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Children's Exposure to Community and War Violence and Mental Health in Four African Countries: A Stress Process Model

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Abstract

In this article we review the mental health consequences of children's exposure to community and war violence (ETV) in four African countries: South Africa, Sierra Leone, Gambia and Rwanda. A focus on Africa is particularly pressing because of children's high levels of community and war ETV in countries therein. Regions of Africa present important macro-contexts for understanding children's various types of violence exposure amidst war and economic disadvantage. Findings of the review across 20 quantitative studies from 2004-2015 indicate consistent associations between exposure to war and community violence and children's symptoms of Post-traumatic Stress disorder (PTSD), depression, and aggression. School climate and family support mitigate these ETV influences upon children: however, more research is needed on the buffering effects of such resources. The effects of war violence are mediated by perceived discrimination in communities post-conflict. We integrate findings across studies to synthesize knowledge on children's ETV in Africa around a model of its correlates, mediators, and moderators in relation to mental health.. Emerging research points to avenues for prevention and future inquiry.

Keywords

Children; Adolescents; Exposure to Violence; Community Violence; War Violence; Africa

This review article focuses on children's exposure to community and war violence (ETV) in one area of the Global South, the continent of Africa. Many areas of Africa have high levels of community violence. In South Africa, for example, the homicide rate is 5 times the global average (Kaminer, Hardy, Heath, Mosdell, & Bawa, 2013), and in Cape Town specifically the homicide rate is 88 per 100,000 compared to the estimated global rate of 28.8 per 100,000 (Ward, Martin, Theron, & Distiller, 2007). In another comparison, the homicide rate is estimated at 34.1/ 100,000 in 2009-2010 in South Africa compared to 5/100,000 in US in 2009 (Shields, Nadasen, & Pierce, 2013). In East Central Africa, many children in

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Rwanda were exposed to war-time violence during the 1994 genocide, where as many as 1 million people of all ages of a total population of 7.5 million were killed (Dryegrov, Gupta, Gjestead, & Mukaboheli, 2000; Neugebauer et al., 2009).

Community violence is one of the most prevalent forms of violence exposure among children in South Africa (Collings, Valgee, & Penning, 2013). While comprehensive reviews synthesize studies on physical and sexual abuse among children in Africa (Meink, Cluver, Boyes, & Mhlono, 2015), a systematic review of community and war violence in Africa and children's mental health outcomes has not yet been conducted and are among areas identified in need of further research (Meinck et al., 2015). We bring together in this article existing literature on this topic. Our review focuses on quantitative empirical studies on children's exposure to community and war violence in three regions: one country in Southern Africa (South Africa), two countries in the West (Sierra Leone and Gambia) and one in East-Central Africa (Rwanda). We use the name of South Africa when referring to country in the review and use the term Southern Africa when we are referring to region. We highlight factors that may offset or transmit violence influences.

In addition to more general studies with community and school based samples, there are also special sub-populations of children in Africa where exposure to violence has been explored. Parts of Africa are experiencing the aftermath of recent civil wars involving the forced recruitment of child soldiers (e.g, Sierra Leone, West Africa). Child soldiers have been exposed to high levels of violence exposure, and one of the goals of this review is to look at mediators and moderators among these children that can prevent mental health problems. Furthermore, Sub-Saharan Africa has very high overall levels of HIV/ AIDS prevalence, where estimates suggest between 64%-67% of those affected with HIV/AIDS internationally are located therein (Cluver et al., 2013; Mboup, Musonda, Mhalu & Essex, 2006). We incorporate a study of how having a parent ill with AIDS is linked to child health through exposure to community violence (Cluver et al., 2013). To forward an integrative understanding of children's exposure to violence (ETV) in Africa, we build on earlier reviews of children's violence exposure in the United States (Buka, Stichick, Birdthistle & Earls, 2001; Foster & Brooks-Gunn, 2009) and children's exposure to war and terrorism (Joshi & O'Donnell, 2003).

We organize our review around Figure 1 which visually depicts the interconnections between the correlates, mediators and moderators of community and war violence in relation to children's mental health outcomes. By reviewing extant evidence (presented in Table 1) around this Figure, we can identify which components of this synthesizing model have been most supported informing avenues for prevention and intervention. In Figure 1, we depict the types of ETV considered in this review, some of the correlates of exposure to community and war violence (Path a), the linkage between exposure to violence and children's health outcomes (Path b), and mediating and moderating factors (Paths c, f, d, and h). All reviewed articles are listed in Table 1 with information on sample characteristics as well as which paths in Figure 1 were investigated. Associations as indicated by regression coefficients, correlation coefficients, and odds ratios are further reported in Table 1.

We next review key associations between ETV and children's health outcomes (path b) as well as information on war and community ETV prevalence and correlates in Africa (path a). In the remainder of this article, we focus on emerging evidence on mediators and moderators of children's exposure to violence on health outcomes, as well as the main effects of coping resources (paths c and f, and paths d and h). A mediating variable "...accounts for the relation between the predictor and the criterion" (Baron & Kenny, 1986, p. 1176). In Figure 1, mediators are considered in terms of family, school, community and child factors and in paths c and f. A moderating variable "...affects the direction and/or strength of the relationship between an independent or predictor variable and a dependent or criterion variable" (Baron and Kenny, 1986, p. 1174). Moderators include family, school, community and child factors and moderating pathways are represented in the Figure through paths d and h. We also attend to protective factors that directly affect health in high violence contexts (path f).

Methods

We searched the PsycInfo and Medline databases to locate articles on children's exposure to community and war violence in Africa using the following search terms: (1) exposure to violence, Africa, children; (2) community violence, Africa, children; (3) war violence, Africa, children; (4) genocide, Africa, children; (5) child soldiers, Africa; (6) child soldiers, Sierra Leone. As shown in Figure 2, based on Meink et al. (2015, p. 86), this resulted in 346 articles being identified for the review. Our review is focused on the 2004-2015 period and we excluded articles not falling in that range. We further excluded articles that were not reporting the results of a quantitative empirical study, or were not focused on associations between community or war violence and children's health outcomes, among other criteria, listed in Figure 1 (205 articles excluded). Application of these criteria resulted in 20 articles being included in the review. A detailed discussion of the included articles in terms of location of the study, details on samples and research design, the type of violence exposure measured, and key findings from the study regarding children's ETV and health outcomes in Africa is presented in Table 1.

Prevalence of Community and War ETV

Community violence exposure is common in regions of Africa. In a sample from Cape Town, South Africa, 68.4% of young adolescents reported witnessing and being a victim of violence (Ward et al., 2007). Among children and adolescents also in Cape Town, 58.1% reported seeing someone attacked with a weapon in the neighborhood, while 92% indicated they had seen someone hit in the neighborhood (Shields et al., 2009b). Victimization in the neighborhood was also common with 65.6% of children reported being hit in the neighborhood, and 51.8% had been in a fight. Adolescents in Gambia also report high levels of community violence where 86.7% have seen someone beaten up or mugged, and 48.4% have themselves been beaten up or mugged (O'Donnell, Roberts, & Schwab-Stone, 2011).

A relatively common form of traumatic violence exposure across studies in Africa is exposure to dead bodies and seeing someone killed. In studies of children in South Africa, 32.5% to 40.3% have seen someone killed or a dead body in their neighborhood (Kaminer et

al., 2013; Martin, Revington, & Seedat, 2013; Shields et al., 2013). War-related violence exposure is also notable where in Sierra Leone, having faced a civil war between 1991-2002, Betancourt, Borisova et al. (2010) found almost 90% of children had witnessed war-related violence (e.g., massacres, raids on villages). Furthermore, being a victim of rape was also experienced by 37% of females and 6% of males in that study over two waves of data collection. By the third assessment in their longitudinal study, 45% of girls and 5% of boys reported being raped (Betancourt, Brennan, Rubin-Smith, Fitzmaurice, & Gilman 2010). In circumstances of war, another form of violence exposure among children is being forced to perpetrate acts of violence. For example, in Sierra Leone, between 26% to 28% of former child soldiers have killed a stranger or a loved one (Betancourt, Borisova et al., 2010). Almost 27% the longitudinal sample by the second wave reported having killed or injured others during war (Betancourt, Brennan et al., 2010).

Correlates of ETV and Associations of ETV With Children's Health

In support of path a indicating the structural socio-demographic correlates of children's exposure to violence, studies show an older age, male gender, and mixed race and Black race/ethnicity are associated with more violent victimizations and exposure to violence in Africa (Fincham, Altes, & Seedat, 2009; Kaminer et al., 2013; Martin et al., 2013; Shields et al., 2013; Shields et al., 2009a). As per studies in the U.S., some patterns support higher levels of female exposure to rape (e.g. Betancourt, Brennan et al., 2010) and male exposure to other forms of violence victimization.

In Support of path b in Figure 1, and as reported in Table 1, studies have further found positive associations between exposure to violence in Africa with children's health problems in terms of PTSD symptoms, internalizing problems including symptoms of depression and anxiety, psychological distress, as well as externalizing problems including antisocial behaviors, aggressive behaviors, conduct problems and substance use (Bach & Louw, 2010; Betancourt, Borisova et al., 2010; Betancourt, Brennan et al., 2010; du Plessis, Kaminer, Hardy, & Benjamin, 2015; Fincham et al., 2009; Kaminer et al., 2013; Martin et al. 2013; Shields 2009a, 2009b; Waller, Gardner, & Cluver, 2014).

Mediators/ Moderators of ETV Exposure and Main Effects of Coping Resources

In support of the mediating paths of c and f in Figure 1, several studies indicate intervening factors between ETV and child health outcomes in multiple domains. One of these paths of transmission concerns the post-conflict environment in the community. Betancourt, Agnew-Blais et al. (2010) find in a longitudinal study that perceived discrimination, a form of community stigma, partially mediates exposure to war-related events and subsequent mental health of child soldiers. Partial mediation is found among former child soldiers for associations of having been raped on symptoms of depression, anxiety and hostility. Full mediation is supported for the influence of having wounded or killed someone on hostility. These findings suggest that post-conflict experiences matter for mental health for this group of children in Sierra Leone. Other factors supported include perceived personal safety which partially mediated the effects of witnessing neighborhood violence on elevating psychological distress in South Africa (Shields et al., 2008). Additionally, other forms of psychopathology are involved in transmission pathways (Shields et al., 2009b).

Some moderation effects were also found in reducing the effects of ETV on child mental health outcomes (supportive of Path d in Figure 1). For example, in South Africa, increased resilience scores (e.g., tolerance of negative affect, perceived social support, self-efficacy) reduced the risk effect of childhood abuse and neglect on PTSD symptoms (Fincham et al., 2009). However, moderation by resilience was not supported for the influences of community violence exposure. Thus, the moderation effect in this study was limited in terms of the type of violence exposure considered. Yet, other studies have found evidence of modifiers of community violence. Extending the consideration of moderating effects to the school, O'Donnell et al. (2011) found a positive school climate among youth in Gambia moderates the association between witnessing community violence and victimization by community violence on post-traumatic stress symptoms. A buffering role of school climate was found among youth witnessing violence. In a study of children in Cape Town moderating factors encompassed school and family domains. School, family, and peer social support were found to decrease the effects of gang violence on psychological distress, while the positive association between hearing about violence and psychological distress was mitigated by higher levels of family organization (Shields et al., 2008). Finally, individual resources also showed a trend toward significance in modifying the effects of violence exposure, where children with a low unknown locus of control (i.e., not knowing why events happened) had lower distress than those with a higher unknown locus of control (Shields et al., 2009b). Gender also modified some of the effects of violence exposure on children's health (Betancourt, Borisova, de la Soudiere, & Williamson, 2011; Betancourt, McBain, Newnham, & Brennan, 2014).

In terms of the role of context, Shields et al. (2013) find an interaction effect in the association between children's neighborhood victimization on symptoms of psychological distress across countries in a comparison of children in South Africa and the USA. In a plot of the interaction, they found at low and high levels of victimization in the neighborhood, children had higher levels of psychological distress in the USA than South Africa. This effect supports path h in Figure 1.

Protective influences of coping resources on mental health outcomes (path f) for children in regions of Africa include levels of family acceptance (Betancourt, Agnew-Blais, et al., 2010; Betancourt, Newnham, McBain, & Brennan, 2013), community acceptance (Betancourt, Brennan et al., 2010; Betancourt et al. 2010) and school support and after-school involvement (Ward, Martin, Theron & Distiller, 2007). Risk effects, showing direct influences of community factors on health, are seen for the role of stigma as well as community social disorder (Betancourt et al., 2013; Betancourt et al., 2014).

Finally, in the South African context a special sub-population of concern are children affected by parental illness and death due to AIDS. Recent findings by Cluver et al. (2013) illuminate a mediating pathway in Figure 1 by supporting a connection between paths a and b. Exposure to community violence and abuse were found to transmit the risk effect of being a child of a parent ill with AIDS to children's elevated psychological distress.

Conclusion

This review highlights empirical findings from recent research on children's exposure to war and community violence in Africa in relation to a general synthesizing model presented in Figure 1. Support was found in the review and discussed in Table 1 for pathways in this model. This review attends to the importance of war-related trauma and community violence for children's health in Africa. Increased attention to context in international research may highlight salient types of exposure to violence.

Furthermore, attention to context draws attention to specific multilevel mediators and moderators that work in regions of Africa. Studies show stigma in the community and perceived safety transmit the effects of children's community and war violence exposure on children's health. School climate, family organization, and school, family and peer support all moderate the effects of community violence exposure on health. Also identified in this review is the importance of risk and coping resources in the family and community that exert direct effects on children's health in Africa. Protective resources include family and community acceptance, school support, and involvement in after-school programs. Risk factors include stigma and community social disorder. While efforts are needed to reduce levels of violence exposure in regions of Africa overall, this review suggests points of prevention and intervention in communities, families, and schools that may promote child well-being and reduce the influences of violence exposure on children's mental health. Finally, low exposure to violence was an important buffering effect for children's psychological distress, when children's parents had AIDS.. Efforts to reduce community violence and abuse may interrupt some of the transmission pathways from the AIDS epidemic to children's health problems.

More longitudinal studies of children's exposure to violence are needed in regions of Africa as the majority of studies in this review were cross-sectional in design. Also, more quantitative empirical research is needed on community and war violence in relation to children's mental health as the review found a smaller subset of these studies among the range of studies in the broader literature on ETV for children in Africa (Figure 2). Additionally, more comparative international research is needed on children's exposure to violence and mental health, including other areas of Africa as well as the Global South inclusive of the Middle East, Latin America and developing Asia to most fully guide prevention and intervention efforts as well as international understandings of the implications of violence exposure.

Finally, theoretically driven models of children's violence exposure are in need of development. Meinck et al. (2015) draw on ecological theory in their review of research of risk and protective factors on children's physical and sexual abuse in Africa. We suggest future research on war and community violence among children may also fruitfully build on the stress process paradigm which provides a theoretical basis for linkages between violence exposure and social conditions, including context, and considers an overall process of stress unfolding to influence various mental health outcomes (Pearlin et al., 1981; Pearlin, 1989; Wheaton & Clarke, 2003; Turner, 2010). The process of stress in that paradigm begins fundamentally with social conditions and moves through mediating and moderating factors

to discern how violence affects mental health. Development of a stress process model of war and community violence in the Global South would highlight the social conditions shaping violence exposure as well as structural inequalities in the availability of mediating and moderating resources.

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Research Highlights

- Children in areas of Africa have heightened exposure to community and war violence
- ETV in African areas is associated with symptoms of PTSD, depression and aggression
- Moderators of ETV include resiliency, positive school climate and family support
- Mediators of war violence include perceived discrimination

Figure 1.
Model of Exposure to Violence (ETV) Among Children and Adolescents in African Context

Fig. 2.
The selection process for determining articles included in review.

Table 1

Quantitative empirical articles in regions of Africa included in review (2004-2014).

Author(s) and date	Location	Sample Size, Demographics and Research Design	Types of Exposure to Violence (ETV)	Health Outcome Measure(s)	Key findings related to path(s) supported (in relation to Figure 1)
Betancourt, Agnew-Blais, Gilman, Williams, & Ellis (2010)	Sierra Leone	<ul style="list-style-type: none"> N=152 former child soldiers Age at T2: 17.39 11% female Longitudinal study, 2001-2002 and 2004 	Child War Trauma Questionnaire <ul style="list-style-type: none"> Experiencing rape Perpetration of wounding/killing 	Symptoms of Depression Symptoms of Anxiety Symptoms of Hostility	<i>Paths c/f (mediating effect)</i> : post-conflict discrimination explained the effect of being a victim of rape on elevating depressive symptoms ($b=2.58$, $p<.01$ to $b=1.65$, $p>.10$). However, being a victim of rape exerted a robust effect on anxiety net of other variables ($b=4.26$, $p<.01$). Post-conflict discrimination explained the effect of killing others on symptoms of hostility ($b=2.39$, $p<.05$ to $b=1.26$, $p>.10$). <i>Path f (main effect of coping resource)</i> : Family acceptance reduced symptoms of hostility ($b=-.2.62$, $p<.05$).
Betancourt, Brennan, Rubin-Smith, Fitzmaurice, & Gilman (2010)	Sierra Leone	<ul style="list-style-type: none"> N=260 former child soldiers Ages 10-17, average age at baseline=15.13 yrs 12% female Longitudinal study: 3 waves at 2001-2002, 2004, & 2008 	Child War Trauma Questionnaire <ul style="list-style-type: none"> witnessing general war violence being a victim of rape injuring or killing others. 	Internalizing Problems Externalizing Problems	<i>Path b (direct effect of violence on health)</i> : in a growth curve model, rape was associated with heightened baseline levels of internalizing problems ($b=4.34$, $p<.05$) <i>Path f (main effect of coping resource)</i> : More community acceptance was associated with decreased baseline levels of internalizing problems ($b=-1.21$, $p<.01$).
Betancourt et al., (2010)	Sierra Leone	<ul style="list-style-type: none"> N=156 former child soldiers Ages 10-18 12% female Longitudinal study, 2002, 2004 	Child War Trauma Questionnaire <ul style="list-style-type: none"> Witnessing general war violence Experiencing rape Wounding or killing others. 	Depression Anxiety Hostility	<i>Path b (direct effect of violence on health)</i> : Being a victim of sexual abuse was associated with anxiety ($b=4.06$, $p<.05$) and hostility symptoms ($b=7.42$, $p<.001$). Wounding or killing others was associated with hostility symptoms ($b=3.06$, $p<.05$). None of the war traumas were directly associated with depressive symptoms. <i>Path f (main effect of coping resource)</i> : increases in community acceptance between waves was associated with lower depressive symptoms ($b=-.35$, $p<.05$).
Betancourt, Borisova, de la Soudiere, & Williamson, (2011)	Sierra Leone	<ul style="list-style-type: none"> N=273 former child soldiers, 29% female Average age is 16.44 Cross-sectional analysis from 2004 data (T2) of a longitudinal study 	Child War Trauma Questionnaire <ul style="list-style-type: none"> Killing others Surviving rape/sexual assault Death of mother or father 	Depression Anxiety Hostility	<i>Path b (direct effect of violence on health)</i> : killing others was associated with depression ($b=5.01$, $p<.0001$), anxiety ($b=3.81$, $p<.0001$) and hostility ($b=4.78$, $p<.0001$). Rape was associated with anxiety ($b=2.85$, $p<.05$) and hostility ($b=2.37$, $p<.05$) but not depression. <i>Path d (modifier of violence effect on health)</i> : Gender modified effects of rape and loss of caregiver on mental health problems, effects were stronger among males than females (on anxiety: victim of sexual assault/rape*gender $b=-6.24$, $p<.05$; on hostility: victim of sexual assault/

Author(s) and date	Location	Sample Size, Demographics and Research Design	Types of Exposure to Violence (ETV)	Health Outcome Measure(s)	Key findings related to path(s) supported (in relation to Figure 1)
Betancourt, Newnham, McBain & Brennan, (2013)	Sierra Leone	<ul style="list-style-type: none"> • N=243 former child soldiers • Average age=16.58 (T2) • 30% female • Longitudinal study 	Childhood War Trauma Questionnaire <ul style="list-style-type: none"> • death of parent due to war, being a victim of rape, injuring or killing another person 	PTSD symptoms	<p>rape*gender=b=-6.17, p<.05; on depression: loss of caregiver*gender=b=-6.17, p<.05; on depression: loss of caregiver*gender=b=-4.06, p<.05).</p> <p><i>Path f (main effect of coping resource):</i> Results of growth curve models show family acceptance inversely covaried with PTSD levels, where an increase in family acceptance was associated with lower PTSD scores (b=-.11, p<.001).</p> <p><i>Path f (main effect of risk factor):</i> Increases in stigma increased PTSD symptoms (b=.23, p<.001). Family acceptance reduces PTSD symptoms (b=-.11, p<.001).</p>
Betancourt, McBain, Newnham, & Brennan, (2014)	Sierra Leone	<ul style="list-style-type: none"> • As above 	<ul style="list-style-type: none"> • As above 	Internalizing Symptoms Externalizing Symptoms	<p><i>Path b (direct effect of ETV on health):</i> victims of rape (b=.174, p<.05) and parental death due to war (b=.094, p<.05) had higher levels of baseline internalizing symptoms; killing others was associated with baseline externalizing symptoms (b=.178, p<.001).</p> <p><i>Path f (main effects of risk factors):</i> Community social disorder and stigma positively covaried with externalizing scores (b=.049, p<.01; b=.052, p<.001) and the growth curve slope on internalizing symptoms (b=.037, p<.01; b=.057, p<.01).</p> <p><i>Path d (modification of ETV exposure on health outcome):</i> Females compared to males experienced higher growth curve slopes on internalizing (b=.406, p<.05) and externalizing symptoms (b=.674, p<.01) due to rape.</p>
Cluver et al., (2013)	South Africa	<ul style="list-style-type: none"> • N=6002 children n=6002 children ages 10-17 • Average age 13.50 • 55.6% female • Stratified random sample of three groups of children • Cross-sectional study 	Adapted Child Exposure to Community Violence Checklist: assault, robbery and witnessing of stabbings and shootings	Psychological distress	<p><i>Path a (correlate of ETV):</i> Results of structural equation models showed parental AIDS illness was positively associated with community violence (standardized b=.14, p<.10) and abuse (standardized b=.15, p<.10)</p> <p><i>Path b (direct effect of ETV on health outcome):</i> community violence increases child abuse (standardized beta=.48, p<.01) which then elevates psychological distress (standardized b=.90, p<.10).</p>
Collings, Valgee, & Penning, (2013)	Durban, South Africa	<ul style="list-style-type: none"> • N=720 adolescents • Average age of 15.43 • 33.9% female • School-based sample • Cross-sectional study 	Developmental Trauma Injury (multiple forms of violence exposure including community violence)	PTSD symptoms	<p><i>Path b (direct effect of ETV on health outcome):</i> witnessing community violence was correlated with PTSD symptoms (r=.08, p<.05).</p>
du Plessis, Kamminer, Hardy & Benjamine, (2015)	Cape Town, South Africa	<ul style="list-style-type: none"> • N=616 adolescents • 12-15 years, average age of 12.8 years. • 54.6% female • School-based sample • Cross-sectional study 	Child Exposure to Violence Checklist (multiple forms of violence exposure including community, community,	Depressive Symptoms Aggressive Behaviors Conduct Problems	<p><i>Path b (direct effect of violence on health outcome):</i> Witnessing community violence was associated with aggressive behavior (.29, p<.00) but community victimization was not (b=.31, p>.10). Community violence witnessing (b=.07, p=.01) and victimization (b=.18, p=.01) were associated with</p>

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Fincham, Altes, Stein & Seedat, (2009)	Cape Town, South Africa	<ul style="list-style-type: none"> • N=787 adolescents • Ages 13-21, average 16.37 years • 58.6% female • School-based sample • Cross-sectional study 	domestic, school and sexual violence (ETV)	PTSD symptoms	<p>conduct problems. Neither community violence witnessing (b=-.02, p>.10) or victimization (b=-.21, p>.10) were associated with depressive symptoms.</p> <p><i>Path b (direct effect of violence on health outcome):</i> exposure to community violence (b=-.11, p<.01) and childhood abuse and neglect (b=.15, p<.01) both increased PTSD symptoms net of controls.</p> <p><i>Path d (modification of violence effect):</i> higher levels of resilience buffered effects of childhood abuse and neglect (b=.00, p<.01) but not community violence (b=.00, p>.10) on PTSD symptoms.</p>
Kaminer, Hardy, Heath, Mosdell & Bawa, (2013)	Cape Town, South Africa	<ul style="list-style-type: none"> • N=230 adolescents • Ages 14-21 (average age of 17.45). • 60% female • School-based sample • Cross-sectional study 	Child Exposure to Community violence scale (home and community witnessing and victimization as well as sexual victimization)	PTSD symptoms	<p><i>Path b (direct effect of violence on health outcome):</i> Among females, community violence victimization (b=.876, p<.01) and sexual victimization (b=1.551, p<.01) both increased PTSD symptoms net of controls. Community violence witnessing did not elevate PTSD symptoms (b=.037, p>.10). <i>Path b (direct effect of violence on health outcome):</i> Among males, a combined measure of domestic or community violence victimization was associated with PTSD symptoms net of controls (b=.660, p<.05). Witnessing community violence was not associated with PTSD (b=.258, p>.10)</p>
Martin, Revington & Seedat, (2013)	South Africa	<ul style="list-style-type: none"> • N=231 children and adolescents • Ages 8-19 years (average age 13.91 years) • 57.1% females • Sample of trauma exposed youth in school • Cross-sectional study 	Child Exposure to Community Violence checklist (hearing, witnessing, or forms of violence)	PTSD symptomatology	<p><i>Path a (correlate of ETV):</i> Older youth had higher mean rank scores on community violence exposure (129.02) compared to children (88.37) (p<.01).</p> <p><i>Path b (direct effect of violence on health):</i> Higher levels of exposure to community violence was associated with PTSD symptomatology (those with PTSD symptomatology had higher community violence exposure mean rank scores (132.83) than those without PTSD (99.31) (p<.001).</p>
Neugebauer et al. (2014)	Rwanda	<ul style="list-style-type: none"> • N=1547 youth • Ages 8-19 years; half were 14-16 years old • Community sample of youth attending school in 1995 • 50% female • Cross-sectional study 	War-time Violence Checklist (traumatic experiences of loss, victimization and witnessing violence during 1994 genocide)	Probable PTSD	<p><i>Path b (direct effect of violence on health):</i> A dose-response relationship was observed between exposure to violence and PTSD, where more exposure was associated with more PTSD (e.g., Sample 1: 1-9 endorsed wartime violence items, reference category: 10-13 items: adjusted OR=1.69 [CI=1.16-2.47]; 14-16 items: adjusted OR=1.91 [CI=1.31-2.83]; 17-20 items adjusted OR=2.48 [1.71-3.51]; 21-28 items adjusted OR=4.02 [3.31-4.90])</p>
O'Donnell, Roberts & Schwab-Stone (2011)	Gambia	<ul style="list-style-type: none"> • N=653 adolescents • Average age of 17.76 years • 48.7% female • School-based sample 	Social and Health Assessment (SAHA), scales on victimization and witnessing of	Post-traumatic stress symptomatology	<p><i>Path b (direct effect of violence on health):</i> Witnessing (b=.45, p<.01) and victimization of neighborhood violence (b=.40, p<.01) were each associated with PTSD symptoms.</p>

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Shields, Nadasen & Pierce (2008)	Cape Town, South Africa	<ul style="list-style-type: none"> • N=185 children • Ages 8-13, average age 10.7 • 50.3% female • School-based sample • Cross-sectional study 	neighborhood violence.	Psychological distress	<p><i>Path d (modifiers of violence effects on health):</i> School climate buffered the effects of witnessing neighborhood violence ($b=-.08$, $p<.05$). School climate also interacted with witnessing neighborhood violence ($b=.14$, $p<.01$).</p> <p><i>Path f (main effect of coping resource):</i> Parental warmth was not associated with PTSD symptoms ($b=.04$, $p>.10$).</p> <p><i>Paths c,f (mediating effect):</i> Children's perceived safety mediates the effects of witnessing school violence ($b=.306$, $p<.01$ to $b=.142$, $p<.01$), witnessing neighborhood violence ($b=.301$, $p<.01$ to $b=.115$, $p<.05$), hearing about violence ($b=.276$, $p<.01$ to $b=.054$, $p>.05$), witnessing police violence ($b=.263$, $p<.01$ to $b=.123$, $p<.05$) and witnessing gang violence on psychological distress ($b=.263$, $p<.01$ to $b=.074$, $p>.05$).</p> <p><i>Path d (modifiers of violence effects on health):</i> Plotted relations of interaction effects showed "high social support was related to lower levels of distress, and low social support was related to greater distress" ($p=.596$) (gang violence by support interaction=$b=.183$, $p<.05$). Significant interaction term between heard about violence and family organization $b=.031$, $p<.05$: "when plotted, high family control was related to less distress and low family control was related to more distress"; Significant interaction between police violence and family organization ($b=.088$, $p<.01$): "When plotted, high family control was related to less distress and low family control was related to greater distress" ($p=.596$).</p>
Shields, Nadasen and Pierce (2009a)	Cape Town, South Africa	<ul style="list-style-type: none"> • As above 	<ul style="list-style-type: none"> • As above 	Psychological Distress	<p><i>Path b (direct effect of violence on health):</i> Witnessing violence in neighborhood was associated with children's psychological distress ($b=.071$, $p<.05$).</p> <p><i>Path d (modifiers of violence effects on health):</i> Trend found around children's unknown locus of control as modifying associations between violence exposure and psychological distress (observing school violence, $b=-.105$, $p<.10$; victimized at school $b=.126$, $p<.05$; observing neighborhood violence $b=-.107$, $p<.10$; victimized in neighborhood $b=-.135$, $p<.05$). Except for the case of school victimization, those with low unknown locus of control had lower distress than those with higher unknown locus of control.</p>
Shields, Nadasen & Pierce (2009b)	Cape Town, South Africa	<ul style="list-style-type: none"> • N=247 children ages 8-13 years, average age 10.7 • 51% female 	Nadel, Spellman and Alvarez-Cannio Victimization Scale on Witnessing	Symptoms of Depression	<p><i>Paths c,f (mediating effect):</i> Children's PTSD symptoms mediate the association between witnessing neighborhood violence and depressive symptoms (from standardized regression</p>

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Shields, Nadasen, Pierce (2013)	Cape Town, South Africa, and St. Louis, MO, USA	<ul style="list-style-type: none"> School-based sample Cross-sectional study 	Victimization and Perpetration of School Violence, Neighborhood Violence	Psychological Distress	<p>coefficient=1.998, $p<.05$ to .063, $p>.05$). PTSD symptoms did not mediate between being victimized in the neighborhood and depressive symptoms (from standardized regression coefficient=2.785, $p<.05$ to 2.866, $p<.01$).</p> <p><i>Path h (place modifies ETV-health outcome association):</i> Results show country modifies the association of exposure to violence on psychological distress, where the US sample showed more psychological distress in response to low and high levels of neighborhood victimization than did the South African sample (interaction term between sample and neighborhood victimization $b=-.13$, $p<.05$).</p>
Waller, Gardner and Cluver 2014	Western Cape and Mpumalanga, South Africa	<ul style="list-style-type: none"> N=3515 adolescents mean age of 13.45 years, [range 10-17 years] 56.7% female community based sample Longitudinal study gathered in 2010-2011 and 2011-2012 	Child Exposure to Community violence checklist; Witnessing and victimization of community violence; Child abuse measure inclusive of physical, emotional and sexual abuse; Home violence is a measure of violence between adults in household.	Antisocial behavior Substance use behavior	<p><i>Path b (direct effect of violence on health):</i> Net of wave 1 symptoms, orphanhood status, child abuse and violence in the home, community violence was associated with increases in substance use ($b=.13$, $p<.001$) and antisocial behavior ($b=.10$, $p<.05$). Child abuse was associated with antisocial behavior net of other factors ($b=.22$, $p<.01$).</p>
Ward, Martin, Theron, & Distiller (2007)	Cape Town, South Africa	<ul style="list-style-type: none"> N=377 children in impoverished high violence community Age range=11-15, average age 11.6 years 51% female school based sample Cross-sectional study 	Community violence Survey of Exposure to Community Violence (10 items)	Depressive Symptoms Anxiety Symptoms Conduct Problems	<p><i>Path b (direct effect of violence on health):</i> Witnessing violence is associated with depressive ($b=.11$, $p<.01$) and anxiety symptoms ($b=.10$, $p<.05$), and being a victim of violence is associated with depressive ($b=.13$, $p<.01$), anxiety ($b=.11$, $p<.01$) and conduct problems symptoms ($b=.17$, $p<.01$).</p> <p><i>Path f (main effect of coping resource):</i> School support reduces depressive symptoms ($b=-.21$, $p<.01$), after-school involvement reduces anxiety symptoms ($b=-.18$, $p<.05$), and school support reduces conduct problems ($b=-.15$, $p<.05$).</p>
N=20					

Key: b=unstandardized regression coefficient; standardized regression coefficients are named as such in Table; r=correlation coefficient, p=p-value; OR=Odds Ratio; CI=Confidence Interval.