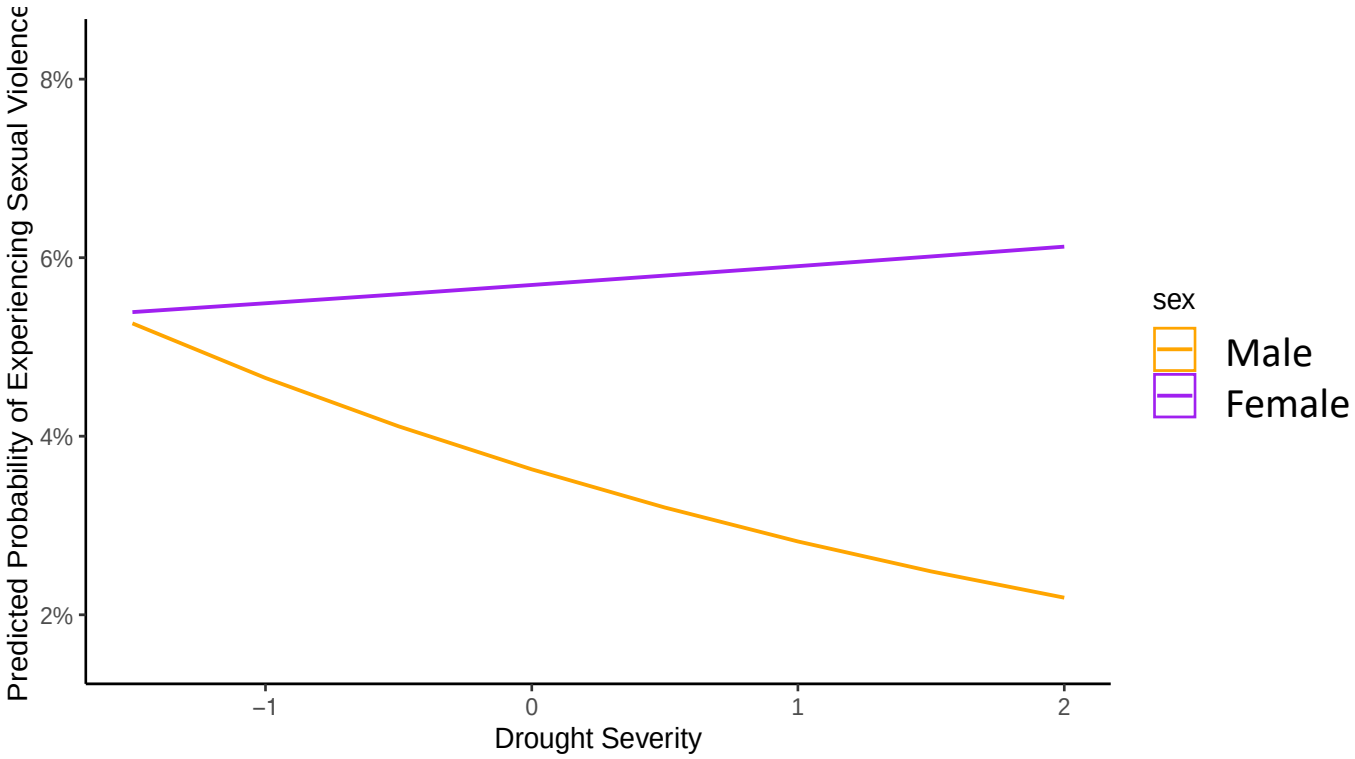
N.B: Model controls for: Age, rural residence, Head of Household (female), informal housing and education attainment.

Figure.4: **Gender moderation analysis**

- Figure 4. Marginal effects of physical IPV risk in drought settings



- Figure 5. Marginal effects of sexual violence risk in drought settings



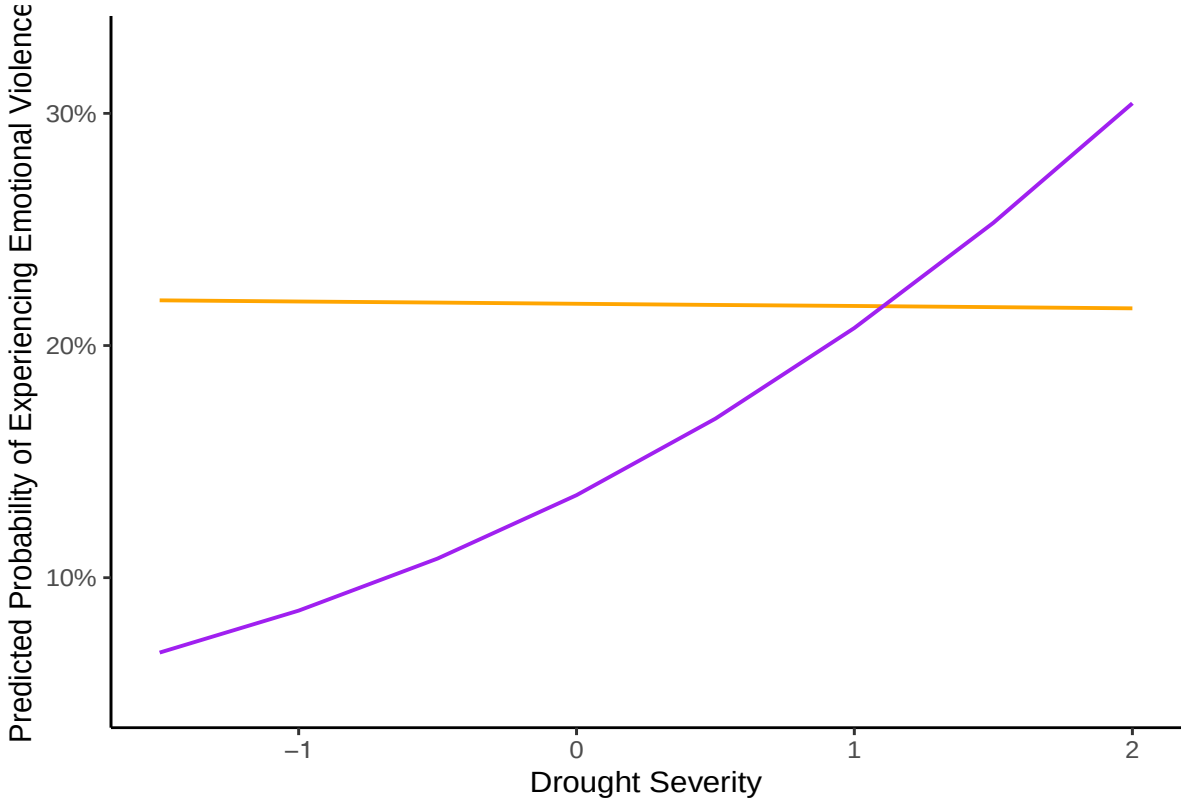
- Table 3. **Age moderation analysis** of multivariable logistic regression of Mean drought (SPEI) exposure and the risk of experiencing violence in the past year against adolescents in five Southern African countries.

	Any violence	Sexual violence	Emotional violence	Non-partner physical violence	Physical IPV
SPEI drought anomaly x Age Group (17-18)	**1.227*** [1.130, 1.333]**	**1.237** [1.064, 1.438]**	**1.680*** [1.519, 1.857]**	0.966 [0.856, 1.091]	0.967 [0.790, 1.185]
Mean drought	0.886 [0.744, 1.055]	0.696* [0.514, 0.943]	0.592*** [0.483, 0.725]	1.159 [0.916, 1.467]	1.338 [0.884, 2.025]
Age Group	0.789*** [0.724, 0.860]	1.000 [0.866, 1.155]	0.562*** [0.504, 0.627]	0.379*** [0.337, 0.427]	4.898*** [3.970, 6.044]

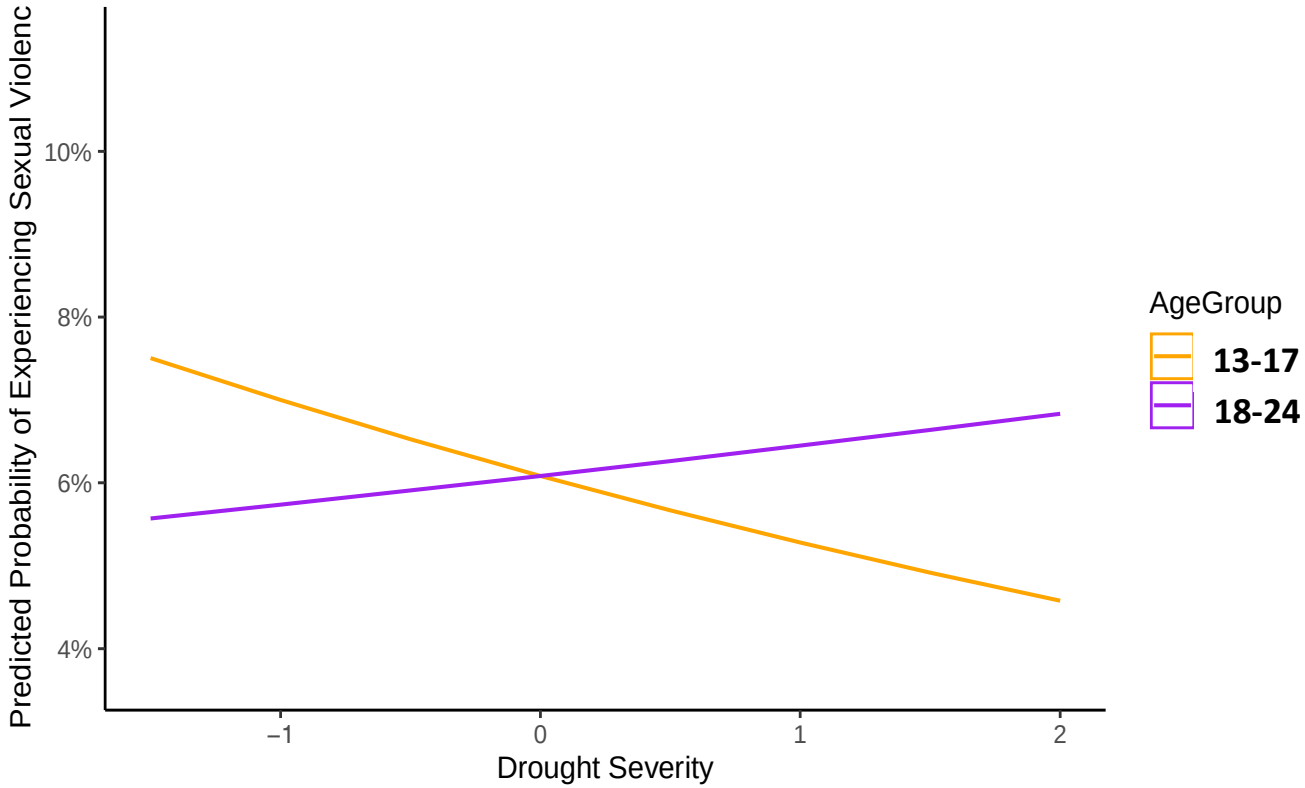
N.B: Model controls for: Age, rural residence, Head of Household (female), informal housing and education attainment.

Figure.5: **Age moderation analysis**

- Figure 6. Marginal effects of emotional violence risk in drought settings



- Figure 7. Marginal effects of sexual violence risk in drought settings

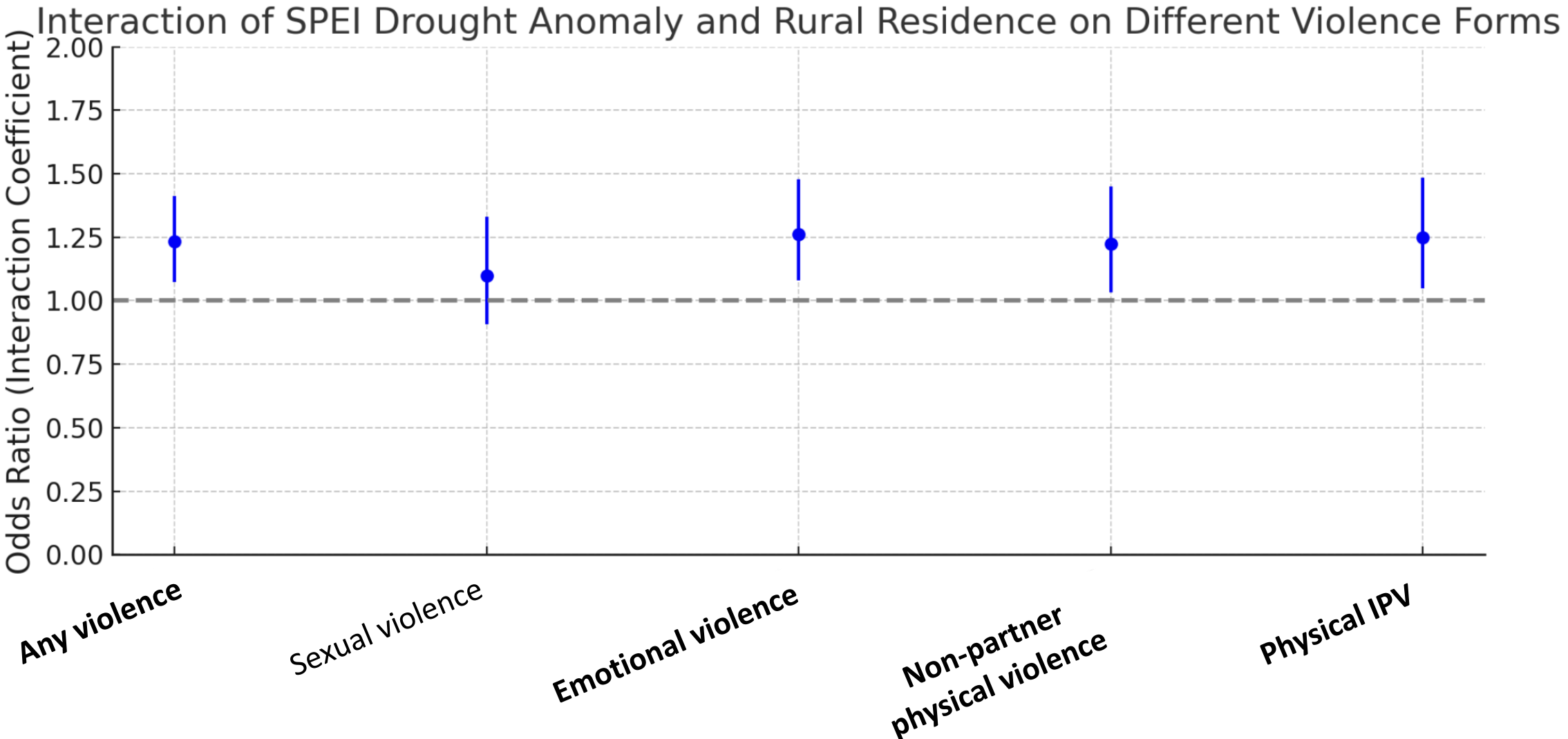


- Table 4. **Rural residence moderation analysis** of multivariable logistic regression of Mean drought (SPEI) exposure and the risk of experiencing violence in the past year against adolescents in five Southern African countries.

	Any violence	Sexual violence	Emotional violence	Non-partner physical violence	Physical IPV
SPEI drought anomaly x Rural residence	**1.232** [1.075, 1.413]**	1.098 [0.906, 1.330]	**1.263** [1.081, 1.477]**	**1.225* [1.034, 1.451]**	**1.248* [1.049, 1.486]**
Mean drought	1.057 [0.914, 1.223]	0.922 [0.755, 1.125]	1.117 [0.940, 1.327]	0.973 [0.809, 1.171]	1.080 [0.885, 1.318]
Rural residence	0.639*** [0.561, 0.729]	0.524*** [0.435, 0.632]	0.584*** [0.502, 0.679]	0.689*** [0.586, 0.811]	0.764** [0.638, 0.915]

N.B: Model controls for: Age, rural residence, Head of Household (female), informal housing and education attainment.

Figure.6: **Rural residence moderation analysis**



Key takeaways:

- **Drought significantly increases the risk of violence exposure**. Specifically, any, emotional, non-partner physical violence, and physical IPV in the whole sample of adolescents.
- Compared to boys, **girls living in drought** settings are **30.56% more at risk for sexual violence.**
- **Older adolescents** are more at risk for **sexual and emotional violence**.
- **Rural residence exacerbates adolescents vulnerability to violence** exposure during conditions of drought as it increases the risk of all violence forms except sexual violence.

Recommendations

- Adopt interdisciplinary programming by integrating climate adaptation measures, social protection and violence prevention interventions.
- Scale up access to gender-responsive and age-specific climate and violence prevention interventions to support adolescents and their households, and prioritising those in rural areas.
- Need for more evidence examining the mechanisms and risk pathways between drought and violence exposure to inform evidence-based policies.

Thank you!

Bothaina.Eltigani@reuben.ox.ac.uk