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Research article

The relationships between violence in childhood and educational outcomes: A global systematic review and meta-analysis

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ABSTRACT

This is the first study to estimate the association globally between violence in childhood on educational outcomes, addressing a significant gap in the current evidence base. Systematic reviews and meta-analyses were conducted to identify 67 and 43 studies respectively from 21 countries to estimate the relationship between different types of violence in childhood on educational outcomes including school dropout/graduation, school absence, academic achievement and other educational outcomes such as grade retention, learning outcomes and remedial classes. Findings show that all forms of violence in childhood have a significant impact on educational outcomes. Children who have experienced any form of violence in childhood have a 13% predicted probability that they will not graduate from school. Males who are bullied are nearly three times more likely to be absent from school and girls who have experienced sexual violence have a three-fold increased risk of being absent, AOR 2.912, 95% CI (0.904–4.92) and AOR 3.147, 95% CI (0.033–4.57) respectively. Violence in childhood also has a significant impact on children's academic achievement on standardized tests. This study shows how different forms of violence in childhood contribute to inequalities in education—for both boys and girls and that an increased investment in prevention is needed in order to meet the global Sustainable Development Goals of ending violence, raising learning outcomes and creating safe, non-violence and inclusive learning environments. More work is also needed to further define, monitor and measure the link between violence in childhood and educational outcomes in order to achieve the Sustainable Development Goals.

1. Introduction

Addressing violence in childhood is a key development challenge for many countries and a major focus for international development since the adoption of the United Nations Sustainable Development Goals (SDGs) which include targets specifically aimed at eliminating, reducing and preventing violence everywhere. While violence in childhood has been shown to impact the health and well-being of children in every country where it has been measured, there is less evidence of the impact of violence on educational outcomes (Gilbert et al., 2009; Fry, 2016; Fang et al., 2015) despite the realization that education goals cannot be met when children live in fear (UNESCO, 2017; UN Secretary General, 2016). This study assesses the impact of a wide range of types of violence in

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childhood on educational outcomes through a global systematic review and meta-analyses. As the first study to do so, it aims to fill a gap in existing knowledge about this relationship and identify key issues for future research. The study is part of a larger program of research intended to support the achievement of SDG education Target 4.a which calls for the provision of *safe, non-violent, inclusive and effective learning environments for all*.

The past ten to fifteen years have seen substantial improvement in the analysis of both the prevalence and consequences of violence in childhood as demonstrated by a number of reviews and meta-analyses looking at this field of study which include both a global (see Barth, Bermetz, Heim, Trelle & Tonia, 2013; Hillis, Mercy, Amobi & Kress, 2016; Pereda, Guilera, Forns & Gómez-Benito, 2009; Stoltenborgh, van IJzendoorn, Euser & Bakermans-Kranenburg, 2011) and regional perspective (see Fry, McCoy & Swales, 2012; UNICEF, 2012). Furthermore, there have been systematic reviews and meta-analyses exploring individual countries where enough empirical literature exists (see Ji, Finkelhor, & Dunne, M. 2013; Fang et al., 2015). However, fewer literature reviews and meta-analyses focus on educational outcomes. Those that do typically examine variables such as enrolment, attendance and learning outcomes as measured by test scores (Cuesta, Glewwe & Krause, 2016; Glewwe et al., 2011; Mitchell, Wylie & Carr, 2008; Snilstveit et al., 2015). Measuring learning and other educational outcomes such as enrolment is important because enrolment does not ensure attendance and attending school does not necessarily mean children will learn (Rose & Alcott, 2015). Nevertheless, the measurement of learning outcomes has become an important focus of policy and programming efforts – including the SDGs – as a means of ensuring equitable and inclusive education for all (SDG 4), reducing poverty (SDG 1), and improving life skills (a focus area for many goals). Though there have been improvements in defining and measuring educational outcomes, including learning, there is a clear need to better understand how violence impacts children's educational outcomes.

Although no systematic review has yet examined the myriad forms of violence in childhood and their impact on educational outcomes, there have been both literature reviews and meta-analyses conducted on some specific violence types and academic outcomes. For example, a literature review by Espelage et al. (2013) concluded that bullying and peer victimization are related to poor academic performance in college. Another review examining violence and aggression in urban minority youth in the United States concluded that violence adversely affects academic achievement by negatively impacting cognition, school connectedness and school attendance (Basch, 2011). A further recent review exploring the relationship between violence in childhood and educational outcomes which utilized 20 articles, of which sixteen were empirical and four were research syntheses, concluded that violence in childhood frequently impairs academic performance resulting in special education requirements, grade retention and lower grades (Romano, Babchishin, Marquis & Fréchette, 2015). A recent report by UNESCO (2017) has also shown that school violence and bullying victimization impacts children's education in a number of ways, such as being afraid to go to school, difficulties concentrating in class and poorer performance in subjects, particularly mathematics. Nakamoto and Schwartz (2010) conducted a meta-analytic review of 33 studies that explored the association between peer victimization and academic performance. This systematic approach reported a small but significant negative correlation between peer victimization and academic performance using random effects and fixed-effects models (Nakamoto & Schwartz, 2010). Clearly these reviews offer important insights about the impact of violence on academic and other educational outcomes but equally there has been a lack of systematic attempts to explore these associations.

This paper is the first to comprehensively explore the impact of violence in childhood on various educational outcomes including learning. A global systematic review was conducted and meta-analyses estimating the impact of violence on educational outcomes were developed. The meta-analyses calculated the magnitude of associations with school dropout, absenteeism, academic achievement, grade repetition, engagement and other outcomes, and thereby estimated (at least to the lower bound) the educational burden, separately for seven major types of violence in childhood: physical, sexual, emotional, and community violence as well as bullying, neglect, and witnessing parental violence.

2. Methods

2.1. Systematic review of the impact of violence in childhood on educational outcomes

A systematic review was conducted to identify studies reporting on the consequences of violence in childhood on educational outcomes. The term 'violence in childhood' is used to cover violence against children, violence by children towards others (such as bullying) and violence to which children are exposed (such as witnessing parental violence). Definitions of different types of violence used in the study are presented in Table 1. Educational outcomes are those specified in the studies included in the review. These include measures of school performance including academic performance and test scores; student engagement; and attendance, truancy, absenteeism suspension and expulsion (see Table 2).

We searched PubMed, Embase, PsycInfo, CINAHL-EBSCO, ERIC and SocINDEX for papers published from the start of January 2000 to the end of November 2016 utilizing both free text and controlled vocabulary of subject heading and keyword terms consisting of population (children); type of violence and type of educational outcome [systematic review protocol with full list of search strings is available from the authors]. Languages were restricted to English and the geographic scope was global. Two reviewers identified and screened potentially relevant articles and independently assessed each study against the inclusion criteria. To identify additional relevant studies; we also hand searched several journals including *Child Abuse and Neglect*; *Child Maltreatment*; *Child Abuse Review*; *Journal of Interpersonal Violence*; *International Journal of Educational Development* and *Developmental Psychology*.

Based on the methods of previous reviews, studies were included if they were: primary research that explored the relationship between at least one form of violence in childhood (occurring before the age of 18), regardless of the setting (home, school, community, institution) where the violence occurred including: (1) sexual violence (including unwanted touching, forced sex, attempted

Table 1
Definitions of Violence in Childhood Used in This Study.

Physical violence	That which results in actual or potential physical harm from an interaction or lack of an interaction, which is reasonably within the control of a parent or person in a position of responsibility, power or trust. There may be single or repeated incidents.
Sexual violence	Child sexual violence is the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared and cannot give consent, or that violate the laws or social taboos of society. Child sexual violence is evidenced by this activity between a child and an adult or another child who by age or development is in a relationship of responsibility, trust or power, the activity being intended to gratify or satisfy the needs of the other person.
Emotional violence	Emotional violence involves the failure to provide a developmentally appropriate, supportive environment, including the availability of a primary attachment figure, so that the child can develop a stable and full range of emotional and social competencies commensurate with her or his personal potentials and in the context of the society in which the child dwells. There may also be acts towards the child that cause or have a high probability of causing harm to the child's health or physical, mental, spiritual, moral or social development. These acts must be reasonably within the control of the parent or person in a relationship of responsibility, trust or power. Acts include restriction of movement, patterns of belittling, denigrating, scapegoating, threatening, scaring, discriminating, ridiculing or other non-physical forms of hostile or rejecting treatment.
Neglect	Neglect can be defined as the failure to provide for the development of the child in all spheres: health, education, emotional development, nutrition, shelter, and safe living conditions, in the context of resources reasonably available to the family or caretakers and causes or has a high probability of causing harm to the child's health or physical, mental, spiritual, moral or social development. This includes the failure to properly supervise and protect children from harm as much as is feasible.
Witnessing domestic violence	The systematic review included studies, which measured childhood exposure to violence in the home, as perpetrated by family members towards others.
Bullying	Bullying involves repeated exposure over time, to negative actions on the part of one or more other persons, and the victim has difficulty defending himself or herself. This systematic review includes studies on both bullying perpetration and bullying victimization, as well as cyber-bullying and peer-to-peer victimization.
Adolescent relationship violence	Often called teen dating violence or intimate partner violence, adolescent relationship violence entails the perpetration and/or victimisation of violence between intimate partners during teenage years, which can take many forms – physical, sexual or emotional, or a combination of these.
Community violence	This systematic review includes studies on exposure to community violence, which can involve witnessing, perpetrating or direct victimisation of interpersonal violence in any space used or occupied by children other than homes, schools, institutions or organised workplaces. Different forms of community violence include physical violence, sexual violence, assault by authority figures such as the police and violence associated with gangs and traffickers.

Definitions are from the *UN Convention on the Rights of the Child*, the *World Report on Violence and Health*, World Health Organization, 2002, and the UN Secretary-Generals' *World Report on Violence against Children*, 2006. The sexual violence definition is from the Report of the Consultation on Child Violence Prevention, 29–31 March 1999. Geneva, World Health Organization, 1999 (document WHO/HSC/PVI/99.1). The bullying definition is from Olweus, D. (1995). *Bullying at school: What we know and what we can do*. 1993. Malden: Blackwell Publishing, as used by UNESCO. The adolescent relationship violence definition is from the CDC's Division of Violence Prevention.

unwanted sex, sexual harassment or pressurised/coerced sex), (2) emotional violence (including verbal abuse, psychological abuse), (3) physical violence (including corporal punishment, violent discipline, and physically abusive behaviors), (4) bullying (including physical or verbal bullying), (5) adolescent relationship violence (including dating violence in all forms: physical, verbal, sexual and coercive behaviors), (6) witnessing domestic violence, (7) witnessing community violence, and/or (8) gang violence and its impact on educational outcomes to include at least one quantifiable main outcome measure of (a) school enrolment, (b) attendance including school absence, (c) school dropout, (d) progression including failing courses, and/or (e) learning (including basic literacy and numeracy skills, the development of other important capabilities such as critical thinking and problem-solving and knowledge that promotes well-being).

Based on previous studies which have measured the burden of violence on education and other outcomes such as health and well-being (Fang et al., 2015; Fang et al., 2016), included studies needed to present the calculation of odds ratios (ORs), relative risks (RRs) or marginal effects (MEs) disaggregated by the type of violence, or reported results from regression analyses which could be used to calculate MEs (e.g. those which included continuous outcome variables such as scores or indexes). Studies which sampled on the basis of the presence of any specified outcome were not included – since this would invalidate the calculation of an OR, RR or ME for that outcome (Andrews et al., 2004). Both ORs and RRs refer to the ratio of the odds of an event occurring in an exposed group versus an unexposed group – in the case of this review it being those who have experienced a specific type of violence and those who have not (Fry, 2014). The odds ratio can be calculated in non-random samples, whereas the relative risk is calculated from population-level data. Marginal effects measure how much change in a continuous outcome variable – in this review, educational outcomes such as test scores – will be produced by a unit change in the predictor variable – in this case, violence (Cameron & Trivedi, 2010).

The abstract of each article of potential interest was screened to see if the article met our inclusion criteria. If so, full articles were retrieved and again reviewed to ensure the article met inclusion criteria. If insufficient information was presented in the abstract, full-texts were retrieved for further examination. For each included study, we examined the bibliographies to ensure all articles meeting the inclusion criteria were located. Key variables related to study design, location and findings were then extracted from the included studies.

Fig. 1 highlights the search and inclusion process. A total of 9407 records were reviewed through the databases and an additional 88 through manual searching journals. The dataset from one study, the *Young Lives* study, was also identified as having relevant

Table 2
Studies Meeting Inclusion Criteria for the Systematic Review.

Study Number	Authors Information	Country	Year of Data Collection	Study Design	Type(s) of Violence Studied	Type(s) of Educational Outcomes Explored
1	Allwood and Widom (2013)	United States	1967–1971 and 1989–1995	Cohort: Prospective	Child Abuse and Neglect	High school graduation
2	Hyman (2000)	United States	1984–1985	Cross-sectional	Childhood Sexual Abuse	College education
3	Barker, Kerr, Dong, Wood, and Debeck (2015).	Canada	2005–2013	Cross-sectional	Sexual abuse Physical Abuse Emotional Abuse Physical Neglect Emotional Neglect	High school incompletion
4	Turner, Finkelhor, Shattuck, Hamby, and Mitchell (2015)	United States	1993–2012	Cross-sectional	Peer victimization involving injury Peer victimization involving weapon Peer victimization involving power imbalance Peer victimization involving sexual content Peer victimization involving internet component Peer victimization involving bias component e.g. skin color, religion Past week physical violence from staff	Child missed school because of the incident
5	Devries et al. (2013)	Uganda	2012	Cross-sectional	Bullying	Low performer on educational tasks Achievement score
6	Glew, Fan, Katon, Rivara, and Kernic (2005)	United States	2001–2002	Cross-sectional	Bullying	Achievement score
7	Maclean, Taylor, and O'Donnell (2016)	Australia	2008–2010	Cohort	Sexual violence Physical violence Emotional violence Neglect Bullying	Attendance% Suspension or expulsion Low reading scores
8	Rothon, Head, Klineberg, and Stansfeld (2011)	United Kingdom	2001–2003	Repeated measures	Bullying	Reached achievement benchmark attainment
9	Ayahri and Goodman (2008)	Yemen	2002–2003	Cross-sectional	Harsh corporal punishment	Poorer school performance
10	Boynton-Jarrett, Hair, and Zuckerman (2013)	United States	1997–2007	Cohort: Prospective	Cumulative exposure to violence (CEV): (1) Direct victimization; (2) Perceived school safety; (3) Threat of violence; and (4) Witnessing violence Exposure to gang activity Bullying	High school graduation
11	Bradshaw, Waasdorp, Goldweber, and Johnson (2013)	United States	2011	Cross-sectional	Bullying	Truancy Poor grades
12	Brendgen, Wanner, Vitaro, Bukowski, and Tremblay (2007)	Canada	Not stated. Occurs over 17 years. (Published 2007)	Cohort: Prospective	Verbal abuse by teacher	High school graduation
13	Chapple and Vaske (2010)	United States	1979–1996	Cross-sectional	Educational neglect Physical neglect	Remedial classes needed Suspension Grade retention <i>(continued on next page)</i>

Table 2 (continued)

Study Number	Authors Information	Country	Year of Data Collection	Study Design	Type(s) of Violence Studied	Type(s) of Educational Outcomes Explored
14	Fantuzzo, Perlman, and Dobbins (2011)	United States	1990–2008	Cohort	Emotional neglect Physical abuse Neglect	Reading test scores Mathematics test scores Language test scores Science test scores Learning Behaviors Performance Assessment (LBPA) Social Skills Performance Assessment (SSPA) Poor attendance Suspensions Skipping school
15	Hansen, Hasselg & rd, Undheim, and Indredavik (2014)	Norway	2009–2011	Cross-sectional	Bullying	Academic performance in college
16	Holt et al. (2014)	United States	2012	Cross-sectional	Bullying	Any academic suspension Any academic expulsion Frequent absenteeism Cumulative grade point average (GPA) Receipt of special education services
17	Kernic et al. (2002)	United States	1996–1999	Case-control	Witnessing parental violence Child abuse	Grade retention School dropout by grade twelve School dropout
18	Orpinas and Raczynski (2016)	United States	2002–2008	Longitudinal	Relational victimization	Underachieve on SAT's Test Results
19	Peguro (2011)	United States	2002–2006	Longitudinal	Exposure to violence and victimization at school Physical bullying	Persistent absenteeism
20	Woods and Wolke (2004)	United Kingdom	Not stated	Cross-sectional	Relational bullying Witnessing family conflict	Missing school Australian Tertiary Admission Ranking (ATAR) system: ATAR > 70 Wide Range Achievement Test–Reading
21	Thornton, Darmody, and McCoy (2013)	Ireland	2007–2008	Cohort	Bullying	High School Graduation
22	Steiner and Rasberry (2015)	United States	2013	Cross-sectional	Bullying in person and electronically	
23	Smith and Skrbis (2016)	Australia	2006–2013	Cohort	Bullying	
24	Thompson and Whimper (2010)	United States	1991 onwards	Cohort	Maltreatment	
25	Tanaka, Georgiades, Boyle, and MacMillan (2015)	Canada	1983 and 2000–2001.	Cross-sectional	Witnessed family violence Severe physical abuse	
26	Tajima, Herrenkohl, Moylan, and Derr (2011)	United States	1976–1977. 1980–1982. 1990–1991.	Longitudinal	Non-severe physical abuse Sexual Abuse Witnessing parental violence Child Abuse	High school dropout

(continued on next page)

Table 2 (continued)

Study Number	Authors Information	Country	Year of Data Collection	Study Design	Type(s) of Violence Studied	Type(s) of Educational Outcomes Explored
27	Fry, D., Anderson, J., Hidalgo, R.J., Elizalde, A., Casey, T., Rodriguez, R., Martin, A., Oroz, C., Gamarra, J., Padilla, K. & Fang, X.	Peru	2013	Cross-sectional	Witnessing family fights Psychological violence at home Verbally threatened at home Physical violence at home Non-contact sexual violence Contact sexual violence Any sexual violence Peer-to-peer psychological violence at school Peer-to-peer physical violence victimization at school Cumulative neglect Physical abuse Psychological abuse Sexual abuse Witnessed physical or sexual abuse in the family Bullying	Failed course in last year Ever repeated grade Ever expelled
28	Geoffroy, Pereira, Li, and Power (2016)	United Kingdom	1958 onwards	Cohort		No qualifications < O-Level or equivalent O-Level or equivalent A-Level or equivalent
29	Brown and Taylor (2008)	United Kingdom	1958 onwards	Cohort		No O Levels Nine+ O levels No education Degree School performance
30	Contreras, Elacqua, Martinez, and Miranda (2016)	Chile	2008–2009	Cohort	Bullying	School performance
31	Hamnig and Jozkowski (2013)	United States	2009	Cross-sectional	Injured in fight in past 12 months Bullied in past 12 months	Grades: Mostly Cs versus mostly As/Bs and Mostly Ds/Fs versus mostly As/Bs
32	Henrich, Schwab-Stone, Fanti, Jones, and Ruchkin (2004)	United States	1998–2000	Longitudinal: 2 years	Threatened at school in last 12 months Victim of IPV in last 12 months (Females only) Sexually assaulted (Females only) Community violence	Academic achievement
33	Jayasinghe, Jayawardena, and Perera (2009)	Sri Lanka	Not stated	Cross-sectional	Fighting, hurting someone badly in a fight, carried a gun, been in gang fights, been arrested and carried a knife Witnessing parental violence	Behavior and psychological status School performance School attendance Completion of secondary school Academic performance (continued on next page)
34	Moore et al. (2015)	Australia	1989 onwards	Cohort	Bullying	

Table 2 (continued)

Study Number	Authors Information	Country	Year of Data Collection	Study Design	Type(s) of Violence Studied	Type(s) of Educational Outcomes Explored
35	Rouse and Fantuzzo (2009)	United States	2002–2003	Cross-sectional	Any form of child maltreatment	Poor reading achievement Poor mathematics achievement Grade retention Poor learning behaviors Poor social skills Absenteeism Suspension history
36	Rouse, Fantuzzo, and LeBoeuf (2011)	United States	2005–2006	Cross-sectional	Any form of child maltreatment	Poor reading achievement Poor mathematics achievement Absenteeism Truancy Happiness at school Academic performance
37	Siziya, Mtuila, and Rudatsikira (2007)	Swaziland	2003	Cross-sectional	Bullying	Reading test scores Reading test scores
38	Arseneault et al. (2006)	England and Wales	1994–95 birth cohort onwards.	Case-control: part of the Environmental Risk (E-Risk) Longitudinal Twin Study	Bullying Peer aggression Physical violence Community violence Physical and/or sexual violence victimization by a partner	Spelling test scores Mathematics test scores School attachment
39	Baker-Henningham, Meeks-Gardner, Chang, & Walker, (2009)	Jamaica	Not stated	Cross-sectional	Peer aggression	Feeling they were likely to drop out before finishing high school Grades No secondary school qualifications Gained university degree Gained Higher School Certificate
40	Banyard and Cross (2008)	United States	2000–2001	Cross-sectional	Sexual violence	Attended university Reading test scores Mathematics test scores Elementary school grade failure
41	Boden, Horwood, and Fergusson (2007)	New Zealand	1977–2002	Cohort	Physical violence Community violence	Educational attainment Academic problems Role fulfillment as a good student High school dropout Obtained college degree Student engagement GPA
42	Burdick-Will (2013)	United States	2002–2009	Cross-sectional	Physical violence Community violence	State achievement test (continued on next page)
43	Caudillo and Torche (2014)	Mexico	1990–2010	Cohort	Community violence	
44	Covey, Menard, and Franzese (2013)	United States	1976–2003	Cohort	Physical Violence	
45	Espinoza, Gonzales, and Fuligni (2013)	United States	2009–2010	Cross-sectional	Bullying	
46	Font and Maguire-Jack (2016)	United States	2012	Cross-sectional	Witnessing parental violence	
47	Forrest, Bevans, Riley, Crespo, and Louis (2013)	United States	2006–2008	Repeated Measures	Bullying	

Table 2 (continued)

Study Number	Authors Information	Country	Year of Data Collection	Study Design	Type(s) of Violence Studied	Type(s) of Educational Outcomes Explored
48	Gruber and Fineran (2015)	United States	Not stated	Cross-sectional	Bullying Sexual violence	Academic engagement School withdrawal Academic performance Academic achievement
49	Huang and Mossige (2012)	Norway	2007	Cross-sectional	Physical violence Sexual violence	GPA Academic engagement School attendance
50	Juvonen, Wang, and Espinoza (2010)	United States	Not stated	Repeated Measures	Bullying	Reading test scores Mathematics test scores Academic Problems
51	Kiesel, Piescher, and Edleson (2016)	United States	2005–2009	Cohort	Witnessing parental violence Child maltreatment	Academic competence: self-reported grades; and self-perceived academic competence
52	Lopez and DuBois (2005)	United States	Not stated	Cross-sectional	Peer victimization Perceived peer rejection	Academic achievement
53	Ma, Phelps Lerner, and Lerner (2009)	United States	2002–2003 and 2003–2004.	Cohort: utilized 4-H Study of Positive Youth Development, a national longitudinal investigation of adolescents	Bullying	
54	Morrow, Hubbard, and Swift (2014)	United States	Not stated	Cross-sectional	Physical victimization Verbal victimization Social manipulation Property attacks Social rebuff	Academic achievement
55	Peek-Asa et al. (2007)	United States	1994 onwards	Cohort: Prospective Longitudinal	Witnessing parental violence	Core total test scores Language test scores Maths test scores Reading test scores Numeracy test Scores Dropout
56	Pieterse (2015)	South Africa	2002	Cohort	Childhood maltreatment Hit hard by parent Pushed by parent Afraid of being hurt Put down by adults	
57	Popp, Peguero, Day, and Kahle (2014)	United States	2001–2002	Cross-sectional	Direct and Indirect bullying	Academic self-efficacy Educational achievement
58	Risser (2013)	United States	2000–2004.	Cross-sectional	Peer victimization	School performance Performance IQ Verbal IQ GPA Attendance
59	Rueger, Malecki, and Demaray (2011)	United States	Not stated	Longitudinal	Peer victimization	Completed high school Attended college
60	Robst (2010)	United States	1992	Cross-sectional	Childhood Sexual Abuse	Achieved bachelor's degree or above Academic Achievement
61	Strøm, Thoresen, Wentzel-Larsen, and Dyb (2013)	Norway	1999–2001	Cross-sectional	Sexual abuse Violence from youths Violence from adults Bullying	

(continued on next page)

Table 2 (continued)

Study Number	Authors Information	Country	Year of Data Collection	Study Design	Type(s) of Violence Studied	Type(s) of Educational Outcomes Explored
62	Tanaka et al. (2011)	Canada	1983 and 2000–2001	Cross-sectional	Severe child physical abuse (CPA) Non-severe CPA Childhood sexual abuse Peer victimization	Educational attainment
63	Thijs and Verkuymen (2008)	Netherlands	Not stated	Cross-sectional		Academic self-efficacy Relative academic achievement Absolute academic achievement
64	Wang et al. (2014)	Canada	2008	Cross-sectional	Peer victimization	Academic achievement: GPA
65	Wormington, Anderson, Schneider, Tomlinson, and Brown (2016)	United States	2009	Cross-sectional	Peer victimization	Academic performance
66	Wright (2015)	United States	Not stated	Longitudinal: 1.5 years	Face to face peer victimization Cyber victimization	Truancy Academic performance Absenteeism
67	Ogando Portela and Pells (2015) Pells, Ogando Portlea, and Espinoza Revollo (2016)	Ethiopia, India, Peru, Viet Nam	2002–2016	Longitudinal	Corporal punishment	Cognitive achievement outcomes Psychosocial competencies

Definitions for each of the types of violence and educational outcomes included in these studies can be found here: [<http://datashare.is.ed.ac.uk/handle/10283/2762>].

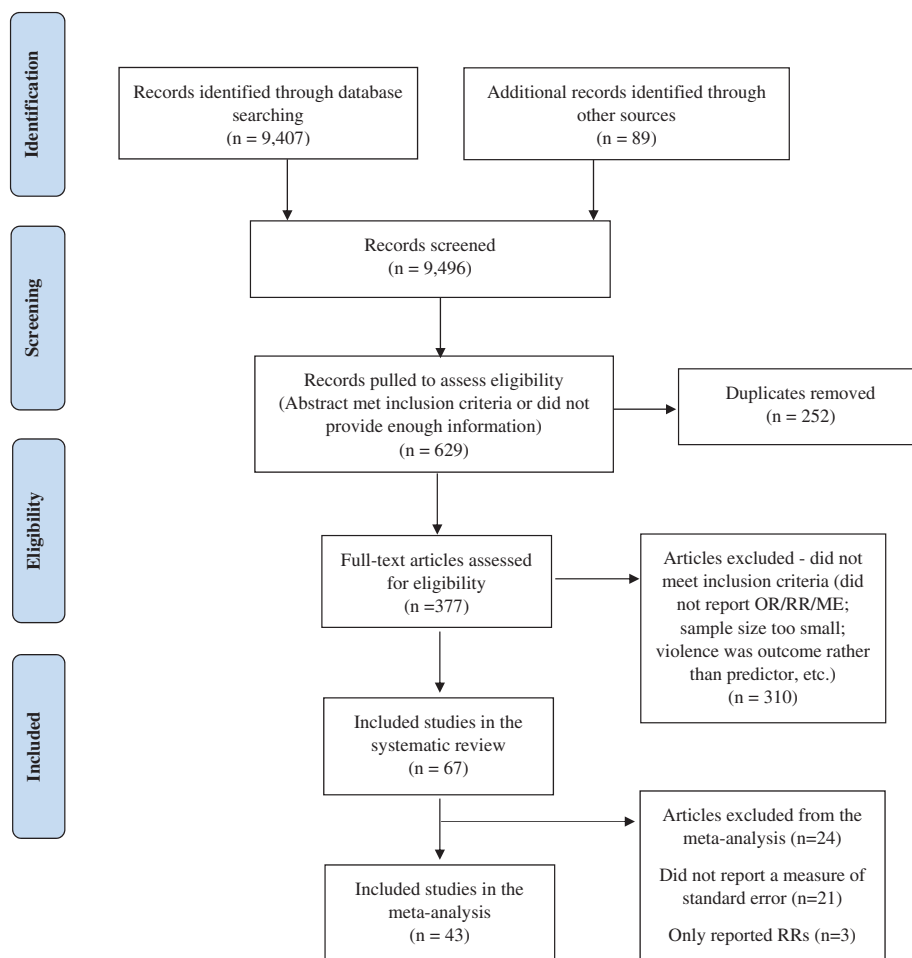


Fig. 1. PRISMA flow chart.

information that was not yet accessible through the search engines. Of these, 629 abstracts were further reviewed to assess whether they met the inclusion criteria. Of these abstracts, 377 full-text articles were retrieved and reviewed. A total of 67 studies (representing 68 publications: 2 from the 1 *Young Lives* study) met the inclusion criteria. Of these, 14 were studies exploring sexual violence, 16 on physical violence, 36 on bullying, 6 on neglect, 10 on witnessing domestic violence, 6 on emotional violence, 2 on adolescent relationship violence, 5 on community violence and 10 on any form child maltreatment (e.g. those that did not disaggregate by type of violence) and their links with educational outcomes (see Table 2 for a full list and further details of included studies). The majority of studies explored multiple types of violence and multiple educational outcomes.

2.2. Meta-analyses to estimate the impact of violence in childhood on educational outcomes

2.2.1. Effect sizes

Two types of effect size were used in the meta-analyses, adjusted odds ratios (AORs) and marginal effects (ME). Over half of studies identified through the systematic review reported ORs or AORs (36 studies). If only the ORs and not AORs, which adjust for confounders, were available for a study, we produced corresponding estimates of AORs using an adjustment factor calculated from studies that had both AORs and ORs. If both ORs and AORs were not available in any given study, the average of the adjustment factors was derived from other outcomes within the same general category of outcomes (e.g. academic achievement, dropout, etc). The adjustment factor was calculated by using the following formula:

$$U = \frac{OR_A}{OR_U}$$

Where OR_A represents the adjusted odds ratio and OR_U represents the unadjusted odds ratio, the U is the bias produced from failure to control for the confounders. Most studies that reported ORs or AORs had corresponding 95% confidence intervals (CIs). Those studies that did not report 95% CIs (for ORs or AORs) were excluded from our study (Study No.2, 12, 13, 14, 19, 26, 32, and 37) and an additional 3 studies (No.17, 21, and 28) only reported RRs, these 11 are studies were excluded.

Another 31 studies identified through the systematic review reported MEs and most of them were the marginal effect of different types of violence in childhood on standardized academic achievement. We also excluded the ME studies that did not report 95% CIs or a measure of standard error (such as t-statistics) of coefficient estimates. Thirteen studies that did not report 95% CIs or standard errors were excluded, (Study no. 38, 40, 43, 44, 46, 47, 52, 53, 59, 60, 63, 65, 66).

2.2.2. Outcome and violence types

The educational outcomes were divided into four different outcome types based on the findings of the systematic review: (1) school dropout/graduation (including high school dropout/incompletion and school graduation/completion, the impact directions of these two are opposite), (2) school absence, (3) academic achievement/performance (reporting both low and high academic achievement, with the impact directions of the two also being opposite), and (4) other educational outcomes including grade retention/remedial class, etc.

Since limited studies were found related to the impact of community violence, gang violence, and adolescent relationship violence on educational outcomes that reported AORs or MEs in the systematic review, the types of violence in childhood were divided into 7 different violence types for the meta-analysis: (1) sexual violence, (2) physical violence, (3) emotional violence, (4) neglect, (5) witnessing parental violence, (6) bullying, and (7) other.

2.2.3. Meta-analyses strategy

Since several estimates provided under one outcome type and one corresponding violence type could exist in the same study (because of different control variables, different subtypes of the outcome types and violence types), we first calculated only one estimate for each study under one outcome type and one corresponding violence type. Two strategies were adopted to address this issue.

2.2.3.1. Double meta-analyses. A two-step double meta-analysis was the first strategy adopted. First, for those studies that reported more than one estimate under one outcome type and one corresponding violence type, we conducted a meta-analysis for this study (under the outcome type and violence type) to obtain one estimate and its corresponding 95% CI. If the P value of the Q test was under 5%, then the estimates reported are from random effect results, otherwise they are from fixed effect results.

Secondly, we merged the data from step 1 and those studies that reported only one estimate under one outcome type and one corresponding violence type and did meta-analyses the second time, and from this obtained the results of the overall impact of different types of violence in childhood on different educational outcomes.

2.2.3.2. Classified meta-analyses. The second strategy was to obtain estimates by hand, using a two-step process. The first step involved excluding the estimates for those studies that reported more than one estimate under one outcome type and one corresponding violence type by excluding the estimates that did not control most covariates and those that reported measures of severity and only retained those estimates that reported abuse or not (for example: removing estimates of severe physical abuse (0/1) and retaining (non)physical abuse (0/1)). For those estimates where it was difficult to decide whether to exclude or retain the estimates, we chose to include the medium estimates of all estimates.

This article presents the findings from the double meta-analysis strategy but findings for the classified meta-analyses are also available at: [<http://datashare.is.ed.ac.uk/handle/10283/2762>].

3. Results

Tables 3–6 present findings from the double meta-analyses for studies reporting AORs presented in a format similar to other studies in this field (see for example Abajobir, Kisely, Maravilla, Williams, & Najman, 2017). We provide the fixed and random effect AOR of the association between different types of violence in childhood according to the educational outcome groupings. An overall estimate of the impact of violence in childhood on educational outcomes is also provided. For educational outcomes related to school absence and also for the ‘other’ category, gender differences were provided since these were present in the included studies.

Table 3 presents the findings specifically on the association between forms of violence in childhood and school dropout (8 studies with 18 different outcomes) and school graduation (3 studies with 6 outcomes). For school dropout the findings highlight that all the various forms of violence in childhood increase school dropout with those who experience ‘other’ forms of violence, mostly in the form of being engaged in community violence, being at a two-fold increased risk of also dropping out of school, AOR 2.277, 95% CI (1.644–2.91). Similarly, emotional violence also increases a child’s risk of dropping out of school twofold, albeit with a limited number of studies measuring this type of violence and its relationship to school dropout.

We see the opposite relationship with school graduation: experiencing any of the forms of violence in childhood is associated with not graduating from school. The ‘other’ category for type of violence which accounts for community and gang violence, among other forms of violence not listed in the other categories, has the largest association with school graduation, such that those who experience these forms of violence are less likely to graduate from school, AOR 0.385, 95% CI (0.212–0.558).

Table 4 highlights the findings related to the association between absenteeism and violence in childhood, covering a total of six studies and 14 outcomes from the global systematic review. These findings are also disaggregated by gender since all the included studies for this outcome reported gender differences. The findings indicate that rates of absenteeism as a burden of violence in childhood are higher for males than females and, according to the studies from the review, driven mostly by bullying experiences. Males who experience bullying are nearly three times more likely to also be absent from school as compared to males who do not

Table 3
Fixed Effect and Random Effect Adjusted Odds Ratios of the Association between Violence in Childhood and School Dropout and School Graduation.

Subgroup	n of studies	n of outcomes	School dropout						dQ	P value	I-squared
			Fixed Effect			Random Effect					
			AOR	95% LL	95% UL	AOR	95% LL	95% UL			
Sexual Abuse	2	4	1.165	0.904	1.426	1.165	0.904	1.426	0.02	0.888	0.00%
Physical Abuse	2	7	1.611	1.333	1.888	1.611	1.333	1.888	0	0.972	0.00%
Emotional Abuse	1	1	2.2	1.6	3	2.2	1.6	3	0	.	.
Neglect	1	2	1.654	1.249	2.06	1.654	1.249	2.06	0	.	.
Bullying	1	1	1.51	1.08	2.13	1.51	1.08	2.13	0	.	.
Other	1	3	2.277	1.644	2.91	2.277	1.644	2.91	0	.	.
Overall	8	18	1.521	1.366	1.675	1.593	1.334	1.852	17.05	0.017	59.00%
School graduation											
Subgroup	n of studies	n of outcomes	School graduation						dQ	P value	I-squared
			Fixed Effect			Random Effect					
			AOR	95% LL	95% UL	AOR	95% LL	95% UL			
Sexual Abuse											
Physical Abuse											
Emotional Abuse											
Neglect											
Witnessing parental violence											
Bullying	1	3	0.69	0.503	0.878	0.678	0.341	1.015	0	.	.
Other	2	3	0.385	0.212	0.558	0.385	0.212	0.558	3.21	0.073	68.80%
Overall	3	6	0.526	0.399	0.653	0.568	0.288	0.848	8.73	0.013	77.10%

Note: n of studies means number of studies, n of outcomes means number of outcomes (one study may reports several outcomes/see strategy adopted in the methods section)

Table 4
Fixed Effect and Random Effect Adjusted Odds Ratios of the Association between Violence in Childhood and School Absence by Gender.

Subgroup	n of studies	n of outcomes	School Absence						dQ	P value	I-squared
			Fixed Effect		Random Effect						
			AOR	95% LL	95% UL	AOR	95% LL	95% UL			
School Absence (Male and Female)											
Sexual Abuse	1	1	4.218	2.775	6.549	4.218	2.775	6.549	0	.	.
Physical Abuse	4	12	1.777	1.459	2.095	1.783	1.454	2.111	3.03	0.387	1.00%
Emotional Abuse	1	1	1.8	1.5	2.3	1.8	1.5	2.3	0	.	.
Neglect	6	14	1.828	1.581	2.074	1.996	1.552	2.441	9.31	0.097	46.30%
Overall											
School Absence (Male)											
Sexual Abuse	1	3	2.263	0.913	3.614	2.263	0.913	3.614	0	.	.
Physical Abuse	1	1	2.512	0.876	7.209	2.512	0.876	7.209	0	.	.
Emotional Abuse	1	1	3.53	1.549	8.044	3.53	1.549	8.044	0	.	.
Neglect	1	2	2.005	0.29	3.72	2.005	0.29	3.72	0	.	.
Witnessing parental violence	2	7	2.575	1.46	3.69	2.912	0.904	4.92	2.38	0.123	58.00%
Bullying											
Other											
Overall	6	14	2.426	1.698	3.154	2.426	1.698	3.154	3.18	0.672	0.672
School Absence (Female)											
Sexual Abuse	1	3	3.147	0.401	5.893	3.147	0.401	5.893	0	.	.
Physical Abuse	1	1	0.926	0.246	3.478	0.926	0.246	3.478	0	.	.
Emotional Abuse	1	1	0.335	0.05	2.225	0.335	0.05	2.225	0	.	.
Neglect	1	2	0.639	-0.43	1.708	0.639	-0.43	1.708	0	.	.
Witnessing parental violence	2	7	1.824	0.94	2.707	2.301	0.033	4.57	4.89	0.027	79.60%
Bullying											
Other											
Overall	6	14	1.123	0.59	1.656	1.349	0.458	2.241	12.26	0.031	59.20%

Table 5
Fixed Effect and Random Effect Adjusted Odds Ratios of the Association between Violence in Childhood and Academic Achievement.

Subgroup	n of studies	n of outcomes	Academic achievement/performance						dQ	P value	I-squared
			Fixed Effect AOR	95% LL	95% UL	Random Effect AOR	95% LL	95% UL			
Low academic achievement/performance											
Sexual Abuse	2	3	1.254	1.063	1.446	1.254	1.063	1.446	0.02	0.899	0.00%
Physical Abuse	2	3	1.232	1.066	1.398	1.232	1.066	1.398	0.01	0.909	0.00%
Emotional Abuse											
Neglect	1	1	1.63	0.73	3.64	1.63	0.73	3.64	0	.	.
Witnessing parental violence	3	4	1.2	0.884	1.516	1.269	0.816	1.722	3.15	0.207	36.60%
Bullying	6	12	1.123	0.971	1.275	1.186	0.816	1.556	18.05	0.003	72.30%
Other	2	3	1.232	1.118	1.345	1.303	1.024	1.582	2.53	0.112	60.40%
Overall	16	26	1.21	1.138	1.282	1.222	1.105	1.34	25.76	0.041	41.80%
Academic achievement/performance											
Subgroup	n of studies	n of outcomes	Academic achievement/performance						dQ	P value	I-squared
			Fixed Effect AOR	95% LL	95% UL	Random Effect AOR	95% LL	95% UL			
High academic achievement/performance											
Sexual Abuse	1	1	0.6	0.5	0.7	0.6	0.5	0.7	0	.	.
Physical Abuse	3	6	0.764	0.699	0.829	0.722	0.586	0.858	6.81	0.033	70.60%
Emotional Abuse	4	7	0.715	0.661	0.77	0.684	0.557	0.811	14.05	0.003	78.60%

Table 6
Fixed Effect and Random Effect Adjusted Odds Ratios of the Association between Violence in Childhood and Other Educational Outcomes.

Subgroup	n of studies	n of outcomes	Other (Grade Retention/ Remedial class etc.)						dQ	P value	I-squared
			Fixed Effect		Random Effect		95% LL	95% UL			
			AOR	95% LL	AOR	95% LL					
Sexual Abuse	1	1	2.202	1.363	3.356	2.202	1.363	3.356	0	.	.
Physical Abuse											
Emotional Abuse											
Neglect											
Witnessing parental violence											
Bullying	2	3	1.532	1.355	1.71	1.532	1.355	1.71	0.48	0.49	0.00%
Other	3	4	1.553	1.378	1.728	1.563	1.367	1.759	2.16	0.34	7.30%
Overall											
Other Educational Outcomes (Male)											
Subgroup	n of studies	n of outcomes	Fixed Effect		Random Effect		95% LL	95% UL	dQ	P value	I-squared
			AOR	95% LL	AOR	95% LL					
			AOR	95% LL	AOR	95% LL	AOR	95% UL			
Sexual Abuse	1	3	1.25	0.979	1.522	1.25	0.979	1.522	0	.	.
Physical Abuse	1	1	1.068	0.704	1.62	1.068	0.704	1.62	0	.	.
Emotional Abuse	1	1	1.15	0.751	1.763	1.15	0.751	1.763	0	.	.
Neglect											
Witnessing parental violence	1	2	1.345	0.914	1.777	1.345	0.914	1.777	0	.	.
Bullying	1	4	1.2	0.965	1.435	1.2	0.965	1.435	0	.	.
Other											
Overall	5	11	1.214	1.066	1.362	1.214	1.066	1.362	0.89	0.926	0.00%
Other Educational Outcomes (Female)											
Subgroup	n of studies	n of outcomes	Fixed Effect		Random Effect		95% LL	95% UL	dQ	P value	I-squared
			AOR	95% LL	AOR	95% LL					
			AOR	95% LL	AOR	95% LL	AOR	95% UL			
Sexual Abuse	1	3	1.141	0.845	1.438	1.141	0.845	1.438	0	.	.
Physical Abuse	1	1	1.978	1.199	3.263	1.978	1.199	3.263	0	.	.
Emotional Abuse	1	1	2.526	1.698	3.758	2.526	1.698	3.758	0	.	.
Neglect											
Witnessing parental violence	1	2	1.722	1.036	2.408	1.722	1.036	2.408	0	.	.
Bullying	1	4	1.483	1.16	1.806	1.483	1.16	1.806	0	.	.
Other											
Overall	5	11	1.406	1.205	1.606	1.571	1.191	1.952	9.82	0.043	59.30%

experience bullying, AOR 2.912, 95% CI (0.904–4.92). After bullying, physical violence and sexual violence in childhood have the strongest associations with absenteeism for males. For females, the largest impact on absenteeism is experiencing sexual violence during childhood: girls who experience sexual violence are three times more likely to be absent from school than girls who have not experienced sexual violence, AOR 3.147, 95% CI (0.033–4.57). For girls, the second highest impactful form of violence in childhood on absenteeism is bullying which is associated with a two-fold risk of not attending school, AOR 2.301, 95% CI (0.033–4.57).

Table 5 showcases findings related to both low and high academic achievement primarily through standardized test scores with findings from 16 studies representing 26 outcome variables. The findings highlight that all forms of violence in childhood impact on academic achievement fairly equally, AOR 1.22, 95% CI (1.105–1.34), with children who have experienced violence being less likely to achieve high grades and test scores (4 studies with 7 outcomes).

Table 6 focuses on other educational outcomes such as repeating grades and needing to take remedial classes, based on overall findings from 3 studies with 4 outcomes and findings from 5 gender disaggregated studies with 11 outcomes reported. Overall, all forms of violence impact on these additional educational outcomes with physical violence in childhood having a slightly higher association, AOR 2.202, 95% CI (1.363–3.356). These studies also disaggregated by gender and findings show that all forms of violence impact on these educational outcomes for both boys and girls yet for girls emotional violence appears to have a larger association. Girls who have experienced emotional violence in childhood are at a 2.5 times increased risk of experiencing these negative educational outcomes (grade repetition, taking remedial classes, etc.) than girls who have never experienced emotional violence, AOR 2.526, 95% CI (1.698–3.758).

Tables 7–9 present the findings from the double meta-analyses for the studies reporting MEs. Table 7 includes the findings related to dropout and graduation. Overall, based on 12 studies reporting 21 different outcome relationships, students who experience any form of violence of childhood have a 5% predicted probability of dropping out of school, 0.058 ME, 95% CI (0.028, 0.087). This ranges from a low of 4% probability for children who experience bullying to a high of 15% predicted probability for those who experience sexual violence in childhood, 0.045 and 0.152 ME, 95% CI (0.026, 0.064 and –0.199, 0.504 respectively). For children who experience physical, emotional or other forms of violence, the predicted probability is that an additional 8% will drop out over their counterparts who have not experienced violence.

The results are even starker for graduation rates. Children who have experienced any form of violence in childhood have a 13% probability of not graduating from school compared to those who have not experienced violence, based on eight studies reporting 15 outcomes, –0.137 ME, 95% CI (–0.227, –0.047). In these findings, children who experience physical violence have a negative predicted probability of 20% and those who have experienced sexual violence have a probability of 14% for not graduating, –0.206 and –0.142 ME, 95% CI (–0.403, –0.009 and –0.31, 0.025 respectively).

Only one study reported the marginal effects relationship between violence in childhood and school attendance with 3 different outcome variables (see Table 8A). The overall findings indicate that there is a 2% predicted probability that children who experience community/gang violence or other forms of violence will be absent from school, –0.028 ME, 95% CI (–0.034, –0.022). Further studies are needed on other forms of violence in childhood and the resulting effects on school attendance.

Table 8B covers both low and high academic achievement as well as findings related to standardized and raw test scores. Overall, all forms of violence that have been measured impact negatively on academic achievement including learning outcomes. Children who experience violence before the age of 18 have a 9% predicted probability of performing poorly in school compared to their peers who have not experienced childhood violence, 0.09 ME, 95% CI (–0.005, 0.185). Much of this poor performance, in the limited number of studies that measure low academic achievement, appears to be driven by children who have experienced sexual violence, 0.192 ME (0.013, 0.053). On the other hand, all the studies measuring high academic achievement (four studies with 11 outcome relationships) were focused on the relationship between school performance and bullying. Children who have experienced bullying have a 10% predicted probability of also not being high performing students, –0.107 ME, 95% CI (–0.179, –0.035).

Findings show that all forms of violence in childhood impact negatively on standardized test scores (Table 8B). Children who have experienced sexual violence show the largest predicted probability of scoring lower on standardized tests (by 29 percentile points) compared to children who have not experienced violence. Other forms of violence have similar negative impacts on standardized test scores with physical violence (25 percentile point reduction in standardized test scores), other forms of violence (12 percentile point reduction), witnessing parental violence (8 percentile point reduction) and bullying (5 percentile point reduction) when compared to children who have not experienced violence. Experiencing violence in childhood also leads to a predicted probability of a decrease in raw test scores.

When exploring the marginal effects of other educational outcomes such as engagement on bullying, the findings show a strong relationship (Table 9). For children who experience bullying, there is a 35% predicted probability that other educational outcomes such as engagement and participation will be negatively impacted, –0.354 ME, 95% CI (–1.071, 0.363).

3.1. Limitations of the study

There are several limitations that should be highlighted. First, very few studies disaggregated their findings by gender. For those that did, they were also disaggregated for the meta-analyses and important gender distinctions were found. For example, boys who experienced bullying were more likely to be absent from school, whereas for girls, sexual violence was the most influential form of violence on their absenteeism. In addition to gender, understanding the impact of a child's age on the relationship between violence and educational outcomes is crucial. The concept of the developmental life course impacts on both the types of violence that children may experience but also how this violence may impact on their developing brains (Chong, Hallman, & Brady, 2006; Lansdown, 2004).

Second, both the violence in childhood and education fields have similar challenges in definitional agreement and use of

Table 7
Fixed Effect and Random Effect ME of the association between Violence in Childhood and School Dropout and School Graduation.

Subgroup	n of studies	n of outcomes	Fixed Effect			Random Effect			dQ	P value	I-squared
			ME	95% LL	95% UL	ME	95% LL	95% UL			
School Dropout											
Sexual Abuse	2	2	0.005	-0.007	0.017	0.152	-0.199	0.504	5.2	0.023	80.80%
Physical Abuse	2	4	0.083	0.014	0.152	0.083	0.014	0.152	0.54	0.464	0.00%
Emotional Abuse	1	1	0.08	0.041	0.119	0.08	0.041	0.119	0	.	.
Neglect											
Witnessing parental violence	5	11	0.045	0.026	0.064	0.045	0.026	0.064	0.28	0.991	0.00%
Bullying	2	3	0.108	0.072	0.145	0.087	0	0.173	2.67	0.102	62.60%
Other	12	21	0.027	0.018	0.037	0.058	0.028	0.087	53.43	0	79.40%
Overall											
School Graduation											
Sexual Abuse	3	5	-0.149	-0.278	-0.021	-0.142	-0.31	0.025	3.28	0.194	39.10%
Physical Abuse	3	6	-0.225	-0.353	-0.097	-0.206	-0.403	-0.009	4.03	0.133	50.40%
Emotional Abuse											
Neglect											
Witnessing parental violence	1	1	-0.071	-0.225	0.083	-0.071	-0.225	0.083	0	.	.
Bullying	1	3	-0.056	-0.198	0.086	-0.056	-0.198	0.086	0	.	.
Other	8	15	-0.134	-0.202	-0.065	-0.137	-0.227	-0.047	11.14	0.133	37.20%
Overall											

Note: n of studies means number of studies, n of outcomes means number of outcomes (one study may reports several outcomes/see strategy adopted in the methods section).

Table 8
 A) Fixed Effect and Random Effect ME of the association between Violence in Childhood and School Attendance. B) Fixed Effect and Random Effect ME of the association between Violence in Childhood and Academic Achievement.

A) School Attendance									
Subgroup	n of studies	n of outcomes	Fixed Effect		Random Effect		dQ	P value	I-squared
			ME	95% LL 95% UL	ME	95% LL 95% UL			
Sexual Abuse									
Physical Abuse									
Emotional Abuse									
Neglect									
Witnessing parental violence									
Bullying	1	3	-0.028	-0.034 -0.022	-0.028	-0.034 -0.022	0		
Other	1	3	-0.028	-0.034 -0.022	-0.028	-0.034 -0.022	0		
Overall									
B) Academic achievement / performance									
Subgroup	n of studies	n of outcomes	Fixed Effect		Random Effect		dQ	P value	I-squared
			ME	95% LL 95% UL	ME	95% LL 95% UL			
Low academic achievement/performance									
Sexual Abuse	1	1	0.192	0.153 0.231	0.192	0.153 0.231	0		
Physical Abuse									
Emotional Abuse									
Neglect									
Witnessing parental violence	2	4	0.03	0.018 0.042	0.033	0.013 0.053	1.42	0.234	29.50%
Bullying									
Other	3	5	0.044	0.033 0.055	0.09	-0.005 0.185	61.25	0	96.70%
Overall									
High academic achievement/performance									
Sexual Abuse									
Physical Abuse									
Emotional Abuse									
Neglect									
Witnessing parental violence	4	11	-0.003	-0.012 0.007	-0.107	-0.179 -0.035	49.32	0	93.90%
Bullying									
Other	4	11	-0.003	-0.012 0.007	-0.107	-0.179 -0.035	49.32	0	93.90%
Overall									
Test Scores (Standardized)									
Sexual Abuse	1	1	-0.29	-0.172 -0.076	-0.29	-0.408 -0.642	0		
Physical Abuse	3	5	-0.13	-0.184 -0.251	-0.251	-0.642 0.14	34.92	0	94.30%

(continued on next page)

Table 9

Fixed Effect and Random Effect ME of the association between Violence in Childhood and Other Educational Outcomes.

Other Educational Outcomes (School Engagement, etc)											
Subgroup	n of studies	n of outcomes	Fixed Effect			Random Effect			dQ	P value	I-squared
			ME	95% LL	95% UL	ME	95% LL	95% UL			
Sexual Abuse											
Physical Abuse											
Emotional Abuse											
Neglect											
Witnessing parental violence											
Bullying	2	6	-0.003	-0.005	-0.001	-0.354	-1.071	0.363	24.47	0	95.90%
Other											
Overall	2	6	-0.003	-0.005	-0.001	-0.354	-1.071	0.363	24.47	0	95.90%

consistent measures for key variables such as different types of violence or various educational outcomes. These differences across studies make comparisons difficult. Furthermore, many studies will report multiple outcome relationships making meta-analyses more difficult to calculate. This study undertook two strategies to solve these limitations and found no significant difference between the double meta-analysis versus the classified meta-analysis approaches as specified in the methods section. However, these challenges point to the need for commonly agreed measurements that can be used across studies.

Thirdly, the systematic review included studies that reported AORs, RRs and MEs only based on previous research from the field. This may have excluded studies that reported other types of effect sizes. Furthermore, this study is based on quantitative data and because of the approaches used does not include qualitative data, which is critical for understanding and contextualizing ways in which and why violence in childhood has these impacts on education. Further reviews exploring qualitative data to unpack pathways through which violence in childhood impacts on educational and especially learning outcomes are needed.

Fourthly, this study did not disaggregate findings to various levels based on the lack of disaggregation within the primary studies. For example, findings were not disaggregated by the setting in which the violence occurred (home, school, community) and it may be that the particular setting has a larger impact on educational outcomes. This study only disaggregates by gender for studies that reported that information and important gender-specific differences did emerge in the data. Future studies should also disaggregate by age to further understand the developmental aspects of childhood on these outcomes. Lastly, this data includes low-, middle- and high-income country data, but the majority of the studies are from high-income countries. The impact of schooling, government policies more broadly, existing interventions and other key aspects of educational policy would be important to explore further in relation to these relationships in order to make targeted recommendations.

4. Discussion

This article reports on the first study to estimate the global burden of violence in childhood on educational outcomes. Despite the limitations described above, this study represents a significant new contribution to the understanding of how and to what extent different forms of violence in childhood contribute to inequalities in education. The findings provide robust evidence that all forms of violence in childhood significantly impact on a variety of educational outcomes. In particular, bullying appears to have a strong influence on school attendance and participation through school engagement and less of an impact on academic achievement compared to other forms of violence. This is an area that needs further research, especially given the high prevalence of bullying in every country where it is measured (UN Secretary General, 2016). The findings also show that sexual violence has a significant impact on educational outcomes, especially on standardized test scores where those who have experienced sexual violence in childhood scored 25 percentile points lower than their peers who have not experienced sexual violence. Other forms of violence in childhood, including physical violence, neglect and community violence are also shown to impact significantly on standardized test scores. These are important findings that support the idea that prevention of violence in childhood can be viewed as a key strategy for raising attainment and improving educational outcomes globally for both boys and girls.

Increased investment in violence prevention is an important strategic aim for ending all violence against children, enhancing educational outcomes and ensuring that students are learning in safe, non-violent and inclusive environments. One step in this direction would be to link effective approaches to preventing violence in childhood (WHO et al., 2016) more explicitly to SDG 4. The work of the Global Partnership to End Violence Against Children, launched in July 2016 with the overall aim of supporting SDG Target 16.2: the end of abuse, exploitation, trafficking, torture and all forms of violence against children by 2030, has led on the development of new, unified efforts to develop a package of seven evidence-based strategies to reduce violence. These are focused on the need to:

1. Implement and enforce laws to protect children (including those on ending corporal punishment in schools).
2. Value social norms and values that protect children.
3. Sustain safe environments for children.
4. Provide parent and caregiver support.

5. Empower families economically.
6. Raise access to response and support services.
7. Help children develop life skills and stay in school.

The WHO has emphasized that these seven strategies should be complemented by robust monitoring and evaluation and multi-sectorial coordination (WHO et al., 2016) and this can be achieved in part by linking where possible to indicators associated with SDG Target 4.a: building and upgrading education facilities that are child, disability, and gender sensitive and provide a safe non-violent and inclusive and effective learning environments for all. Safe, non-violent and effective learning environments are important spaces that can be enhanced and supplemented by buildings and facilities, but are not be limited by them. As Cobbett, McLaughlin and Kiragu's (2013) work on sex education in Kenya, Ghana and Swaziland reminds us, space is created by what happens in it.

As several regional systematic reviews on the burden of violence in childhood have highlighted, there is a lack of comprehensive data on the relationship between violence and educational outcomes (Fang et al., 2015; Fry et al., 2016; Gilbert et al., 2009). To this end, it will be important to link the growing literature on educational outcomes and how they can be improved, to what we can learn from this systematic study of the effects of violence in childhood on these outcomes. More work on what these educational outcomes are, how they are defined and how they are measured is also now urgently needed.

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