

Spousal Violence in Sub-Saharan Africa: Structure, Forms, and Levels

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Session 177: Methodological Innovations in Intimate Partner Violence Research
Population Association of America Annual Meeting

May 1-3, 2014

Boston, MA

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Abstract

This study uses factor analysis of data from 12 Demographic and Health Surveys (DHS) in sub-Saharan Africa to understand the underlying structure of items related to spousal violence in the data and determine if these structures are similar or dissimilar across study countries. In spite of variation in the prevalence of the various forms of spousal violence, there is remarkable consistency in the factor structure and the item-factor structure of spousal violence. Three factors emerge in study countries: (1) emotional and physical violence, (2) sexual violence, and (3) marital control. Further analysis provides evidence that emotional and physical violence comprises two sub-factors, as does marital control. These findings generally uphold the face validity of the categories of emotional, physical, or sexual violence to which experts have previously assigned items. Our analysis provides another important insight: the six items typically categorized as marital control may represent not one, but two concepts—suspicion and isolation,—both of which are distinct from the categories of emotional, physical, or sexual violence.

This study was carried out with support provided by the United States Agency for International Development (USAID) through the MEASURE DHS project (#GPO-C-00-08-00008-00). The views expressed are those of the authors and do not necessarily reflect the views of USAID or the United States Government.

Background

A large and growing body of literature examines patterns and trends in intimate partner violence as a phenomenon in its own right (Alhabib, Nur, and Jones 2010; Garcia-Moreno et al. 2006; Hindin, Kishor, and Ansara 2008; Kishor and Bradley 2012; Kishor and Johnson 2004), as well as the association intimate partner violence may have with broad range of health outcomes. These health outcomes include mental health and/or substance abuse (Ellsberg et al. 2008; Fals-Stewart and Kennedy 2005; González-Guarda, Florom-Smith, and Thomas 2011; Meyer, Springer, and Altice 2001), sexually transmitted infections and HIV (Barros, Schraiber, and França-Junior 2011; Campbell et al. 2008; Decker, Seage, Hemenway, Gupta, et al. 2009; Dude 2011; Jewkes et al. 2010; Kishor 2012; Raj et al. 2008; Silverman et al. 2007), and contraceptive use and other reproductive outcomes (Hindin, Kishor, and Ansara 2008; Krug et al. 2002; Speizer et al. 2009; Stephenson, Koenig, and Ahmed 2006; Swan and O'Connell 2011; Tello et al. 2008; Watts and Mayhew 2004).

Survey data on intimate partner violence is usually collected according to an inventory of individual acts or behaviors that a woman (or man) may experience. These unique items have to be summarized in some way to provide indicators of violence for measuring prevalence or conducting analysis and are done so in a variety of ways. One common approach is to count women as having experienced violence if they respond yes to having experienced even one act, thereby converting a large number of items into a single binary indicator (e.g., Kishor 2012; Maman et al. 2010; Miner et al. 2011). This indicator is based on the assumption that the experience of any act/behavior versus no act/behavior is more meaningful which specific act/behavior or how many acts/behaviors are experienced.

Another approach uses a simple additive index (sometimes referred to as a naïve index) that is a count of the number of violence items experienced. One variation is to sum the number of items experienced, then use the mid-point to categorize women into “high” and “low” groups (e.g., Kayibanda, Bitera, and Alary 2012). Although the assumption underlying this indicator is that there is a meaningful distinction between the experience of more and fewer violence items, the indicator gives equal weight to each act/behavior (DiStefano, Zhu, and Mindrila 2009).

Definitions of forms of violence vary as well, with some studies investigating a single form, such as physical violence (e.g., Decker, Seage, Hemenway, Raj, et al. 2009; Ghosh et al. 2011). Others examine multiple forms of violence, such as physical and/or sexual violence (e.g., Andersson and Cockcroft 2012; Hindin, Kishor, and Ansara 2008; Kishor 2012; Silverman et al. 2007). In so doing, researchers may either combine or keep multiple forms of violence as separate categories. Less frequently considered is the experience of emotional or psychological violence¹ or of controlling behaviors (also referred to as marital control) (Barros, Schraiber, and França-Junior 2011; Ellsberg et al. 2001; Kayibanda, Bitera, and Alary 2012).

Heise notes that intimate partner violence research “privileges physical assault because it is easiest to measure and de-emphasizes emotional abuse because it is most difficult to measure and

¹ The terms “emotional violence” and “psychological violence” are often used interchangeably with no distinction between them.

interpret” (2013, p12). This exclusion may be due to perceptions that there is cultural variability in what defines “emotionally abusive acts” across different settings (Ellsberg and Heise 2005a). The inventory of items that is believed to comprise physical and sexual violence frequently contains behaviorally specific items, patterned after those included in the Conflict Tactic Scales (Straus 1979, 1990). Such items do not require the respondent to identify the behavior as abusive in order to report it, resulting in comparable estimates of the prevalence of the behavior wherever it occurs, regardless of whether or not it is construed as violence in that setting (Ellsberg and Heise 2005b; Hindin, Kishor, and Ansara 2008; Kishor and Bradley 2012). Such items also reduce underreporting of violence relative to single questions or those that require identifying an act as violence (Ellsberg et al. 2001). Accordingly, differences in the reported prevalence of violence across settings should represent true differences in the occurrence of the constituent behaviors and not variation in the cultural understanding of violence.

Items representing other forms of violence may require the respondent to recognize a particular behavior as emotional violence (for example) to report experiencing it. While this may better capture the experiences that are most meaningful to the respondent herself rather than the researcher, such items can result in an identical act being classified as violence in one case but not in another, and this may vary systematically by cultural setting. Accordingly, differences in the reported prevalence across settings may represent variations in the cultural understanding of violence, rather than true differences in the occurrence of violent acts. With these constraints in mind, Walby cautions of the need to balance “local specificity with international comparability” (2005, p10).

There is a general recognition that physical violence and/or sexual violence are frequently accompanied by emotional violence and controlling behaviors, as the various forms of abuse may all be employed as mechanisms to assert and maintain systems of gender-based power (Ellsberg and Heise 2005b; Watts and Mayhew 2004). Yet, a lack of consensus is revealed, with the literature alternately conceptualizing controlling behaviors as (1) a separate form of, or (2) a predictor of spousal violence, or (3) as a component of, usually emotional, violence (e.g., Tjaden 2004; Walby 2005; Watts and Mayhew 2004) and occasionally considering emotional abuse as a lesser form of violence (Saltzman 2994). Thus there are issues related to measurement, conceptualization, and cross-cultural validity that influence research on intimate partner violence.

The numerous acts and behaviors asked about in the DHS are organized into categories of physical, emotional, and sexual violence and controlling behaviors. Assigning acts/behaviors in this manner is based on the face validity of the items according to experts in the field. However, we are unaware of any analysis that determines conclusively whether this schema is validated by the data in the range of cultural settings in which the DHS module has been applied—for example, whether acts that other researchers consider to be physical violence share have more in common with each other than with acts that are often considered to be emotional or sexual violence. This study uses data from 12 DHS surveys in sub-Saharan Africa to uncover the underlying structure of items related to spousal violence, that is, intimate partner violence perpetrated against married/in-union women by their husband/co-habiting partner. We explore how many domains of violence occur in the data and which items comprise them. Further, we examine whether these violence domains are similarly structured in all study countries or whether they are culturally variable.

Method

Data and Sample

The data for this study come from 12 recent Demographic and Health Surveys (DHS) in sub-Saharan Africa: Gabon 2012, Ghana 2008, Kenya 2008-09, Liberia 2007, Malawi 2010, Mozambique 2011, Nigeria 2008, São Tomé and Príncipe 2008-09, Tanzania 2010, Uganda 2006, Zambia 2007, and Zimbabwe 2010-11. The DHS uses multistage cluster sampling techniques to obtain nationally representative samples. In the first sampling stage each country is stratified into major regions (or districts, in the case of Malawi 2010). Census-based enumeration areas are selected from these regions, with a probability of selection proportional to their size. The enumeration areas are then mapped and all households listed. In the second sampling stage, households are randomly selected from a list of all households within each selected enumeration area. Urban and less populated areas are typically oversampled to enable representative regional and rural-urban comparisons.

In addition to the core household and individual woman's questionnaire, the DHS has several additional modules that countries can include in a survey, including one specifically related to domestic violence. Recent sub-Saharan African surveys were considered for inclusion in the study if: (1) they were conducted in 2005 or later; (2) the data were publicly available by January 2014; and (3) they included the domestic violence module. Of the 18 countries with surveys that met these criteria, seven were excluded because they did not collect data on the full range of domestic violence items used in the analysis presented here (Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Gabon, Mali, and Rwanda).

Table 1 displays the analytic sample from each survey, which differs from the total sample of all women interviewed by the DHS. Whereas all women age 15-49 in a household are eligible for the DHS woman's questionnaire, only one eligible woman per household is administered the domestic violence module, randomly selected from all eligible women using the Kish Grid technique (Kish 1965). This practice is in accordance with WHO guidelines (2001) on the ethical conduct of domestic violence research. Further, the domestic violence module may be administered in only a subsample of all sampled households. In Gabon, Kenya, Liberia, Nigeria, Zambia, and Zimbabwe, the domestic violence module was administered in all households. However, in Ghana, it was administered in two thirds of households and in Malawi and Mozambique, São Tomé and Príncipe, and Uganda, it was administered in every third household. Finally, this study examines spousal violence and therefore limits its analysis to ever-married women and women for whom data is complete on all variables used in the analysis.

-- Table 1 about here --

Ethical considerations

The DHS Program incorporates three specific protections into its data collection procedures for the domestic violence module, in order to maintain confidentiality and maximize the safety of respondents (World Health Organization 2001). First, the DHS protocol specifies that only one

person per household can be administered the domestic violence module. Interviewing only person in each household reduces the risk of any confidentiality breach (and risk of further violence) due to other persons in the household knowing that information on domestic violence was given.

Secondly, the interviewers proceed with the interview if and only if privacy is ensured; if privacy cannot be secured, the interviewer skips the module. Finally, informed consent for the survey is obtained from the respondent at the start of the interview. In addition, at the start of the domestic violence module, each respondent is read a statement alerting her that she is going to be asked questions that may be personal in nature and reminding her of her right to decline to answer any questions and assuring her that her answers will be confidential.

As a result of the more restrictive sampling strategy and potentially greater non-response resulting from these protective measures, a separate domestic violence sampling weight is calculated and made available in DHS datasets.

Measures

The DHS domestic violence module was first developed and standardized in 2000 and has been implemented in more than 80 surveys to date. It collects data on violence against women perpetrated by an intimate partner as well as violence by other family members or unrelated individuals. The portion of the module specific to spousal violence uses a modified and shortened version of the conflict tactics scales (CTS) (Straus 1979, 1990). These questions ask women whether their current or most recent (if divorced, separated, or widowed) husband/partner ever perpetrated any of a series of behaviorally specific acts. Women who say yes to a particular item are then asked about the frequency of perpetration in the 12 months preceding the interview. These items are as follows:

(Does/did) your (last) husband/partner ever do any of the following things to you?

1. *Slap you?*
2. *Twist your arm or pull your hair?*
3. *Push you, shake you, or throw something at you?*
4. *Punch you with his fist or with something that could hurt you?*
5. *Kick you, drag you, or beat you up?*
6. *Try to choke you or burn you on purpose?*
7. *Threaten or attack you with a knife, gun, or any other weapon?*
8. *Physically force you to have sexual intercourse with him even when you did not want to?*
9. *Force you to perform any sexual acts you did not want to?*

Items 1-7 are commonly classified as physical violence while items 8-9 are commonly classified as sexual violence. In addition to those items adapted from the CTS, the module asks ever-married women the following set of three questions in the domain frequently referred to as “emotional” or “psychological” violence or “verbal abuse”. These items are somewhat more subjective than those modified from the CTS; while the respondent does not need to label the behavior as emotional or psychological violence, reports of the behavior are based on her interpretation of, for example, what is “humiliating” or “insulting”. The three items are:

(Does/did) your (last) husband ever:

10. *Say or do something to humiliate you in front of others?*
11. *Threaten to hurt or harm you or someone close to you?*
12. *Insult you or make you feel bad about yourself?*

The module also includes questions asked to ever-married women assessing whether their current or last husband exhibited any of series of behaviors believed to represent “marital control”. These controlling behavior questions are as follows:

First, I am going to ask you about some situations which happen to some women. Please tell me if these apply to your relationship with your (last) husband/partner?

13. *He (is/was) jealous or angry if you (talk/talked) to other men?*
14. *He frequently (accuses/accused) you of being unfaithful?*
15. *He (does/did) not permit you to meet your female friends?*
16. *He (tries/tried) to limit your contact with your family?*
17. *He (insists/insisted) on knowing where you (are/were) at all times?*
18. *He (does/did) not trust you with any money?*

This study uses information from women’s responses to having *ever* experienced each type of violent act by their current husband (or last husband, in the case of women who are divorced or widowed), as well as their responses to questions about whether their husband exhibits controlling behaviors. Note that throughout this study the term “married” refers to official, legal marriages, as well as couples living in union as if married, and the term “husband” refers to men who are legally married to the respondent or who live with her as if married.

This study uses data on each of the above measures with two exceptions. The item inquiring about having the arm twisted or hair pulled is excluded because the wording of the question is inconsistently applied in the study surveys. In some instances, having the arm twisted is asked separately from having the hair pulled and in others these acts are asked in a single question; in some cases, these acts are combined with “spit at” in a single question. The item about being threatened or attacked with a knife, gun, or other weapon is excluded for the same problem of inconsistency: in some surveys, the question asks about being threatened *or* attacked, in others, the question *only* asks about being threatened. Finally, the item about being trusted with money is omitted from the domestic violence module in Gabon, but it is included in the analysis of the other surveys. Any country-specific violence items are excluded from this analysis. Therefore, the analysis is based on 15 measures of violence/marital control in this two country and 16 measures in the remaining 11 countries.

Analytical Strategy

In this study, we use factor analysis to understand the underlying structure of items related to spousal violence in the data and determine if these structures are similar or dissimilar across study countries. We first describe the magnitude of violence using conventional summary measures, organized into four forms as classified by experts in domestic violence research (controlling behaviors, emotional, physical, and sexual violence). We then perform factor analyses to uncover the commonality or distinctiveness in the factor structure and item-factor structure in the 12 countries.

Finally, we produce violence measures using the resulting factor scores. A factor score is essentially a weighted index in which the respondent's value on each item is weighted by the importance or influence of that item in the overall factor, as measured by its factor loading score (Pett, Lackey, and Sullivan 2003). These factor scores hold several advantages for measuring violence compared with other commonly used summary indicators. Factor scores are linear combinations of the observed variables produced by a multivariate procedure that accounts for correlations among factors (DiStefano, Zhu, and Mindrila 2009). By assessing the shared variance and uniqueness of items, the use of factor scores eliminates the need for arbitrary assumptions about how to combine the different items and how to weight them.

We conduct exploratory factor analysis (EFA) using principal component factor extraction technique with oblique (Promax) rotation of factor loadings, as no strong assumptions about the independence of factors can be asserted (Pett, Lackey, and Sullivan 2003). Separate EFA solutions are sought for each survey, rather than pooling countries together, so that the structure of violence constructs can be compared across settings. Factors are retained based on a combination of screeplots and a minimum eigenvalue of 1.0 (Pett, Lackey, and Sullivan 2003).

Sixteen spousal violence items (15 items in Gabon and Uganda), including six describing controlling behaviors, are included in the factor analysis. Items with factor loadings >0.40 are retained (Kootstra 2004; Pett, Lackey, and Sullivan 2003). Cronbach's alpha is calculated for each factor as a measure of inter-item reliability. Finally, factors are tested for correlation and, since they are slightly correlated, the oblique rotation is retained (Kootstra 2004).

Two subsequent steps are taken to determine if the factor structure is similar or dissimilar across cultural settings in cases of divergent results in the initial solution. First, for countries with the fewest number of factors in the initial solution, the *strict restriction of an eigenvalue ≥ 1.0 is relaxed* so as to detect any common structure across countries that might lie just below this threshold. Second, in surveys with a greater number of factors in the initial solution, the *EFA is repeated with a restriction on the number of factors* to determine if the more limited factor structure is nested in the more expanded structure.

As the factor analysis uncovers the variance structure among the variables in the sample, the EFA is conducted on the full *unweighted* sample of ever-married women to whom the domestic violence module was administered. All other analyses, e.g., descriptive frequencies, are weighted using the domestic violence weight calculated in the DHS datasets. This weight accounts for both sampling and non-response specific to the domestic violence module-eligible sample. Additionally, we use the *svy* commands available within Stata to account for the complex sampling design and estimate robust standard errors.

Results

Prevalence of Spousal Violence

Figure 1 illustrates the prevalence of spousal violence in the 12 study countries². Specifically, it presents the proportion of ever-married women who report experiencing at least one item believed to constitute marital control, emotional violence, physical violence, and sexual violence. These data do not differentiate among women experiencing one such item and those experiencing two or more items.

-- Figure 1 about here --

In all 12 countries, marital control is the most commonly experienced and sexual violence is the least commonly experienced form of violence. Levels of emotional and physical violence are experienced by similar proportions of women in most countries. However, the prevalence of each form violence varies across surveys. The proportion of ever-married women reporting experiencing violence is generally lower in Ghana, Nigeria, São Tomé and Príncipe, and Uganda, and higher in Gabon, Liberia, and Uganda.

Forms of Spousal Violence

Factor structure of spousal violence

We conduct factor analysis to determine how many violence-related factors emerge and if the *same* factors emerge and the items load onto the factors in the *same* pattern in all 12 study countries. The results of the EFA shown in Table 2 reveal that the most common solution, occurring in half of the countries, has three violence factors that explain between 47% and 60% of the variance among the violence items. The six countries manifesting this prevailing structure are: Gabon, Ghana, Kenya, São Tomé and Príncipe, Tanzania, and Uganda. Four factors emerge in four countries (Mozambique, Nigeria, Zambia, and Zimbabwe) and five factors in the remaining two countries (Liberia and Malawi), explaining up to 66% of the variance.

-- Table 2 about here --

The violence items load onto the three factors in a similar fashion in all six countries with a three factor solution, as shown in Table 3. We label these three factors: (1) emotional and physical violence, (2) sexual violence, and (3) marital control. Items 1-7 constitute emotional and physical violence. This includes acts such as humiliating, threatening to harm, or insulting the respondent as well as acts like pushing, shaking, punching, or kicking the respondent. Sexual violence is composed of items 8-9: physically forcing the respondent to have intercourse with him when she does not want to and forcing other sexual acts. Marital control is composed of six items (items 10-16), including becoming jealous if respondent talks with other men, insisting on knowing where she is, and limiting contact with others.

² The prevalence figures reported here may differ slightly from those published in DHS final reports for each survey due to different analytic samples and omitted items.

-- Table 3 about here --

In Malawi, which produces five factors in the unconstrained solution, a sexual violence factor includes the same two items as in the three factor solution that appear in Gabon, Ghana, Kenya, São Tomé and Príncipe, Tanzania, and Uganda. In lieu of a single “emotional and physical violence” factor, two separate factors emerge. Items relating to the husband humiliating the respondent in front of others, threatening to hurt her or someone close to her, and insulting her (items 6-8) load onto one factor, labelled “emotional violence,” while items 1-5, relating to pushing, shaking, throwing something, slapping, punching, kicking, dragging, or beating her up, load onto a second factor, labelled “physical violence.”

Likewise, the “marital control” factor emerges as two separate factors in Malawi. The first factor includes items relating to the husband’s jealousy, accusations of being unfaithful, and insisting on knowing where the respondent is at all times (items 11-13). The second includes items relating to restrictions on contact with female friends and family and not trusting the respondent with money (items 14-16). We label these factors “suspicion” and “isolation”, respectively.

In Mozambique, Nigeria, Zambia, and Zimbabwe, each of which reveal a four factor solution, items that, in the prevailing three factor structure, constitute *either* “emotional and physical violence” *or* “marital control”, but *not both*, emerge as two separate factors. For instance, Nigeria and Malawi produce a separate emotional violence and a physical violence factor along with a sexual violence and a single marital control factor. Meanwhile, the four factors in Mozambique and Zimbabwe are (1) emotional violence and physical violence, (2) suspicion, (3) isolation, separately, and (4) sexual violence. That is, these four countries suggest a structure that lies midway between the prevailing three factor structure and the five factor structure that emerges in Malawi.

Liberia, which also produces a five factor unconstrained solution, bears more similarity to the four factor solution appearing in Mozambique and Zimbabwe than the five factor solution in Malawi. Here, marital control items form a separate suspicion and an isolation factor, as occurs in Mozambique, Zimbabwe, and Malawi; Emotional and physical violence form a single factor, not separate ones. The fifth factor is composed of a single item that did not load on any other factor: husband does not trust respondent with any money. In none of the other 11 countries did this item load on its own factor, or on any factor other than the controlling behavior or isolation factor.

Item-factor structure of spousal violence

The 16 violence items generally load onto the aforementioned three, four, or five factors in a consistent pattern in all 12 countries. However, there are several exceptions. Perhaps the most notable exception relates to the item, “husband ever tries to choke or burn respondent on purpose.” In seven countries, this item loads onto either the combined emotional and physical violence or the separate physical violence factor. This item fails to load onto any factor in Mozambique. In Ghana, Kenya, and São Tomé and Príncipe, however, this item loads onto the factor encompassing the two sexual violence items. In Liberia, it loads onto the isolation factor.

In São Tomé and Príncipe, the item related to accusations of being unfaithful (item 12) loads onto the factor with emotional and physical violence items and the item relating to jealousy (item 11) fails to load onto any factor. As mentioned previously, the money item (item 16) loads on a single-item factor in Liberia.

Expanded and nested factor structure

Given that the union of items forming the separate suspicion and isolation factors in Liberia, Malawi and Mozambique, and Zimbabwe is the complete set of items comprising the controlling behavior factor in Gabon, Ghana, Kenya, Nigeria, Tanzania, Uganda, and Zambia, it is possible that suspicion and isolation are subfactors of the controlling behavior factor. Likewise, it is possible that the emotional violence and physical violence factors, which emerge in Malawi, Nigeria, and Zambia, are subfactors of the combined emotional and physical violence factor in the other nine countries for the same reason.

To test for this possibility, we repeat the EFA for all surveys producing a three- or four-factor solution, but without constraining the Eigenvalue to greater than 1.0, so as to achieve a five factor solution and examine the item-factor structure of the resulting five factors. The Eigenvalues for the five factor solutions are reported in Table 2. In Gabon, Kenya, Mozambique³, Nigeria⁴, Uganda, Zambia, and Zimbabwe, all items load onto the five factors (physical violence, emotional violence, sexual violence, suspicion, and isolation) in an identical manner as in Malawi, which produces this five factor solution in its initial solution. That is, both a common factor structure and item-factor structure emerge under relaxed Eigenvalue constraints in these countries.

In the remaining three countries, a common factor structure emerges, but with variations in the item-factor structure. In Ghana, the item related to limiting contact with family (item 15) loads onto the same factor as the suspicion items. In São Tomé and Príncipe, the item relating to knowing where the respondent is (item 13) loads onto the isolation factor. In Tanzania, a separate factor composed of the choke item and threat item (items 5 and 7) accompanies factors representing emotional and physical violence, sexual violence, suspicion, and isolation. In a six-factor solution (Eigenvalue=0.7657, 67.6% variance explained), the common five factors (physical violence, emotional violence, sexual violence, suspicion, and isolation) emerge along with a sixth factor comprised of the choke item (item 5), alone. Similarly, in Liberia, a six factor solution (Eigenvalue=0.9520, 71.9% variance explained) consists of the five common factors and a sixth factor with only the money item (item 16).

The next analytical step we undertake is designed to determine if the three factor solution occurring in half of the study countries is nested in the solutions with more factors. Therefore, we repeat the EFA for all surveys producing a four- or five-factor solution but constrain the number of factors to three. These countries are: Liberia, Malawi, Mozambique, Nigeria, Zambia, Zimbabwe. In all six countries, a common factor structure emerges, consisting of (1) emotional

³ In Mozambique, the choke item (item 5) fails to load onto any factor, as was the case in the initial solution.

⁴ In Nigeria, the accusation item (item 12) fails to load onto any factor, with its highest loadings occurring on the isolation (0.3649) and the suspicion (0.3537) factors. In the initial solution, this item loaded onto the combined controlling behavior factor.

and physical violence, (2) sexual violence, and (3) controlling behavior. Furthermore, the item-factor structure is also identical in all countries except Liberia. Here, the money item (item 16) does not load on any of the three factors and its item loadings are exceedingly poor (≤ 0.1006).

Reliability of Spousal Violence Factor Scales and Factor Scores

Internal reliability of each violence factor is measured via Cronbach's alpha, which we report for the three primary factors ((1) emotional and physical violence, (2) sexual violence, and (3) controlling behavior) as well as both sets of subfactors ((1a) emotional violence, (1b) physical violence, (3a) suspicion, and (3b) isolation) in Table 4. The items composing these factor and subfactor scales for all countries, regardless of the item-factor structure appears in any given country, are as follows:

1. Emotional and physical violence: items 1-8
 - a. Emotional violence: items 6-8
 - b. Physical violence: items 1-5
2. Sexual violence: items 9-10
3. Controlling behavior: items 11-16
 - a. Suspicion: 11-13
 - b. Isolation: 14-16

For all 12 study countries, internal reliability of all factor and subfactor scales is sufficiently robust, with the exception of the sexual violence scale in Gabon ($\alpha=0.3724$) and the isolation subscale in Liberia⁵, which indicates borderline reliability with an $\alpha=0.4183$.

-- Table 4 about here --

The range for factor regression scores for the three primary factors in all study countries are reported in Table 5. The factor scores are standardized with a distribution similar to a z-score and a mean approaching zero. The controlling behavior score ranges from -2 in Liberia to 3.8 in Ghana. Emotional and physical violence regression scores range from -1.5 in Mozambique to 5.4 in Zimbabwe and sexual violence ranges from -1.9 in Malawi to 9.2 in Nigeria.

-- Table 5 about here --

⁵ This scale includes the money item (item 16) which loads poorly onto its own factor in the initial solution in Liberia and onto no factor in the solution constrained to three factors.

Discussion and Conclusion

In spite of variation in the prevalence of the various forms of spousal violence reported by married women in the 12 countries studied, there is ample evidence of consistency in the *structure* of spousal violence across countries. Notably, a factor structure composed of three factors—marital control, emotional/physical violence, and sexual violence—emerges in all study countries. There appears to be some variation with the unconstrained factor solution producing three, four, or five factors in an unconstrained solution. However, this three-factor solution emerges either as the unconstrained solution (six countries) or nested within an expanded, five-factor solution. In all 12 countries, the three factors maintain an eigenvalue greater than 1.0 and explain approximately 50 percent of the variance (range 46.2-59.4%).

The only violation of the common factor structure is in Malawi, where money comprises its own factor. Furthermore, the item-factor structure is nearly unvarying, with minor exceptions in the “choking” item in three countries and with several items in São Tomé and Príncipe.

Our analysis provides tempered support for the face validity of the categories of emotional, physical, or sexual violence that experts have assigned to the different acts of violence asked about in the DHS domestic violence module. The item-factor structure supports this classification, however, the overall factor structure suggests that there is little distinction between emotional and physical violence in the majority (nine) of study countries. Only in an expanded structure under relaxed criteria does the distinction become apparent. Rather than separate factors, it appears that emotional violence and physical violence are sub-factors of a common construct. Cronbach’s alpha indicates the internal reliability is robust, both for the overall factor and each sub-factor.

Sexual violence clearly maintains its distinction from emotional and physical violence in all study countries. This is a pertinent finding since physical violence and sexual violence are frequently pooled when a composite violence indicator is used (e.g., Dunkle et al. 2004; Kishor 2012). It is emotional violence that is often omitted or, if included, retained as a separate indicator. Our findings suggest that it may be preferable to keep these domains as separate measures or, if forms of intimate partner violence are to be collapsed in summary indicators, to combine the experience of emotional and physical violence instead of physical and sexual violence.

The factor analysis provides another important insight: the six items typically categorized as marital control may be composed of one construct comprising two separate but related sub-factors, which we label “suspicion” and “isolation” in this report. These terms describe husbands’ behaviors that represent suspicion of their wives and behaviors that aim to isolate them from people and resources. Additionally, marital control is distinct from either sexual or emotional and physical violence. Marital control and emotional violence items did not load onto a common factor in any country, with the exception of the item relating to accusations of infidelity (item 12) in São Tomé and Príncipe, where it joined the emotional and physical violence factor.

The items in these two marital control sub-factors are similar to those in the dominance/isolation subscale of the Psychological Maltreatment of Women Inventory (PMWI) (Tolman 1999). While

they may be similar in underlying construct to the “jealousy” and “dominance” factors identified in other research using PMWI-type measures (Kar and O’Leary 2013; Kasian and Painter 1992), we apply different labels because the sets of items comprising “suspicion” and “isolation” differ both in number and in wording from those comprising “jealousy” and “dominance”. Additional psychometric testing would be needed to determine whether these differences are meaningful and represent distinct constructs, or whether they are immaterial to assessing the same latent construct.

The analysis presented here offers potential guidance for the construction of violence measures, first by suggesting measures representing three domains or, for analytical purposes in which the nuances with marital control and emotional and physical violence are material, five domains. Additionally, with these domains defined and their constituent items identified, it may be advantageous to adopt factor scores as violence measures. By incorporating the variance among items and uniqueness each item has related to other factor items, a factor score is essentially a weighted index in which the respondent’s experience of each violence item is weighted by the item’s relative contribution to the overall factor (DiStefano, Zhu, and Mindrila 2009; Pett, Lackey, and Sullivan 2003). Such a measure avoids the assumptions implicit in other summary violence measures which group *any* violence compared to no violence or weight each violence item equally. While a factor score may have limited utility for describing prevalence levels of violence, it may offer certain advantages when used as a dependent or predictor variable in multivariate analyses.

This study contributes to our understanding of the different dimensions of spousal violence and the shared commonality of violence across diverse settings in sub-Saharan Africa. Nonetheless, it has several limitations that deserve mention. First, this study omitted several violence items (threats/attacks with a weapon, pulled hair/twisted arm) because of inconsistencies in the item wording and, therefore, we may have omitted violent acts that are meaningful to both the experience and measurement of spousal violence. Secondly, we examined intimate partner violence occurring only within the context of marriages or cohabiting unions and excluded other types of relationships in which violence can and does occur. Similarly, we did not examine violence perpetrated by individuals other than the spouse/partner. Furthermore, we examined behaviors that characterized marital control, emotional and physical violence, and sexual violence. We did not include items that could characterize other domains of violence, such as economic violence or restrictions. Nor did we consider measures that could begin to describe the relationship between the experience of interpersonal violence and communal violence.

Finally, all surveys included in our analysis come from sub-Saharan African countries. While this continent is remarkably socially diverse, our study found striking commonality in the structure of spousal violence. Nonetheless, it is not known if the structure common to these study countries is globally universal. Further exploration of intimate partner violence in other settings, be it in developing countries in Asia, Middle East/North Africa, or Latin America and the Caribbean, or in more developed countries of North America, Europe, East Asia and Australia is warranted.

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Table 1. Derivation of the analytic sample

Survey	Unweighted n of full sample	Unweighted n of domestic violence sample	Unweighted n of analytical sample
Gabon 2012	8,422	5,557	3,960
Ghana 2008	4,916	2,442	1,801
Kenya 2008-09	8,444	6,318	4,741
Liberia 2007	7,092	4,913	3,751
Malawi 2010	23,020	6,229	5,312
Mozambique 2011	13,718	6,835	5,656
Nigeria 2008	33,385	23,752	18,343
São Tomé and Príncipe 2008-09	2,615	1,980	1,599
Tanzania 2010	10,139	7,047	5,613
Uganda 2006	8,531	2,087	1,686
Zambia 2007	7,146	5,236	4,115
Zimbabwe 2010-11	9,171	6,542	5,193

Figure 1. Proportion of ever-married women who experience at least one marital control, emotional violence, physical violence, or sexual violence behavior, most recent DHS survey

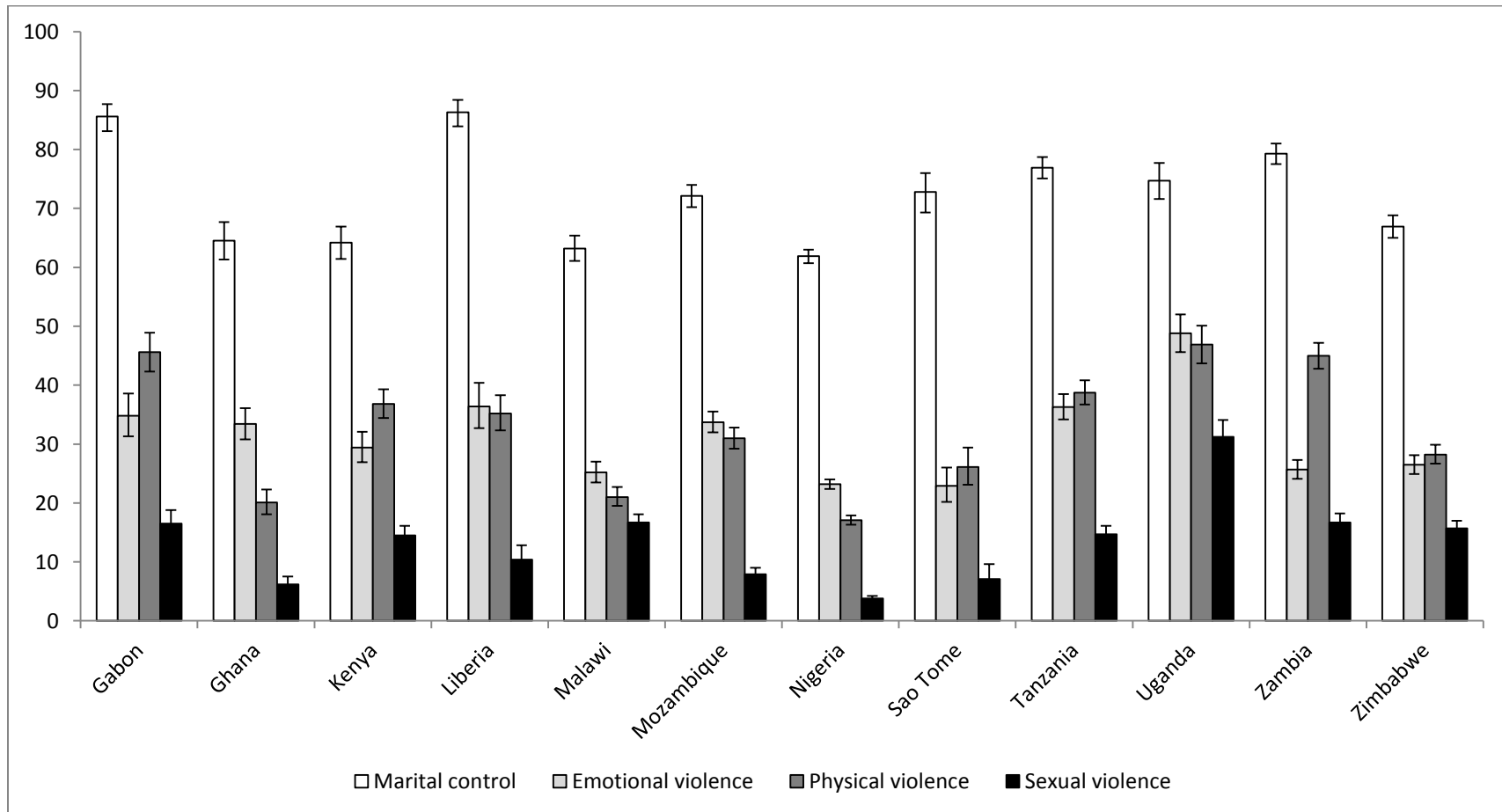


Table 2. Number of factors, eigenvalues, and proportion variance explained resulting from exploratory factor analysis of violence items, most recent DHS survey

	3 factor solution			4 factor solution		5 factor solution	
	Number of factors	Eigenvalue	Variance explained	Eigenvalue	Variance explained	Eigenvalue	Variance explained
Gabon 2012	3	1.09	53.6%	0.93	59.8%	0.88	65.6%
Ghana 2008	3	1.19	46.5%	0.99	52.8%	0.88	58.3%
Kenya 2008-09	3	1.03	50.8%	0.94	56.6%	0.86	62.0%
Liberia 2007	5	1.46	52.6%	1.12	59.6%	1.01	65.9%
Malawi 2010	5	1.13	53.2%	1.02	59.6%	1.01	65.9%
Mozambique 2011	4	1.28	46.2%	1.11	53.2%	0.95	59.1%
Nigeria 2008	4	1.29	50.4%	1.02	56.8%	0.95	62.8%
São Tomé and Príncipe 2008-09	3	1.35	59.4%	0.96	65.4%	0.78	70.3%
Tanzania 2010	3	1.20	51.3%	0.99	57.5%	0.85	62.8%
Uganda 2006	3	1.29	50.6%	0.95	56.6%	0.90	62.2%
Zambia 2007	4	1.14	49.5%	1.02	55.9%	0.93	61.7%
Zimbabwe 2010-11	4	1.23	46.8%	1.09	53.6%	0.90	59.2%

Table 3. Pattern of spousal violence factors and item loadings

Husband/partner:	Emotional & physical violence	Emotional violence	Physical violence	Marital control	Suspicion	Isolation	Sexual violence
1. Ever pushes, shakes, or throws something at respondent	GA, GH, KE, LB, MZ, ST, TZ, UG, ZW		MW, NG, ZA				
2. Ever slaps respondent	GA, GH, KE, LB, MZ, ST, TZ, UG, ZW		MW, NG, ZA				
3. Ever punches respondent with his fist or hits with something that could hurt her	GA, GH, KE, LB, MZ, ST, TZ, UG,		MW, NG, ZA				
4. Ever kicks, drags, or beats up respondent	GA, GH, KE, LB, MZ, ST, TZ, UG, ZW		MW, NG, ZA				
5. Ever tries to choke or burn respondent on purpose ¹	GH, TZ, UG, ZW		MW, NG, ZA			LB	GA, KE, ST
6. Ever says or does something to humiliate respondent in front of others	GA, GH, KE, LB, MZ, ST, TZ, UG, ZW	MW, NG, ZA					
7. Ever threatens to hurt or harm respondent or someone close to her	GA, GH, KE, LB, MZ, ST, TZ, UG, ZW	MW, NG, ZA					
8. Ever insults respondent or makes her feel bad about herself	GA, GH, KE, LB, MZ, ST, TZ, UG, ZW	MW, NG, ZA					
9. Ever physically forces respondent to have sexual intercourse with him even when she does not want to							GA, GH, KE, LB, MW, MZ, NG, ST, TZ, UG, ZA, ZW
10. Ever forces respondent to perform any sexual acts she does not want to							GA, GH, KE, LB, MW, MZ, NG, ST, TZ, UG, ZA, ZW
11. Is jealous or angry if respondent talks with other men ²				GA, GH, KE, NG, TZ, UG, ZA	LB, MW, MZ, ZW		
12. Frequently accuses respondent of being unfaithful	ST			GA, GH, KE, NG, TZ, UG, ZA	LB, MW, MZ, ZW		
13. Insists on knowing where respondent is at all times				GA, GH, KE, NG, ST, TZ, UG, ZA	LB, MW, MZ, ZW		
14. Does not permit respondent to meet her female friends				GA, GH, KE, NG, ST, TZ, UG, ZA		LB, MW, MZ, ZW	
15. Tries to limit respondent's contact with family				GA, GH, KE, NG, ST, TZ, UG, ZA		LB, MW, MZ, ZW	
16. Does not trust respondent with any money ³				GH, KE, NG, ST, TZ, UG, ZA		MW, MZ, ZW	

GA=Gabon, GH=Ghana, KE=Kenya, LB=Liberia, MW=Malawi, MZ=Mozambique, NG=Nigeria, ST= São Tomé and Príncipe, TZ=Tanzania, UG=Uganda, ZM=Zambia, ZW=Zimbabwe

¹ In Mozambique, the choke item failed to load on any of the four factors. The highest loading was on the suspicion factor (.3645).

² In São Tomé and Príncipe, the jealousy failed to load on any of the three factors. The highest loadings were on the emotional/physical violence factor (.3963) and the marital control factor (.3948).

³In Liberia, the money item loaded on a fifth factor with no other items. The money item is not available in the Gabon survey.

Table 4. Internal reliability of violence scales and sub-scales generated from EFA factor analysis (Cronbach's alpha)

	Gabon 2012	Ghana 2008	Kenya 2008-09	Liberia 2007	Malawi 2010	Mozambique 2011	Nigeria 2008	São Tomé & Príncipe 2008-09	Tanzania 2010	Uganda 2006	Zambia 2007	Zimbabwe 2010-11
Marital control	0.7616	0.6700	0.7416	0.6919	0.7221	0.6770	0.7063	0.7383	0.7253	0.7500	0.7369	0.6942
<i>Suspicion</i>	0.6893	0.5721	0.6759	0.7519	0.6609	0.5764	0.6101	0.6108	0.6312	0.6985	0.6815	0.6227
<i>Isolation</i>	0.6531	0.5046	0.5815	0.4183	0.6546	0.6204	0.5905	0.6852	0.6169	0.6106	0.5765	0.6375
Emotional/physical violence	0.8728	0.8167	0.8562	0.8702	0.8726	0.7825	0.8226	0.9107	0.8514	0.8418	0.8323	0.8065
<i>Emotional violence</i>	0.7846	0.6973	0.7619	0.7545	0.7963	0.5852	0.7146	0.8822	0.6892	0.7058	0.7423	0.6466
<i>Physical violence</i>	0.8380	0.7801	0.8084	0.8420	0.8592	0.7408	0.7957	0.8751	0.7985	0.8045	0.7794	0.7579
Sexual violence	0.3724	0.6183	0.5821	0.8245	0.6474	0.8217	0.7812	0.7544	0.7613	0.7419	0.7530	0.7079

Table 5. Range of factor scores for three violence factors, most recent DHS survey

Country	Weighted n	Marital control score		Emotional/physical Violence score		Sexual violence score	
		Min	Max	Min	Max	Min	Max
Gabon 2012	3,342	-1.835	1.631	-1.141	2.922	-1.195	6.302
Ghana 2008	1,644	-1.504	3.841	-0.952	5.053	-1.137	6.746
Kenya 2008-09	4,207	-1.455	2.891	-0.920	3.547	-0.978	6.060
Liberia 2007	3,451	-1.953	1.933	-0.826	3.488	-1.035	4.707
Malawi 2010	4,968	-1.609	3.786	-0.716	4.454	-1.904	4.105
Mozambique 2011	5,462	-1.200	3.258	-1.474	3.614	-0.961	7.016
Nigeria 2008	15,804	-1.449	3.666	-1.265	4.936	-0.917	9.155
São Tomé and Príncipe 2008-09	1,497	-1.227	2.358	-0.859	2.895	-1.068	5.946
Tanzania 2010	5,200	-1.278	2.898	-0.745	3.838	-0.768	3.868
Uganda 2006	1,555	-1.353	2.233	-0.944	2.901	-1.267	2.760
Zambia 2007	3,792	-1.455	2.407	-0.750	4.130	-0.903	3.633
Zimbabwe 2010-11	4,917	-1.221	3.829	-0.727	5.414	-1.655	3.888