Associations between violence in school and at home and education outcomes in rural Malawi: A longitudinal analysis[1]

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Abstract

Growing evidence of the prevalence of school-related gender-based violence (SRGBV) has raised concerns about negative effects on education. Previous quantitative research on this topic has been limited by descriptive and cross-sectional data. Using longitudinal data from the Malawi Schooling and Adolescent Study, we investigate associations between school and domestic violence and three education outcomes: absenteeism, learning and dropout. Half of respondents had experienced both SRGBV and domestic violence by ages 18–21. Associations between violence and education were mixed: school-related sexual violence was associated with poorer *subsequent* education outcomes for males, and to a lesser extent for females; domestic violence was associated with higher absenteeism for males, and *subsequent* dropout for females; and physical violence was associated with lower absenteeism and better *subsequent* numeracy performance for females. Additional longitudinal research is needed, and should integrate a broad understanding of the influence of gender norms and experiences of violence on young people's educational success.

Introduction

Formal education is a powerful tool for transforming attitudes and expanding opportunities, including eliminating gender inequalities globally (UNGEI & UNESCO, 2015). UNESCO describes gender inequality in education as a cause and consequence of broader societal inequalities, and highlights the essential role inequality plays in preventing young people from attending school and acquiring academic skills (UNESCO, 2015). However, despite progress in increasing gender parity in access to primary school in low-income settings (UNESCO, 2015), policy makers and researchers have increasingly questioned whether schooling, in its current form, transforms inequitable gender norms, or merely reflects and reinforces those norms (Chisamya, DeJaeghere, Kendall, & Khan, 2012; Leach & Humphreys, 2007; Mensch, Clark, Lloyd, & Erulkar, 2001; UNESCO, 2015). One area of focus for this discussion has been school-related gender-based violence (SRGBV).

Although global prevalence data do not currently exist, there is increasing evidence that SRGBV is widespread in developing countries[2] (Leach, Dunne, & Salvi, 2014; UNESCO,

2015; UNGEI & UNESCO, 2015), and that many young people experience violence in multiple domains of their lives (Chisamya et al., 2012; Pinheiro, 2006). Beyond its potential immediate psychological and physical effects, policy-makers and researchers have expressed concern that SRGBV may affect grade attainment and learning, as well as longer-term health and well-being (Greene, 2013; Kim, 2003; RTI International, 2013; UNGEI & UNESCO, 2015). Despite growing policy attention to SRGBV (Kim, 2003; UNGEI & UNESCO, 2013, 2015; Winthrop, 2014), research to date on this issue has been largely qualitative (DevTech Systems Inc., 2004; Human Rights Watch, 2001; Leach, 2000) or descriptive (Afenyadu, 2003; Barasa, 2013; Burton, 2005), with few rigorous quantitative analyses linking SRGBV to subsequent education and health outcomes (Kim, 2003; Leach et al., 2014; UNGEI & UNESCO, 2015). Many of the existing quantitative studies use cross-sectional data, limiting causal inference; few include data on learning outcomes (Leach et al., 2014; RTI International, 2013); and few integrate experiences of violence in multiple domains of young people's lives.

Using longitudinal data from the Malawi Schooling and Adolescent Study (MSAS), which has followed adolescents since they were aged 14 to 17 at baseline in 2007, we investigate the effects of reported experiences of school and domestic violence on three education outcomes: absenteeism, learning, and dropout. The results of this study contribute to the growing body of research by providing evidence of whether students who report experiencing SRGBV are more likely than their peers to have poor education outcomes in the current and subsequent school year.

Gender, violence, and schooling

As the central socializing environment outside the family, schools can play a powerful role in transforming inequitable gender norms and protecting children from violence (Mensch et al., 2001; Pinheiro, 2006). However, schools may also serve as environments in which dominant gender norms and other sources of disadvantage play out and are reinforced, rather than rejected (Barasa, 2013; Chisamya et al., 2012; Leach & Humphreys, 2007; Mensch et al., 2001). Gender role expectations can be communicated and perpetuated in multiple ways in the school environment, including through curricula, assignment of tasks to students, and harassment and violence (Mensch et al., 2001). Leach and Humphreys (2007) describe the ways in which schools often serve to sustain an existing "gender regime" by "promoting aggressive masculinities and compliant femininities" (p. 55). SRGBV is a reflection of underlying unequal gender norms and other sources of disadvantage, rather existing in a social or political vacuum (Parkes 2015).

UNGEI and UNESCO (2015) define SRGBV as "acts or threats of sexual, physical or psychological violence occurring in and around schools, perpetrated as a result of gender norms and stereotypes, and enforced by unequal power dynamics" (p. 2). SRGBV is commonly categorized as psychological, physical, and sexual, although there is important overlap between these areas (Leach et al., 2014). While not all forms of violence in school are overtly sexual, many researchers argue that most – if not all – are gendered in nature

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[2]There is also ample evidence that this experience is common in developed countries (see RTI International 2013 for examples), although that setting is not the focus of this paper.

(Leach, 2008; Leach et al., 2014; Leach & Humphreys, 2007; Leach, 2006; UNGEI & UNESCO, 2015). Leach (2008) distinguishes between explicit gender violence in schools, which includes rape and sexual assault, and implicit gender violence in schools, including acts that reinforce gender differentiation, such as teachers' behaviors toward male and female students. Parkes (2011) argues that research on this topic should incorporate a broader understanding of the impact of violence on education by considering cultural norms and behaviors, such as sexual harassment and abuse in the community, high burdens of housework, and the "hidden curriculum" that discourages girls from speaking out about their experiences. From this perspective, the focus of researchers and practitioners should shift from individuals and behaviors to an understanding of violence as an outcome of unequal gender relations. For example, in order to better understand why these behaviors occur, corporal punishment enacted by male teachers against male students may be viewed as a reflection of norms around masculinity and power (Leach & Humphreys, 2007), and unwillingness of female students to disclose sexual harassment or abuse by male students to authority figures should be understood in the context of cultural endorsements of these behaviors. The authoritarian culture of schools, reflecting interactions between gender, age, and power structures, can also create an environment in which violence perpetrated by teachers, in particular, is condoned (Barasa, 2013; Leach et al., 2014).

Patterns of school violence

Although the 2006 UN Study on Violence against Children focused international attention on SRGBV (Pinheiro, 2006), a clear global picture of the prevalence and effects of this problem is still lacking (UNGEI & UNESCO, 2015). Much of the relevant research has been carried out in sub-Saharan Africa, with an emphasis on sexual violence perpetrated by males against females. Studies conducted in similar settings and time periods have conflicting findings, in part due to different age groups, definitions of violence, and research methods (Leach et al., 2014).

Some have found that, while boys are more subject to physical violence, girls are more subject to psychological or sexual violence (Parkes & Heslop 2011; Pinheiro 2006); although Parkes and Heslop (2011) found only small gender differences overall. However, Burton (2005) reported that girls in Malawi were significantly more likely than boys to experience physical or sexual violence in school. Parkes & Heslop (2011) also found conflicting age patterns: reports of physical violence in school were more common in younger groups in Kenya and older groups in Mozambique, and there was no age pattern in Ghana. However, sexual harassment and sexual violence were more common among older girls in all three countries.

Physical violence and intimidation—Evidence from multiple studies indicates that school-related physical violence and intimidation – perpetrated by both teachers and peers – is widespread. In a study in Uganda, more than 90 percent of primary school students reported ever experiencing physical violence in school; about half reported this experience had occurred in the previous week (Devries et al., 2014). Using a nationally representative sample of children in Malawi, Burton (2005) found that experience of physical violence was nearly universal, and slightly more than half of respondents reported experiencing physical

violence in school. Parkes and Heslop (2011) found that in Ghana, 94 percent of girls reported that they had been whipped in school, but only 13 percent of girls and 48 percent of teachers questioned the value of corporal punishment as a method of discipline. (Mensch & Lloyd 1998) found that 17 percent of boys and 13 percent of girls in "low-performing schools" in Kenya reported that they had been caned as punishment in the previous school day. In a mixed methods study in India, Morrow & Singh (2015) found that risk of corporal punishment in school was often linked to poverty, such as when students did not wear the proper uniform or bring the necessary materials to school. Peer perpetration of physical violence in school is also common. An analysis of the 2011 Trends in Mathematics and Science Study (TIMSS) data from 30 countries found that, in about half of these countries, more than a third of grade 8 students reported that they were bullied once or twice a month. In almost every country, boys were more likely to report being bullied than girls (Mullis et al. 2012a). A study compiling data from the WHO Global School-based Student Health Survey (GSHS) between 2003 and 2006 in 19 countries found that one third of middle school students aged 11–13 reported being bullied in the previous month, and 8 percent reported daily bullying (Fleming & Jacobsen, 2010).

Sexual violence and harassment—Although less common than physical violence in many settings, sexual violence is also a key issue facing young people in schools. Although sexual harassment was reported significantly more often by girls than boys in a study in Kenya, the proportion of girls and boys reporting that they had been pressured to have sex was similar (Mensch & Lloyd, 1998). In Malawi, 44 percent of children surveyed reported that they had been inappropriately touched; half of these incidents had occurred in school (Bisika, 2009). percent percent

Peers are, overall, the most commonly reported perpetrators of SRGBV generally, and of school-related sexual violence in particular See Afenyadu and Goparaju (2003), DevTech Systems Inc. (2004), Bisika et al. (2009), Parkes et al. (2011) and Leach et al. (2014).[3] For example, in Bisika's 2009 study in Malawi, peers accounted for nearly 70 percent of the perpetrators, while teachers accounted for less than 4 percent. A 2013 study in Ghana, Kenya, and Mozambique found that 86 percent of in-school girls (aged 8–17) in Kenya, 82 percent in Ghana, and 66 percent in Mozambique reported experiencing some form of violence in the previous 12 months, most commonly perpetrated by peers. Despite the fact that sexual relationships between teachers and students were raised regularly in focus groups, no female students in Ghana and Mozambique reported being forced to have sex with a teacher, and three percent of students in Kenya reported this experience (Parkes, 2011). Similarly, using a convenience sample of secondary school students in Ghana, Afenyadu and Goparaju (2003) found that 15 percent of both male and female students reported experiencing forced sex, among whom only five percent reported that a teacher was the perpetrator. Discrepancies between qualitative and quantitative reports of teachers sexually assaulting students have at least two possible explanations: one is that sexual violence perpetrated by teachers is, in fact, widespread but students are afraid to report their experiences; the other is that a small number of incidents, representing extreme cases, are

[3]The results from similar school-level analyses, using the Progress in International Reading Literacy Study (PIRLS) data, were consistent with results using TIMSS data. That is, students in safer schools had higher reading achievement (RTI International, 2013).

repeatedly discussed throughout communities, creating the impression that this experience is more common than it actually is.

Effects of School Violence

An understanding that SRGBV reflects existing gender norms and inequalities raises the question of how this experience may reinforce those patterns of behavior and have differential effects for boys and girls. To date, research on this topic has been largely qualitative. Existing quantitative research has important limitations, including an absence of longitudinal studies in developing countries, and a lack of objective assessments of educational achievement (as a review: (RTI International, 2013); as examples: (Barasa, 2013; Bisika, 2009). When numerous experiences converge to lead to poor school performance or dropout, it can be difficult to isolate the effects of school violence (RTI International, 2013). Therefore, it is important not only to assess perceptions of the effects of violence, but also to examine its effects on objective measures of achievement. Hypothesized effects of SRGBV include poor mental and physical health, such as increased risk of pregnancy and HIV; declines in school performance; school dropout; reinforcement of unequal gender norms and attitudes; and other economic and social costs (Leach et al., 2014).

Using household data from Malawi, Bisika (2009) found that, of the 657 respondents who experienced inappropriate touching in school, about 40 percent (n = 255) reported that it adversely affected their education, and 3 percent (n = 22) said they stopped going to school completely. However, student reports of both violence and its effects were retrospective, making it potentially difficult for students to recall the effects of violence. Moreover, the study did not include objective data on school attendance or achievement. Many studies also focus on either proximate outcomes of school violence (e.g. depression, school avoidance) or dropout, rather than educational achievement itself (RTI International, 2013). For example, using cross-sectional data from the 2008 Ghana Global School-based Student Health Survey with students attending senior secondary school, Dunne and colleagues (2013) examined associations between bullying by peers and self-reported absenteeism. Boys and girls who were bullied in the previous month had significantly higher odds of absenteeism than those who were not bullied (odds ratio (OR) = 2.5 for boys, 2.1 for girls), but having friendship networks appeared to be protective. Fleming and Jacobsen (2010), using the same survey from 19 countries, found that students who experienced bullying were also more likely to report symptoms of anxiety and depression, alcohol and drug use, and sexual intercourse. Using a random household sample of adolescents in Kwazulu-Natal, South Africa, Hallman (2007) observed that reported experience of non-consensual sex, regardless of the location or perpetrator, was associated with lower levels of school enrollment among females and males, and poorer grade attainment and progression among females. None of these studies included measures of students' learning outcomes.

The lack of longitudinal data on the effects of school violence has also limited possible inferences regarding the direction of associations. In addition to the studies described previously, Devries and colleagues (2014) found that experience of corporal punishment was significantly associated with poorer mental health and poorer school achievement among

primary school students in Uganda. However, given the cross-sectional design, it is possible, for example, that students who performed poorly in school were both more likely to experience corporal punishment, and also more likely to drop out of school, resulting in a spurious association. Analyses of the 2011 TIMSS data showed that fourth grade students attending schools with more frequent bullying, as reported by teachers, had lower achievement in math than students in schools with less bullying (Mullis et al. 2012a).[4] More recent analyses found that students who reported being bullied scored lower in math than students who did not report being bullied (UNGEI & UNESCO, 2015). However, these associations may again reflect other shared underlying characteristics; students attending safer schools may be different from those attending unsafe schools in important ways, including poverty, and attitudes toward education, violence and gender in their communities. One of the few longitudinal studies of the effects of school violence on education in low-income countries, conducted by Townsend and colleagues (2008), followed a cohort of students through high school in South Africa. The authors found that, for females but not for males, being both a perpetrator and victim of bullying was associated with higher odds of school dropout compared to those who were neither bullies nor victims. While the authors controlled for numerous demographic and socio-economic variables, it is possible that unobserved factors, such as student motivation in school, could also account for such findings.

Shared origins of violence

The causes of violence in school and at home are inextricably linked and may reflect broader gender norms, poverty, and other patterns of disadvantage in students' lives (Leach et al., 2014; Parkes, 2015). Heise (1998) outlined an ecological framework for understanding the origins of gender-based violence (GBV), which conceptualized GBV as reflecting the interplay between personal, situational, and socio-cultural factors. She argued that, in seeking to understand the causes of violence, it is important not only to assess why individuals perpetrate violence but also why certain groups (e.g. women, young people) are so often the targets. This perspective underlines the importance of exploring violence in multiple domains of young people's lives, since school violence may reflect a broader social environment that condones and perpetuates this behavior. For example, girls in Ghana, Mozambique and Kenya were more likely to report experiencing violence in their home or community in the previous 12 months than in school, although levels were high in both locations (Parkes, 2011). Similarly, in Malawi, despite widespread harassment in schools, female students reported that they were at higher risk of sexual abuse at home (Chisamya (2012). Generating accurate estimates of the prevalence and effects of school violence is complicated by situations in which cultural norms may condone these behaviors (Bisika, 2009; Leach, 2008; Parkes, 2011). As a result, students may experience violence in their homes, communities and schools, leading to underreporting and challenges in identifying which experiences of violence affect education and health outcomes.

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[4]While we include community violence in our conceptual framework, it is not included in our analyses due to lack of data.

Conceptual Framework

Our conceptual framework for these analyses (Figure 1) draws on existing theory and evidence on the underlying factors that increase the risk of violence in school and at home for young people, as well as qualitative evidence that school violence may contribute to poorer schooling and health outcomes (Devries et al., 2014; Fleming & Jacobsen, 2010; Heise, 1998; Townsend, 2008; Mullis 2012a and Mullis 2012b). We conceptualize violence as both a consequence of existing inequalities, with a focus on unequal gender norms, and an experience that has the potential to reinforce those inequalities during the critical period when young people transition to adulthood (Leach et al., 2014; Leach, 2006; Parkes, 2015). Given different expectations held by students of the behavior of other students and teachers, and potentially different manifestations of violence, we hypothesize that the effects of violence on schooling outcomes may differ by type of violence and student sex (Devries et al., 2014; Fleming & Jacobsen, 2010; Mullis et al. 2012a; RTI International, 2013). We also include key demographic characteristics (e.g. age, socio-economic status) and early schooling experiences as potential determinants of both exposure to violence and education outcomes. The larger white arrows represent the broader relationship between education and disadvantage (e.g. poor education outcomes may reinforce poverty), while the smaller black arrows represent our hypotheses regarding the role of school violence as a mediator of the relationship between underlying disadvantages and education outcomes. This model is not intended as an exhaustive depiction of the causes and consequences of violence, but rather to show the assumptions guiding our choice of research questions and analyses.

Research Questions

Using longitudinal data from MSAS, we explore associations between experience of violence (in school and at home)[4] and education outcomes separately for girls and boys. Our research questions are:

1. To what extent do adolescent students in rural southern Malawi experience school and domestic violence?

2. Is experience of school and/or domestic violence associated with higher absenteeism in the same school year in which the violence took place?

3. Is experience of school and/or domestic violence associated with poorer learning outcomes or earlier dropout in the subsequent school year?

4. Are there gender differences in the experiences of school violence or domestic violence, and their associations with education outcomes?

In contrast to previous studies conducted on these questions using cross-sectional data, longitudinal data provide valuable information on the timing of events, e.g. whether the experience of violence preceded instead of coincided with school dropout. However, we are unable to draw causal conclusions about effects of violence on education outcomes because the MSAS data are observational, so students experiencing violence may be different from their peers in important ways that also affect education outcomes.

Data and Methods

Study Context

Since the elimination of primary school fees in 1994, Malawi, one of the poorest countries in the world, has achieved nearly universal access to primary school, with the most dramatic gains among females. In 2010, 4 percentof males and 8 percent of females aged 20–24 had never attended school compared with 11 percent of males and 34 percent of females aged 40–44 (National Statistical Office and ICF Macro, 2011). Although access to school has improved, it appears to have had little positive impact on schooling outcomes, specifically retention, grade progression, and acquisition of academic skills (Pritchett, 2013; Riddell, 2003). Data from the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) indicate a deterioration in school resources between 2000 and 2007: the proportion of students with access to reading textbooks declined by nearly 50 percent; student-teacher ratios increased by more than 25 percent; and the number of pupils per permanent classroom rose by nearly 10 percent. Furthermore, despite near gender parity in primary school entry (Anzar, 2004; Chimombo, 2000), some research indicates that girls are still more likely than boys to leave school prematurely (Baird, Garfein, McIntosh, & Ozler, 2012).[5]

Malawi Schooling and Adolescent Study

MSAS is a longitudinal study of 2,649 adolescents aged 14–17 at baseline in 2007 and resident in Balaka and Machinga, two southern rural districts. The initial sample consisted of 1,764 students (875 girls and 889 boys) randomly selected from enrollment rosters at 59 randomly selected primary schools, which were weighted by their 2006 enrollment before selection. The probability of a school being included was proportional to its enrollment in 2006. At each school, approximately 30 students stratified by gender and age, enrolled in standards 4–8 (the last five years of primary school), were interviewed. An additional sample of 885 adolescents who were not enrolled in school was drawn from the surrounding communities. Follow-up interviews were conducted annually between 2007 and 2011 as well as in 2013.[6] The study achieved a re-interview rate of 95 percent in 2008, 93 percent in 2009, and 91 percent in 2010 and 2011, and 84 percent of the in-school sample. For this analysis, the sample includes all baseline students for whom data on literacy and numeracy were available (869 females, 884 males). Regression models include covariates for those who remained students in each round of follow-up and were therefore at risk of experiencing school violence, by definition a selective sample, particularly for girls: 618 females and 757 males in round 2; 451 females and 636 males in round 3; 281 females and 519 males in round 4; and 211 females and 451 males in round 5. The MSAS adolescent instrument included an extensive set of questions on household and family characteristics, schooling history and experiences, employment, health, marriage, and sexual behavior and pregnancy, as well as literacy and numeracy assessments in each round, and data on school quality in the first three rounds. Sensitive questions in the adolescent survey, including those on

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[5]From 2005 to 2008, the USAID Safe Schools program was implemented in 40 schools in Machinga district of Malawi, some of which are included in our study sample. More information on the Safe Schools program is available on the DevTech Safe Schools website: http://www.devtechsys.com/practices/gender-inclusive-development/43-safe-schools-program.
[6]Due to a reduction in funding, data were not collected in 2012.

students' experiences of school violence, were asked via audio computer-assisted self-interviews, with the intent of protecting privacy and reducing underreporting.

Dependent Variables

This study explores whether students who report experiencing violence are more likely than their peers to have poor schooling outcomes in the same school year and the subsequent school year. Reflecting previous research on this topic, and given data available in MSAS, we operationalize education outcomes as follows:

- *Absenteeism*: In rounds 1 through 4, students were asked, *"During this school year, have you ever missed a day of school?"* We use student responses as a dichotomous outcome representing absenteeism (no = 0; yes = 1). To assess the robustness of these results to the method of assessing absenteeism, we run our final models using several alternative specifications: student reports of whether they attend school regularly, student reports of whether they attended school yesterday/the last day school was in session, and student reports of how many days of school they attended in the previous week.

- *Learning*: Starting in round 2, reading comprehension assessments in Chichewa (the official language of instruction from standard 1 to 5) were conducted.[7] Respondents were given one minute to read a short passage out loud; those who read at least the first three sentences were then asked six questions about it. The same stories and questions were repeated in round 4. Different stories and questions, but of similar length and complexity, were used in rounds 3 and 5. For these analyses, students were assigned a reading comprehension score ranging from 0 (if they were unable to read the first three sentences or answered all six questions incorrectly) to 6 (if they correctly answered all six questions). We categorize students as having a score equal to or above vs. below the median (5) in all rounds; we use this approach because linear models would not be appropriate given the limited range of reading scores (0–6) and skewed distribution. We assess the robustness of our findings using numeracy score as an alternative measure of achievement. The numeracy assessment included twelve questions drawn from the Malawi Institute of Education achievement tests for standard 3.[8] The questions involved ordering numbers, addition, subtraction, multiplication, division, and two word problems. It was repeated in each round, starting at baseline, and students were given a score ranging from 0 to 12. As with Chichewa reading comprehension, we categorized students as having performed as well as or above vs. below the median numeracy score across rounds (10).

- *School dropout*: In each round, study respondents were asked whether they were currently attending school, or whether they attended the most recent school term

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[7]Simple measures of oral reading ability in English and Chichewa, as well as a numeracy assessment, were also administered beginning at baseline (2007), and reading comprehension in English was also administered beginning in Round 2.
[8]The Malawi Institute of Education is a para-statal organization that is charged by the Ministry of Education with curriculum development, assessment and teacher training programs.

if it had ended. Students were coded as having dropped out of school in the first round when they were no longer attending school, assuming they did not return to school in later rounds.

Independent Variables

Our key independent variables are student reports of school-related sexual harassment, sexual violence, or physical violence in the current school year, and reports of having ever experienced physical domestic violence, as well as having experienced domestic violence in the month preceding the survey.

- *School violence:* In rounds 1 through 4, students were asked whether they had had the following experiences in school or on their way to school: "*had sexual comments made to you*" (sexual harassment), "*been punched, slapped, or whipped*" (physical violence), or "*been touched or pinched on your breasts, buttocks or genitalia*" (sexual violence).[9] We categorize students as having ever or never experienced each type of school violence in the current school year.

- *Domestic violence (ever):* In each round, respondents were categorized as having ever experienced (physical) domestic violence if they responded yes to any of the following three questions: "*Has anyone in your household ever pushed, shaken, or thrown something at you?*"; "*Has anyone in your household ever punched, slapped or whipped you?*"; or, "*Has anyone in your household ever kicked or dragged you?*"

- *Domestic violence (recent):* Respondents were categorized as having recently experienced (physical) domestic violence if they responded that they had experienced any of these types of violence in the month preceding the survey.

We include the following additional control variables in our models: age at baseline (continuous); dummy variables for ethnicity (Chewa, Yao, Lomwe, Ngoni, other) (1=yes; 0=no for each category); dummy variables for orphan status (both parents living, father deceased, mother deceased, both parents deceased) (1=yes; 0=no); employment in the previous 12 months (1=yes, 0=no); late entry to primary school (age 8 or older) (1=yes, 0=no); grade repetition in standards 1 through 3 (dummy variables for never repeated, repeated once, and repeated more than once); whether the mother or father of the student completed primary school (1=yes, 0=no); household assets (continuous); grade level in school (in the learning models only); and time since menarche (females) or the onset of puberty (males).[10] We include these control variables because, as shown in Figure 1, we hypothesize that they might be related both to the risk of experiencing violence and to the risk of negative schooling outcomes.

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[9]Students were also asked whether they had been teased or upset, and whether they had been "peeped at" while using the school toilets. We do not include those questions in our analyses because they were only asked at baseline.

[10]In each round girls were asked the following question: "*As girls grow into women, changes happen in their bodies, such as the start of menstrual periods. At what age did you have your first menstrual period or have you not had one yet?*"; boys were asked: "*As boys grow into men, certain changes happen to their bodies, such as growing pubic hair, voices get deeper or sometimes they have 'wet dreams.' At what age did you first notice any of these changes happening in your body, or have none happened yet?*" We used the number of years since the earliest round when respondents reported they had had their first menstrual period or begun experiencing signs of puberty.

We also control for round of survey to address increasing selectivity of the sample over time, and the possibility that respondents in later rounds recalled survey questions on literacy and numeracy and were therefore better prepared to answer them. In the absenteeism and dropout models, we control for time since the first interview was conducted in that round to address the possibility that probability of absenteeism or dropout might be higher for those interviewed later in the school year.

Data Analysis

We begin by presenting descriptive results on the proportion of the sample reporting that they had ever experienced domestic violence and/or school violence by round 5 (2011). We then describe gender differences in demographic characteristics at baseline and schooling experiences. To further characterize our sample, we show changes in the mean values/ proportions of our key variables, including school and domestic violence, as well as education outcomes, by round and sex of respondents. Next, we present the results of a series of regression models; in all models, we incorporate the multilevel data structure, with observations nested in students, and students nested in schools. To examine the relationship between violence and absenteeism, as well as violence and learning outcomes, we present a series of nested three-level mixed effects logit regression models; results are presented as odds ratios.[11] To examine the relationships between violence and school dropout, we present a series of nested Cox proportional hazard models, in which respondents exit the analysis in the round when they drop out of school permanently. These models adjust for clustering of students within schools, as well as censoring of students who left school after the last observation; results are presented as hazard ratios.[12] In our models for absenteeism, the dependent and independent variables were measured in the same round, based on our assumption that any effects of violence on absenteeism would be immediate; these models are restricted to MSAS rounds 1 through 4. In our models for reading comprehension and dropout, our time-varying independent variables were lagged one round because we assume that any effects of violence on dropout would result from changes over time; these models therefore include data from rounds 1 through 5. All analyses were done using Stata/SE version 14.1.

Missing Data

As with any survey, particularly one that follows young people over time, we are missing data on some of the key variables included in our analyses. Most nonresponse to school and domestic violence questions was due to attrition from the sample, rather than refusal to answer these questions. Fewer than 5 percent of males and females were missing responses on violence questions, with the exception of males in round 4 (8 percent). The main concern with missing data is that nonresponse may be systematic; for example, those who experience violence may be more likely to be lost to follow-up; systematic nonresponse may bias

[11]Odds ratios are interpreted as the ratio of the odds of an event occurring within one group, to the odds of that event occurring within another group (Pagano, 2000). For example, in the reading comprehension models, an odds ratio of 2.0 for x characteristic would indicate that respondents with x characteristic were twice as likely to perform above the median in reading comprehension, compared with those without x characteristic, controlling for other variables in the model.
[12]Hazard ratios are interpreted as the ratio of the chance of an event occurring (e.g. dropping out of school) among those with characteristic x to the chance of that event occurring among those without characteristic x, controlling for other variables in the model.

findings (Heeringa, 2010). In our sample, item nonresponse to both school and domestic violence questions was not significantly associated with any demographic variables at baseline. In round 5, sample attrition was associated with ethnicity and orphan status for males, but was not related to any demographic variables for females. Based on this information, we chose to conduct complete case analyses, dropping observations that were missing data on key variables in each round; we believe the bias introduced by this approach was minimal.

Results

Descriptive Findings

Figure 2 shows that violence—both school-related and domestic—is widespread. By round 5, when respondents were aged 18–21, about half had experienced both school violence (during follow-up) and domestic violence (ever); only 16 percent had experienced neither form of violence. Females were more likely to report that they had experienced only domestic violence than males (13 percent of females, 8 percent of males, p = 0.0002), and males were more likely than females to report only school violence (27 percent of males, 19 percent of females, p = 0.0001).

Table 1 presents differences by sex in demographic characteristics and schooling experiences in the study sample, all of whom were attending school at baseline. Compared with females, males were more likely to have entered school late, but equally likely to have repeated a grade in early primary school. Females were slightly more likely to have a parent who completed primary school than males. By round 5, 55 percent of males were still in school, compared with 28 percent of females.

Table 2 presents the distribution of key variables by round of data collection and sex of respondent. The results on school and domestic violence echo those shown in Figure 2: at baseline about 50 percent of males and females report that they had experienced school violence during the current school year, while about 25 percent report that they had experienced (physical) domestic violence in the month before the survey. As expected, the proportion of students reporting that they had ever experienced domestic violence increased between baseline and round 5. However, the proportion reporting they had experienced domestic violence in the month prior to the survey decreased, from 25 percent of females and 27 percent of males at baseline to 9 percent of girls and 4 percent of males at round 5. Although the proportion of students reporting physical and sexual violence in school decreased across rounds, as students got older and the sample became more selective, the proportion reporting sexual harassment increased between baseline and round 4. Males and females reported comparable levels of school violence across rounds, but females were significantly more likely to report domestic violence (either ever or in the last month) in every round, consistent with Figure 2.

Table 2 also shows the proportion of students reporting absenteeism using four separate measures, all self-reported: whether they attend school regularly, whether they attended yesterday/on the last school day, the number of days attended in the previous school week, and whether they have ever missed a day in the current school year. There were no

consistent gender differences in absenteeism. Approximately 80–90 percent of students reported that they attended school regularly and that they had attended school on the most recent school day, and about 75–80 percent reported that they had ever missed a day of school in the current school year. Although there were also no gender differences in Chichewa reading comprehension across rounds, males consistently outperformed females in numeracy assessments. Last, the proportion of females dropping out of school was significantly higher than males in all rounds.

Tables S1 through S6 present the detailed results from six models estimating the relationships between experiences of school violence and our outcomes of interest; these results are summarized in Table 3 and discussed below.

Violence and Absenteeism

Tables S1 and S1 present odds ratios from multilevel mixed effects logistic regression models estimating the association between reports of violence and absenteeism (in the same round) for females and males, respectively. Our main models use student reports of whether they ever missed a day of school in the current school year as the outcome. There were no significant associations between violence and reported absenteeism in the bivariate or multivariate models for females. In contrast, in both the bivariate and final regression models, boys who reported experiencing sexual violence in school were significantly more likely to be absent than their peers who did not experience sexual violence in school (OR = 1.56).

We assessed the robustness of our findings with several alternate specifications of absenteeism: self-reports of whether students attended school regularly, whether they had attended school on the most recent school day, and the number of days of school they had attended in the previous week. Overall, while the results were not entirely consistent with the prior specification, they did not point to a robust association between violence and school absenteeism. For females, physical school violence was associated with more days of school attended, while sexual harassment was associated with fewer days attended in the previous week; results from other specifications were null. For males, all results on the associations between school violence and absenteeism were null. We also examined associations between each measure of absenteeism and domestic violence, and found clear results: across every measure, males who had ever experienced domestic violence were significantly more likely to be absent than those who had not. In addition, having experienced domestic violence in the preceding month was associated with lower odds of having attended school on the most recent weekday. The results remained null for females (summarized in Table 3).

Violence and Learning Outcomes

Tables S3 and S4 present odds ratios from multilevel mixed effects logistic regression models estimating the association between reports of violence in the previous round and student performance on Chichewa reading comprehension in the current round. In the bivariate models for females, physical violence was significantly associated with poorer performance on Chichewa reading comprehension in earlier models, but this effect was no

longer significant after adding last grade attended to the model. In the bivariate models for males, physical violence, sexual violence, and domestic violence were all significantly associated with poorer performance on Chichewa reading comprehension. In the final male model, only the association with sexual violence was maintained; experiencing school-related sexual violence was associated with a 40 percent lower odds of performing as well as or better than the median on Chichewa reading comprehension.

We assessed the robustness of our findings on learning outcomes using numeracy score as an alternative outcome. In contrast to the Chichewa reading models, experience of school-related sexual violence was associated with poorer performance on numeracy for females (OR = 0.70) but was not significant for males (OR = 0.77). However, somewhat surprisingly, experience of school-related physical violence for females (OR = 1.53) was associated with better numeracy performance in the final models (results summarized in Table 3).

Violence and School Dropout

Tables S5 and S6 present hazard ratios from Cox proportional hazard models estimating the association between violence in the previous round and school dropout in the current round for females and males, respectively. For females, in the bivariate models and the final model, school violence was not associated with dropout, although in some models recent experience of domestic violence was significantly associated with dropout (HR = 1.13, not significant in final model). In contrast, for males, school-related sexual violence was significantly and consistently associated with a higher hazard of dropout (HR = 1.53). Table 3 summarizes the results from our main models and alternative specifications, as well as associations between having ever experienced domestic violence and education outcomes, by sex.

Discussion

Using longitudinal data from Malawi, we find that the experience of school violence and domestic violence is widespread for male and female students. However, our results regarding the associations between the experience of violence and education outcomes, both concurrently (absenteeism) and in subsequent years (learning and dropout) are mixed, and depend on sex of the student, type of violence and education outcome.

By round 5 of data collection (2011), when respondents were aged 18 to 21, 70 percent of girls and 76 percent of boys had experienced school violence since baseline in 2007. Also, 51 percent of girls and 48 percent of boys had experienced both domestic violence (ever) and school violence (since 2007). The use of an in-school sample at baseline, which excludes those who never entered school or dropped out before reaching standards 4–8, combined with likely underreporting, indicates that these numbers may be an underestimate of the actual level of violence perpetrated against young people in this setting.

Overall, we found little consistent evidence of an association between school violence and absenteeism in the same school year for females or males, using four different measures of absenteeism. For females, neither school nor domestic violence was associated with three of the four absenteeism measures used. Surprisingly, female reports of the number of school days attended in the previous week were positively associated with physical violence in

school, yet negatively associated with sexual harassment. For males, the results on absenteeism and domestic violence were consistently negative (i.e. violence was associated with poorer attendance) or null, but varied by the approach to assessing absenteeism. Experience of sexual violence in school was associated with higher absenteeism, based only on one out of three measures of absenteeism, and recent experience of domestic violence was associated with higher absenteeism, based only on one out of three measures of absenteeism on the most recent school day. Having ever experienced domestic violence was consistently associated with higher absenteeism, across each of the four measures used, for males.

Several explanations for these findings are possible. First, the measures of absenteeism may not be reliable. However, associations between absenteeism and demographic and schooling characteristics were consistent, indicating that inconsistent findings related to our research questions were unlikely to have been solely due to measurement error of our outcome. For example, parents' education, household wealth, early schooling experiences, and reading comprehension were associated with all four measures of absenteeism in the expected directions (results not shown for all models). These results on absenteeism might also reflect a situation in which, overall, experience of violence is not a main cause of absenteeism. Absenteeism itself is common in this population, even based on student reports, which likely underestimate the scope of the problem. For example, only about 80 percent of students reported that they had attended school the previous day at baseline (see Table 2). In rounds one through four, students who reported that they had ever been absent during that school year were asked the reasons. The most common responses (multiple responses were possible) at baseline were: illness (40 percent of boys, 54 percent of girls); dirty uniform (17 percent of boys, 12 percent of girls); housework (13 percent of boys, 14 percent of girls); and "other" (20 percent of boys; 13 percent of girls).[13] No students reported that problems with or being afraid of a peer was a reason for absenteeism, and less than 1 percent reported that problems with or being afraid of a teacher was the reason at baseline. These patterns were similar in round four, although housework became a much less common response (4 percent of boys, 1 percent of girls) (results not shown). Even though the fear of violence may have made school less appealing, it must be viewed in the broader context of poverty, illness, and competing demands on young people's time in this setting, which may have an even stronger effect on absenteeism than violence, as shown in Figure 1. Future research should explore this issue in more detail by supplementing student-reported absenteeism with more objective measures, such as attendance rosters, and by integrating information on the multiple factors that contribute to choices about school attendance.

The different findings for males on associations between absenteeism and recent experience of domestic violence vs. having ever experienced domestic violence are also notable. Having ever experienced domestic violence was associated with all four measures of absenteeism for males; recent experience of domestic violence was only associated with being absent on

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[13]Among those responding "other", the most common reason was that they were attending a funeral; at baseline, 40 percent of those who gave "other" as a reason reported they attended a funeral, the remaining responses were distributed across numerous reasons, including lack of school supplies, household responsibilities, church/mosque attendance, etc. None responded that they missed school due to violence or problems with teachers or peers.

the most recent day of school. These findings are perhaps expected if the effects of domestic violence on absenteeism are short-lived. However, the associations between lifetime experience of domestic violence and regular absenteeism may indicate more chronic underlying differences in the household environments where those respondents reside. For example, across the models exploring associations between having ever experienced domestic violence and absenteeism, higher household wealth was consistently associated with lower absenteeism, while working in the previous month was consistently associated with higher absenteeism. Males who are at highest risk of absenteeism may be those who come from households experiencing poverty, where violence may be chronic, and where boys may be expected to contribute to financially supporting the family, in addition to—or perhaps instead of—attending school. The lack of an association between having ever experienced domestic violence and absenteeism for females may reflect, in part, different expectations of how young women and men should spend their time. Females may be expected to attend school regularly as long as they are unmarried, but may be withdrawn from school to marry at younger ages than males (see differential dropout in Table 2). Our data are limited in the degree to which they can answer these questions, but future research should explore gender differences in the meaning and expectations around school attendance and absenteeism at different ages.

Our findings on the associations between school violence and learning were also mixed. In our initial models, examining associations between violence and Chichewa reading comprehension, we found that school-related sexual violence for males was associated with weaker reading comprehension in the subsequent school year. When assessing the robustness of these findings using numeracy as an outcome, however, we found that, for females, physical violence in school was associated with better numeracy, but sexual violence in school was associated with worse numeracy, in the subsequent round. A positive association between school violence and school performance is consistent with some evidence in our data that students from better off households were more likely to experience school violence. For example, boys whose fathers had completed primary school were more likely than their peers to report both physical violence and sexual harassment in school (results not shown). Analyses of 2007 SACMEQ data from twelve countries have found similar conflicting results at the school level: in eight countries, higher perceived levels of violence in schools were associated with lower test scores, while in four countries higher levels of violence were associated with higher test scores. The author (Saito, unpublished) argued that teachers who run safer and more effective schools might be more likely to report violence (RTI International, 2013). Similarly, it is possible that students who perform better in school or come from households with more educated parents might be more likely to perceive and report violence. Or, teachers and students may focus more negative attention, including corporal punishment and bullying, on these students. We have attempted to address this possibility by including information about early schooling experiences and household SES in our models, but there may be remaining unobserved aspects of student background or capacity that affect their risk of experiencing violence. However, given this explanation, it is not clear why experience of school violence would be associated with better numeracy performance for girls, but worse reading performance for boys.

Finally, we found evidence that having ever experienced domestic violence was associated with subsequent school dropout for females, and sexual violence was associated with dropout for males. Given the high risk of marriage for females during follow-up, it is possible that this effect could be attributed to an association between marital status and school dropout. While marriage and schooling are incompatible in the study setting, marriage is often preceded by a multi-year process, beginning with finding a sexual partner (chibwenzi), who may become a more serious chitomelo, or fiancé (Poulin, 2007). Since this process may begin to unfold while females are still in school, it is possible that students who marry in round x+1 were already in intimate partnerships in round x, and more likely to report domestic violence, even if they do not yet live with their partners. Girls involved in the early stages of the marriage process may also be at higher risk of domestic violence from their parents or other family members because of changes in their perceived role in their household, or unplanned pregnancies. To test this explanation, we added marital status to our final model. As expected, marital status was strongly and significantly associated with school dropout (HR = 6.63, 95 percent CI: 5.95–7.39), but the association between domestic violence and dropout remained stable and significant (HR = 1.18, 95 percent CI: 1.03–1.35), suggesting an independent effect of domestic violence on dropout (results not shown). Further, while having ever experienced domestic violence was associated with dropout for females, recent experience of domestic violence was not, indicating that perhaps unobserved factors in the household, such as the gender norms that influence decisions about schooling and violence, may account for this relationship. As with absenteeism, future research on the effects of school and domestic violence on school dropout should seek to integrate an understanding of parents' attitudes toward their children's schooling, especially girls, and toward violence.

Although the focus of these analyses is on specific acts most often considered in a narrow definition of school violence, they are taking place in—and may reflect—broader gendered expectations and patterns of behavior in the school environment. Students were asked in each round about their perceptions of teachers' treatment of boys and girls in the classroom; their responses differed notably by gender. For example, when asked at baseline who is assigned more chores at school, while the majority of students (70 percent of girls and 57 percent of boys) reported that boys and girls are assigned an equal number of chores percent, boys reported that they were assigned a disproportionate number of chores relative to girls. Similarly, although 58 percent of girls and 41 percent of boys said that boys and girls receive an equal amount of punishment in school, a higher proportion of boys (53 percent) than girls (35 percent) reported that boys receive more punishment than girls. These disparities can be explained, in part, by the fact that the vast majority of students (85 percent of girls and 67 percent of boys) reported that boys were more unruly in class than girls (results not shown). It is somewhat surprising, however, that boys and girls reported experiencing comparable levels of corporal punishment in school (21% of girls and 22% of boys reported that they had experienced corporal punishment). This may reflect a situation in which boys experience more frequent corporal punishment within a school year than girls, girls may be more likely to receive corporal punishment for behaviors other than being unruly in class (e.g. arriving late to school), or girls and boys may have different expectations of appropriate levels of corporal punishment.

Overall, in comparison with sexual violence, students and parents may view physical violence as culturally sanctioned for the purposes of discipline, especially for boys. This view is consistent with the lack of association between physical violence in school and all education outcomes for boys. In contrast, school-related sexual violence was consistently associated with negative education outcomes for boys, including absenteeism, poorer learning, and earlier dropout. As hypothesized (see Figure 1), the effects of violence on education outcomes may vary by student gender due to different norms and expectations about acceptable behavior. This pattern might reflect a perception that sexual violence inflicted on boys contravenes existing norms. Future research should incorporate student, parent, and community attitudes toward different types of violence, based on the assumption that culturally acceptable forms of violence, such as corporal punishment, may have less detrimental effects on education outcomes.

The findings reported here should be considered in light of some limitations. In particular, unmeasured adolescent characteristics, such as innate intelligence or commitment to schooling, might be "causing" both school violence (that is, increasing the risk of being targeted for violence) and education outcomes, creating a spurious association between the two. We have sought to capture these characteristics in our models by controlling for factors that might affect both violence and schooling (see Figure 1), including household socio-economic status, early schooling experiences, and school performance. However, it is possible that there are remaining unobserved characteristics that might account for the significant associations observed between violence and education outcomes, or might be otherwise obscuring these relationships. Another limitation is the selectivity of the study sample. Our analyses include only those who were enrolled in standards 4 through 8 of primary school, and were aged 14–17 at baseline. In each round, individuals only contributed information to our models if they were still attending school, and therefore at risk of school violence. Although many students in our sample were overage, reflecting considerable grade repetition in southern Malawi, this sample excludes those who never attended school or dropped out before reaching these ages/grades. Therefore, it is likely that students from the most disadvantaged households, and perhaps those at highest risk of violence (Heise, 1998; Pinheiro, 2006), were not included. Future research on the effects of violence on school outcomes should follow students from younger ages to develop a more complete understanding of how violence affects school entry and continuation through primary and secondary school.

Additional limitations relate to the type of data collected. For example, we do not have data on: 1) the sex of the perpetrators of violence, although we know that the majority of teachers are male; 2) when students first experienced school violence; and 3) the severity of violence experienced. It is also possible that the survey question about having had "sexual comments" made to students, used as our measure of sexual harassment in school, was interpreted differently by respondents in ways that might systematically affect results: some respondents might have interpreted this question to include comments made about themselves only, while others might have also included sexual comments made about peers or teachers. Future research should explore how subgroups interpret these (and other) questions that have not previously been validated. Another limitation is that our measures of school violence and domestic violence do not coincide precisely in two important ways: 1) respondents were

asked whether they had ever experienced domestic violence, and whether they had experienced domestic violence in the previous month, while they were asked about experiences of school violence in the current school year; and 2) respondents were only asked about physical domestic violence, while they were asked about experiences of psychological, sexual, and physical violence at school. On the first issue, it would be difficult for researchers to perfectly align recall periods on school and domestic violence, as domestic violence may take place outside of the school year, and exposure to school violence may change more systematically from one school year to the next. However, more frequent data collection, while costly and presenting a higher burden on respondents, could provide a more precise account of how closely experiences of school and domestic violence coincide. Second, it would be useful to collect data on all types of domestic violence in order to compare effects of different types of violence at home vs. at school. We find that females are significantly more likely than males to report domestic violence when restricted to physical violence; we might expect this disparity to be even larger if psychological and sexual violence were included. We also find that experience of school-related sexual violence is particularly problematic for boys in terms of education outcomes; it would be informative to incorporate information on experiences of sexual violence in the home.

Despite these limitations, to the best of our knowledge, this is the first paper that has attempted to examine associations between experiences of both school and domestic violence and education outcomes using longitudinal data. As noted in the literature review, the vast majority of existing empirical work on the effects of school violence on education has been conducted with cross-sectional data, which make it impossible to rule out reverse causality. In addition to using longitudinal data, MSAS provides rich data on early schooling experiences, household wealth, and other relevant demographic and education factors that may account for associations between school violence and negative schooling outcomes. While we cannot draw conclusions about causality, these analyses provide a major advancement over previous empirical work on this topic.

Conclusions

This research must be placed within the context of cultural norms about appropriate behavior for young people based on gender, age, ethnic group, and religion (Leach & Humphreys, 2007). Adolescents, particularly females, may have limited control over whether and when they drop out of school, or miss days of school. Adolescents may also have multiple competing barriers to education, including illness, poverty, and housework, that may influence decisions about school attendance more immediately than their experiences of violence. They may also have few appealing alternatives to attending school, especially in contexts where domestic violence is ubiquitous, and child marriage and adolescent pregnancy are common. For some, school attendance may even be a strategy to avoid domestic violence. Further, in contexts of very poor school quality (Pritchett, 2013), as is the case in MSAS schools (Psaki et al. 2014), academic achievement may be determined more by factors such as innate intellectual ability and parents' levels of education than by absenteeism.

Our findings support our original conceptual framework, and also point to several areas for future expansion. Analyses of the effects of school violence, whether qualitative or quantitative, should include discussion of the multiple domains in young people's lives in which they experience violence and, when possible, should integrate questions on whether authority figures condone violence. In addition to informing interventions, this information would help to clarify cultural perceptions about the acceptability of violence, which may lead to differential effects of violence on education and health outcomes. Future research should integrate measurement of mental health outcomes, as these may be more immediate indicators of the effects of violence in contexts where young people have limited control over decisions about schooling. Research should also integrate broader conceptualizations of gendered schooling environments, behaviors, and coercion beyond strict definitions of school violence. For example, even when coerced, students may not report sex with teachers or peers as violence if they perceive it to be consensual or culturally acceptable.

There is a clear need for more systematic research identifying the effects of school violence on education – as well as mental and reproductive health – outcomes. Consensus is needed on definitions of school violence, and the most reliable and valid tools for its assessment in different age groups. While cross-sectional data can provide evidence of the effects of school violence, longitudinal data are needed to establish temporality and to understand changes in education outcomes resulting from this experience. Our research examines effects of school violence during several years of follow-up, but research is also needed on the longer-term effects of violence on retention of academic skills, healthy adulthoods, and experience and perpetration of violence later in life. Researchers and policymakers have also highlighted the need for more systematic data collection on school violence (Leach et al., 2014; Pinheiro, 2006; UNGEI & UNESCO, 2015), which should include rigorous testing of models for prevention, such as implementing teacher codes of conduct, as well as support for survivors, such as provision of mental health services.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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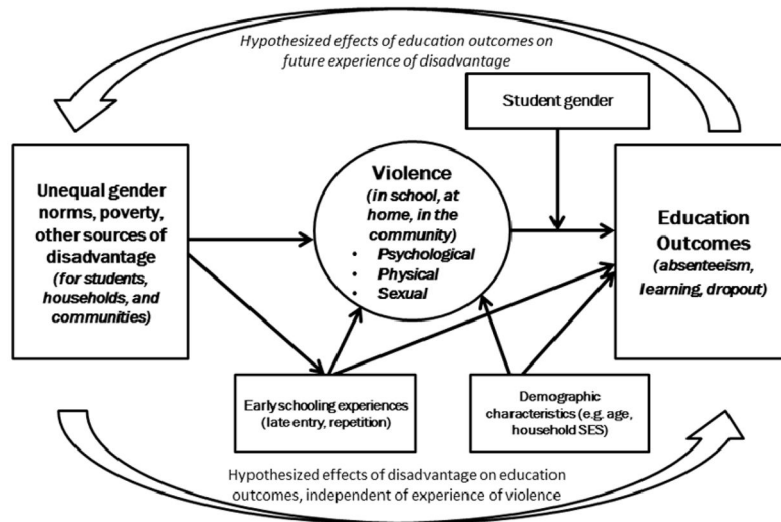
Figure 1.

Conceptual framework

Notes: Not all relationships are shown in this simplified conceptual framework. For example, unequal gender norms and violence are likely to also have negative effects on sexual and reproductive health outcomes for young people, which may, in turn, further reinforce inequalities. This conceptual framework was created by the authors, drawing on: Heise 1998; Parkes 2015; Leach, Dunne & Salvi 2014; Devries et al. 2014; RTI International 2013; Mullis et al. 2012a; Fleming & Jacobsen 2009; Townsend et al. 2008; and Leach & Mitchell 2006.

Figure 2.
Proportion of students at baseline who report experiencing no violence, school violence, domestic violence, and/or both by Round 5 of data collection in 2011 (n = 1744).
Notes: This figure reflects student responses on whether they had experienced any form of school violence in the current school year, and whether they had ever experienced domestic violence, in each round.
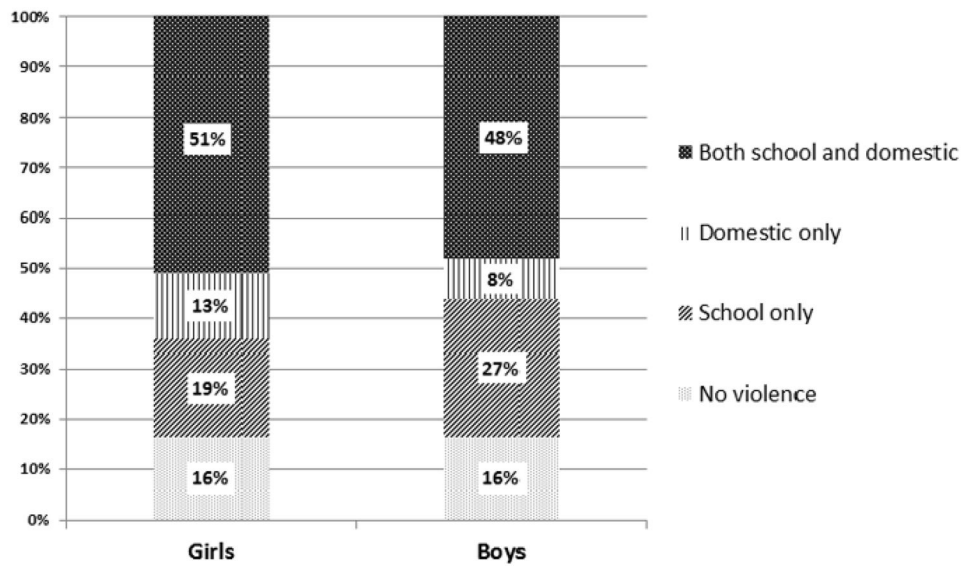
Table 1

Gender differences by round 5 in demographic characteristics and schooling experiences, Malawi Schooling and Adolescent Study, 2007–2011, among those attending school at baseline.

	Female (n = 869)	Male (n = 884)	
Age at baseline (%)			
14	27	24	**
15	42	36	
16	25	32	
17	6	8	
Ethnic group (%)			
Yao	39	39	
Chewa	20	20	
Lomwe	24	23	
Ngoni	10	9	
Other	7	8	
Orphan status (%)			
Both parents living	69	70	
Father deceased	18	17	
Mother deceased	7	7	
Both parents deceased	6	6	
Time since menarche (females) at baseline (%)			
Not yet reached menarche	8	--	
Less than one year	32	--	
One to two years	32	--	
Three or more years	28	--	
Signs of puberty (males) at baseline (%)			
Not yet reached puberty/no signs	--	12	
Less than one year	--	39	
One to two years	--	24	
Three or more years	--	25	
Working in 12 months before Round 5 (%)	16	42	***
Mother completed primary	16	13	†
Father completed primary	34	30	*
Household assets (%)			
Lowest tertile	33	34	
Middle tertile	32	35	
Upper tertile	35	32	
Late entry to school (age 8 or older)	24	33	***
Ever repeated in standards 1–3	74	76	
Still attending school at Round 5	28	55	***

†
p < 0.10;

*
p < 0.05;

**
  $p < 0.01$;

***
  $p < 0.001$

Notes: Analysis of variance (ANOVA) tests were done for categorical variables; tests of proportions were done for dichotomous variables to assess differences by student sex.

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Table 2

Percentage responses on key variables by round and sex of respondent, Malawi Schooling and Adolescent Study, 2007–2011, among those attending school at baseline.

	Round 1		Round 2		Round 3		Round 4		Round 5	
	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males
School enrollment and permanent dropout by round										
Number in-school respondents	869	884	618	757	451	636	281	519	211	451
# dropped out by round	--	--	197	63	162	108	175	121	96	102
Cumulative dropout	--	--	23%	7% ***	41%	19% ***	61%	33% ***	72%	45% ***
Proportion reporting school violence by round										
Sample: In-school each round	869	884	618	757	451	636	281	519	211	451
Any school violence, current year	51%	53%	47%	49%	43%	48% †	58%	53%	--	--
Physical school violence, current year	33%	33%	28%	28%	19%	20%	19%	15%	--	--
Sexual school violence, current year	15%	14%	10%	8%	9%	8%	11%	6% *	--	--
Sexual harassment in school, current year	31%	36% †	31%	34%	34%	39%	48%	45%	--	--
Proportion/mean reporting absenteeism (4 measures) by round										
Sample: In-school each round	869	884	618	757	451	636	281	519	211	451
Attend school regularly	89%	90%	88%	89%	91%	89%	89%	92%	92%	94%
Attended school yesterday/last school day	81%	80%	80%	76% †	83%	81%	90%	84%	--	--
# days attended in last school week (mean)	4.4	4.5	4.4	4.5	4.4	4.3	4.5	4.3 *	--	--
Ever missed school, current school year	81%	77% *	84%	81%	76%	72%	74%	76%	--	--
Proportion reporting domestic violence by round (Sample = all respondents who were in school at baseline: 869 females, 884 males)										
Physical domestic violence - ever	44%	39% *	57%	51% *	63%	56% **	64%	58% *	67%	61% **
Physical domestic violence - in last month	25%	27%	21%	15% **	17%	13% **	7%	5%	9%	4% **
Student learning outcomes by round (Sample = all respondents who were in school at baseline: 869 females, 884 males)										

	Round 1		Round 2			Round 3			Round 4			Round 5		
	Females	Males	Females	Males		Females	Males		Females	Males		Females	Males	
Chichewa reading comprehension score (range: 0–6)														
Mean score (standard deviation)	--	--	3.9 (1.7)	4.0 (1.8)		4.5 (1.4)	4.3 (1.5)	*	4.3 (1.7)	4.6 (1.6)	**	4.4 (1.4)	4.5 (1.5)	†
% scoring median score (5)	--	--	42%	46%		56%	52%	†	55%	63%	**	56%	61%	†
Numeracy score (range: 0–12)														
Mean score (standard deviation)	9.2 (2.5)	9.3 (2.5)	9.3 (2.4)	9.6 (2.3)	*	9.0 (2.6)	9.5 (2.4)	**	8.7 (2.5)	9.1 (2.6)	**	9.1 (2.5)	9.5 (2.6)	**
% scoring median score (10)	55%	56%	56%	60%	†	51%	60%	*	45%	53%	*	53%	61%	**

† $p < 0.10$;

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$.

T-tests were conducted to assess differences by student sex.

Notes: Only current students were asked about school violence and absenteeism in each round. Domestic violence questions and learning assessments were administered to all respondents, regardless of student status. Reading comprehension was not assessed until round 2; school violence and several absenteeism questions were not asked in round 5 because most respondents had left school. Students were coded as having dropped out of school in each round if they reported they were no longer attending school in the current round, as well as all subsequent rounds. For both Chichewa reading comprehension and numeracy, respondents are coded relative to the median across all rounds. More than 50% of respondents fall into the "greater than or equal to" the median category because an important minority scored equal to the median.

Table 3

Summary of findings on associations between school and domestic violence and education outcomes, by sex.

	Physical Violence	Sexual Harassment	Sexual Violence	Domestic Violence (last month)	Domestic Violence (ever)
Significant associations for females					
Absenteeism (ever missed a day of school)	--	--	--	--	--
Absenteeism (attend regularly)	--	--	--	--	--
Absenteeism (attended yesterday)	--	--	--	--	--
Absenteeism (# days attended last week)	✓	X	--	--	--
Chichewa reading comprehension	--	--	--	--	--
Numeracy	✓	--	X	--	--
School dropout	--	--	--	--	X
Significant associations for males					
Absenteeism (ever missed a day of school)	--	--	X	--	X
Absenteeism (attend regularly)	--	--	--	--	X
Absenteeism (attended yesterday)	--	--	--	X	X
Absenteeism (# days attended last week)	--	--	--	--	X
Chichewa reading comprehension	--	--	X	--	--
Numeracy	--	--	--	--	--
School dropout	--	--	X	--	--

Notes: Results in this table indicate whether there is evidence that each type of violence has a beneficial (check mark), detrimental (X), or neutral (--) association with each schooling outcome. The actual direction of the associations (in regression models) may have been positive or negative, depending on how the outcomes were specified.