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Can supportive parenting protect against school delay amongst violence-exposed adolescents in South Africa?

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ABSTRACT

Exposure to multiple forms of violence is common amongst adolescents from socioeconomically disadvantaged communities in South Africa. Adolescents' exposure to violence at home, in school and in their communities can lead to detrimental outcomes in education. In particular, adolescents who are more frequently exposed to multiple forms of violence are at risk of school delay. This paper investigates the potential for supportive parenting to protect against adolescents' school delay in this context. With this aim, this paper applies structural equation modelling to a sample of 503 adolescents exposed to multiple forms of violence from 40 socioeconomically disadvantaged communities. Adolescents' self-report data on child abuse in the family, school and community, and adolescents' perceptions of positive parenting, consistent discipline, good monitoring, parental involvement and social support were analyzed. Results showed that perceptions of more positive parenting and consistent discipline moderated the relationship between more frequent exposure to multiple forms of violence and school delay. Our findings suggest that supportive parenting has the potential to protect against school delay for poly-victimized adolescents in South Africa.

1. Introduction

1.1. Socioeconomic disadvantage and adolescents' school delay in South Africa

School delay (enrolment below the age-appropriate grade) is a major policy concern for education in South Africa. School delay is closely related to the country's high levels of inequality, which affects the quality of education and thus adolescents' school outcomes and their educational opportunities (Department of Basic Education, 2016; Spaull, 2015). Hence, adolescents' academic achievement and progression are profoundly affected by the socioeconomic characteristics of their families, schools and communities (Lam, Ardington, & Leibbrandt, 2011). For instance, more than 30% of the variation in grade 6 reading and mathematics achievement in South Africa can be explained by socio-economic characteristics (Spaull, 2013). This is because adolescents from socioeconomically disadvantaged families and communities mostly attend poorly-resourced schools in rural areas, which are characterized by a lack of safety, inappropriate resources, low quality of teaching and poor learning outcomes (Lam et al., 2011; van der Berg, 2008).

Poorly-resourced schools in disadvantaged areas of South Africa are the least able to overcome the burden of home socioeconomic

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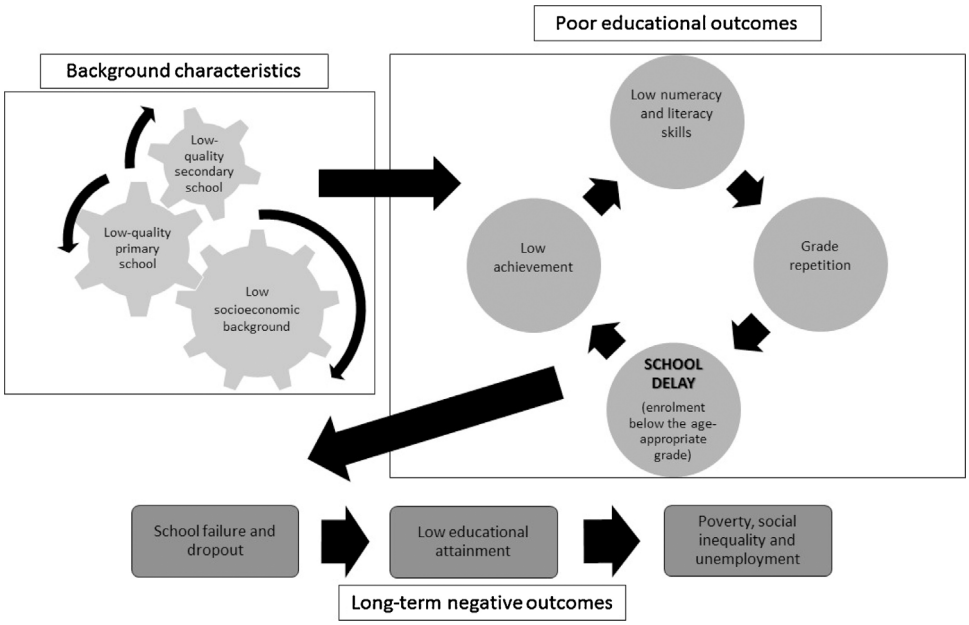

Fig. 1. Background characteristics, poor educational outcomes and long-term negative outcomes: School delay theoretical framework.
Based on Spaull, 2013; Spaull, 2015; Spaull and Kotze, 2015

disadvantage on students' performance (van der Berg, 2008). Thus, by grade 9, adolescents' mathematical knowledge in 60% of the poorest schools in South Africa is already five years behind the knowledge of wealthier adolescents attending more-functional and wealthier schools (Spaull, 2015; Spaull & Kotze, 2015). Therefore, despite high enrolment ratios amongst disadvantaged adolescents, *basic completion* – grade 9 completion- is low (Department of Basic Education, 2016). Accordingly, grade repetition rates are high in South Africa, especially amongst socioeconomically disadvantaged students (Department of Basic Education, 2016). While 30% of the poorest grade 11 students in South Africa have repeated a grade at least once, only 8% of the wealthiest grade 11 students have ever repeated a grade (Branson, Hofmeyr, & Lam, 2014; Department of Basic Education, 2016).

Thus, school delay is an important negative educational outcome affecting many adolescents in South Africa due to the low socioeconomic characteristics of their families and the poorly-resourced low-quality schools which adolescents attend (Spaull, 2013, 2015). Local research indicates that adolescents' school delay is associated with low numeracy and literacy skills and grade repetition, which in turn predicts school dropout and low educational attainment in the long term (Lam et al., 2011; Spaull & Kotze, 2015). Furthermore, studies on the South African education system, labour market and social mobility have identified low educational attainment as a significant determinant of an intergenerational cycle of social inequality characterized by unemployment and poverty (Branson et al., 2014; Spaull, 2015). Fig. 1 summarizes the links between school delay, background characteristics, other poor educational outcomes and long-term negative outcomes in South Africa.

1.2. Adolescents' exposure to violence and school delay in South Africa

Similar to other Sub-Saharan African countries, there is a high prevalence rate of violence against children and adolescents in South Africa (Leoschut & Kafaar, 2017; Meinck, Cluver, Boyes, & Loening-voysey, 2016; Sherr et al., 2016). A 2015, nationally representative survey conducted among adolescents aged 15–18 found that within the home, 34% of adolescents had experienced physical abuse, 21% neglect, 16% emotional abuse, and 23% had witnessed domestic violence in their lifetime (Leoschut & Kafaar, 2017; Ward et al., 2015). Furthermore, 20% of adolescents reported persistent bullying at school, while 50% had witnessed violence take place in the community (Ward et al., 2015).

Repeated victimization and exposure to multiple forms of violence among adolescents are also becoming more common in South Africa (Burton & Leoschut, 2013; Leoschut & Kafaar, 2017; Ward et al., 2015). For instance, 64% of all adolescents aged 15–18 in South Africa experienced "*Lifetime Poly-victimization*" – numerous victimizations across different contexts ever in their lives (Leoschut & Kafaar, 2017). Furthermore, exposure to multiple forms of violence is more prevalent amongst adolescents from socioeconomically disadvantaged families and communities in South Africa due to related risk factors such as chronic poverty, unemployment, parental stress, and household overcrowding (Burton & Leoschut, 2013; Leoschut & Kafaar, 2017; Meinck, Cluver, & Boyes, 2013, Meinck, Cluver, & Boyes, 2015b; Seedat, Niekerk, Suffla, & Ratele, 2009; Ward et al., 2015). For instance, a recent cross-sectional study in socioeconomic disadvantaged communities in the Eastern Cape showed that 94% of adolescents were repeatedly exposed to two or more forms of violence in the past month (Herrero Romero et al., n.d.).

Most of the global and South African evidence on the negative impact of violence against children has focused on its detrimental consequences to children's mental and physical health (Barbarin, Richter, & Wet, 2001; Bruwer et al., 2014; Meinck, Cluver, Orkin

et al., 2016; WHO, 2014). However, only four studies in South Africa have focused on the relationship between violence and negative educational outcomes amongst adolescents (Herrero Romero et al., n.d.; Barbarin et al., 2001; Pieterse, 2015; Sherr et al., 2016). Three of these focused on the negative effects of single forms of violence (domestic violence, harsh parenting, and witnessing community violence) on overall adolescents' school progression, academic achievement and school dropout (Barbarin et al., 2001; Pieterse, 2015; Sherr et al., 2016). The results of these studies showed that harsh discipline and domestic violence were associated with adolescents' slow grade progression (Sherr et al., 2016), while recurrent exposure to physical abuse at home was associated with an increased probability of a reduction in numeracy skills test scores and a greater risk for dropout (Pieterse, 2015). Furthermore, experiences of family violence in the past 6 months was inversely associated with young children's academic motivation (Barbarin et al., 2001). The fourth study looked at the negative impact of adolescents' exposure to multiple types of violence on their school delay and academic motivation, in a socioeconomically disadvantaged context (Herrero Romero et al., n.d.). Results showed that adolescents' more frequent exposure to more than one form of violence was significantly associated with worse school delay but not with lower academic motivation.

1.3. The protective role of supportive parenting on adolescents' schooling outcomes

Parents have an important role in their children's education. Strong global evidence shows that beyond cultural and socio-economic characteristics, less controlling and more supportive parenting practices and parenting styles can have a positive impact on adolescents' educational outcomes (Areepattamannil, 2010; Grolnick et al., 2007; Hill & Taylor, 2004; Jeynes, 2007; Selin, 2013). For instance, studies in countries such as the USA, Canada, the UK, Taiwan, Mexico, Ghana and Kenya have found that at-home parental involvement is associated with positive educational outcomes (Areepattamannil, 2010; Castro et al., 2015; Chowa, Masa, & Tucker, 2013; Kan & Tsai, 2005; Mudibo, 2014; Wilder, 2014). More specifically, the following types of parental involvement exert a positive impact on both an adolescent's academic motivation and academic achievement: providing support with learning opportunities (Desforges & Abouchaar, 2003; Mudibo, 2014; Shukla et al., 2015; Simon, 2001; Wilder, 2014), good supervision (Castro et al., 2015; Chowa et al., 2013; Hill & Tyson, 2009) and parents' high academic expectations (Jeynes, 2007; Kan & Tsai, 2005; Mo & Singh, 2008; Simon, 2001; Wilder, 2014). Furthermore, parenting styles such as close and positive parenting (Jeynes, 2007; Kristin et al., 2009; Zellman, Waterman, & Waterman, 2017) as well as positive, authoritative discipline (Shute, Hansen, Underwood, & Razzouk, 2011) have been found to be associated with higher academic achievement.

In South Africa, we are aware of one study that has investigated the relationship between supportive parenting practices and adolescents' educational outcomes (Sherr et al., 2017). This study applied a cross-sectional analysis investigating the relationship between supportive parenting and several children's outcomes in Malawi and South Africa. The study's results showed that more supportive parenting was associated with fewer educational risks amongst children aged 7–13 (Sherr et al., 2017).

1.4. The potential protective effect of supportive parenting on the relationship between exposure to violence and adolescents' schooling outcomes

Although a large number of studies have looked at violence-prevention programs, few studies have examined parenting processes which work to lessen the negative effect of exposure to violence on adolescents' educational outcomes (Rothon, Head, Klineberg, & Stansfeld, 2011; Tajima, Herrenkohl, Moylan, & Derr, 2011). For instance, a longitudinal study in the UK showed that for adolescents with moderate levels of social support from parents, bullying was not associated with lower odds of achieving the academic benchmark, compared to adolescents with very low or very high levels of social support (Rothon et al., 2011). These results showed that moderate (but not high) support from family protected bullied adolescents against poor academic achievement. Another longitudinal study in the US analyzed the potential moderating effects of having accepting and close parents (rather than controlling parents) on the relationship between exposure to Intimate Partner Violence (IPV) and several adolescent outcomes (Tajima et al., 2011). In this study, having accepting parents moderated (lessened) the effect of exposure to IPV on running away from home and adolescent pregnancy, but did not moderate (lessen) the effect of IPV on school dropout.

1.5. Current study

To date, little is known on the role of supportive parenting practices in protecting South African adolescents' educational outcomes against the negative effects of violence and socioeconomic disadvantage. Thus, following a socioecological resilience approach, this study investigates one source of potential protection in education (Theron & Engelbrecht, 2012; Ungar, 2012). In particular, the current study investigates the potential protective role of supportive parenting against adolescents' school delay within a context of violence and socioeconomic disadvantage in 40 communities in the Eastern Cape, South Africa. With this aim, two distinct types of resilience processes were investigated (see Fig. 2): first, the potential "compensatory" protective effect (Fergus & Zimmerman, 2005; Masten, 2001, 2014; Sacker & Schoon, 2007) of supportive parenting factors against overall exposure to violence and socioeconomic disadvantage is analyzed. This is done by looking at the independent and direct relationships between supportive parenting factors and adolescents' school delay. Second, the potential "moderating" protective effect (Garmezy and Masten, 1986; Hall, 2009; Masten, 2001, 2014) of supportive parenting factors against the negative impact of *"poly-violence"* (Herrero Romero et al., n.d.) on school delay is investigated. This is operationalized by looking at the moderating effects of parenting on the relationship between exposure to *more-frequent 'poly-violence'* and school delay.

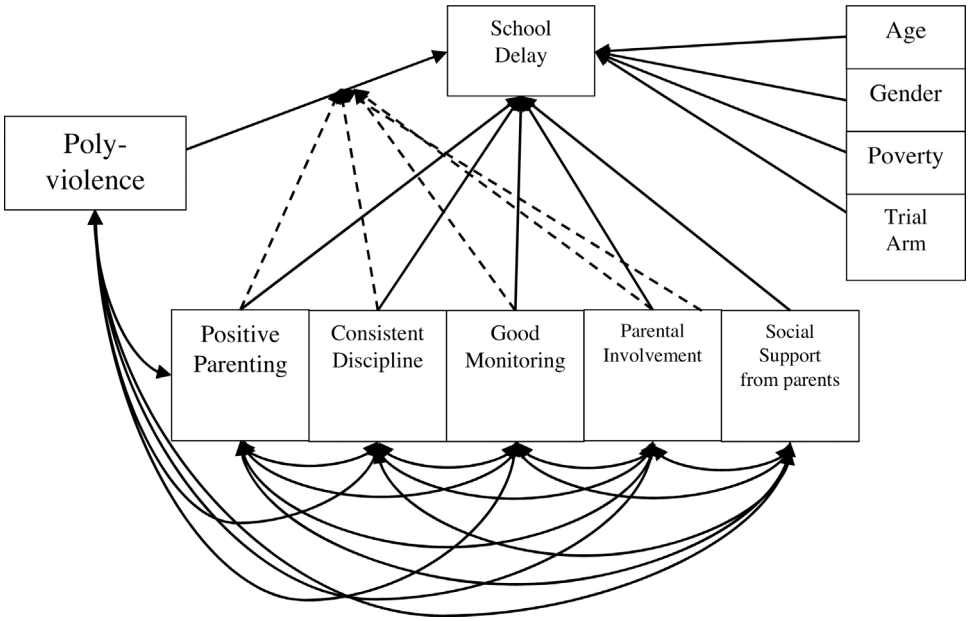

Fig. 2. Hypothesized supportive parenting on school delay: main and interaction effects models.

2. Methods

2.1. Sample and data

Sampled adolescents were participants in the Sinovuyo Teen Study (STS), a cluster randomized controlled trial evaluating a violence-prevention parenting program in disadvantaged communities in the Eastern Cape, South Africa (Cluver et al., 2017). 32 rural and 8 peri-urban communities were purposively selected for the trial. All communities were low-income with high rates of unemployment and poor public infrastructures. Vulnerable adolescents aged 10–18 −and their primary caregivers- were recruited via schools, social workers and community guides. Some families were also self-referred. Biological relationships were not required for the caregiver-adolescent dyads to participate in the study. Primary caregivers were identified by asking adolescents, *"who is the person responsible for caring for you most in your household?"* In order to be included in the study, primary caregivers and adolescents had to be cohabitating at least four nights per week. A brief screening questionnaire inquiring into domestic arguments was used. However, no exclusion criteria were applied. More information regarding the parenting program and the sampling procedure can be found in the publication of the trial protocol (Cluver et al., 2017).

Out of the 552 adolescents included in the trial, 22 dropped out before the intervention took place, while 27 were not attending school and so did not have complete data on educational outcomes in the follow-up survey. Thus, the current analysis only includes 503 adolescents. These 503 adolescents had no missing data on any measures.

Data collection happened twice before and twice after the parenting intervention. Baseline surveys took place from May until September 2015 while follow-up surveys were conducted from February to August 2016. Adolescents were interviewed face-to-face in Xhosa by local research assistants who were trained on sensitive topics. Local research assistants were bilingual in English and Xhosa and trained in the use of tablets, research ethical procedures, interview techniques, observational data collection, questionnaires and measures. In total, they received at least five 2-day refresher training sessions on the questionnaires throughout the trial. Standardized, validated measurement tools were applied. Tablet-questionnaires were used with Audio Computer-Assisted Self-Interview Software (ACASI) options available for the more-sensitive questions. Data was encrypted to ensure confidentiality of the participants.

Ethics approval was granted from research ethics committees at the University of Oxford, the University of Cape Town, and the South African Departments of Social Development and Basic Education. Community consent to participate in the study was sought from local governments and traditional chiefs. Individual, informed consent was also sought from all adult and adolescent participants in the study. Participation was voluntary and participants could withdraw their consent to participate at any moment during the trial. No monetary compensation was given. Refreshments, participation certificates and small stationary 'thank you' packs were given to each adolescent.

2.2. Measures

2.2.1. School delay (at follow-up)

School delay was measured using a continuous scale based on the age-grade appropriateness in South Africa. Adolescents who

were enrolled in the age-appropriate grade scored 0 in the school delay scale. Positive scores indicated number of grades behind, hence a positive score of 1 indicated that a given adolescent was 1 grade behind their age-appropriate grade. The negative scores indicated the number of years ahead. School delay scores in the study sample ranged from "-3" (three years below age-appropriate grade) to "+3" (three years ahead of age-appropriate grade).

2.2.2. "Poly-violence" (at baseline)

Table 1 displays six scores measuring the frequency of adolescents' past-month exposure to six types of violence: *Domestic violence between household members, Adolescent physical abuse by caregivers, Adolescent emotional abuse by caregivers, Perceived school violence, Witnessing community violence* and *Community violence victimization.* Each score was a standardized sub-scale that measured the frequency to past-month violence exposure. The six sub-scales had been previously used in other studies with similar samples in South Africa and other Sub-Saharan countries (The African Child Policy Forum, 2014; UNICEF, 2009; Ward, Martin, Theron, & Distiller, 2007). In the current study, the six sub-scales were adapted to match both cultural and trial characteristics. More information on the adaptation process of these measures can be found in Cluver et al. (2017). Response codes for each sub-scale can be found in Table 2.

Domestic violence between household members, Adolescent emotional abuse by caregivers and *Adolescent physical abuse by caregivers* were measured using a culturally-adapted version of the ISPCAN Child Abuse Screening Tool (ICAST-C); (Meinck et al., n.d.; Zolotor et al., 2009) and the Corporal Punishment sub-scale of the Alabama Parenting Questionnaire (Frick, 1991). Internal consistency (Cronbach's alpha) of the ICAST-C subscales were 0.67 (*Domestic violence between household members), 0.81 (Adolescent emotional abuse by caregivers) and 0.88 (Adolescent physical abuse by caregivers*). *Perceived school violence* was measured using five adapted items from the UNICEF Safe and Caring Child-Friendly School Study (UNICEF, 2009). *Witnessing community violence* and *Community violence victimization* were measured using the Exposure to Violence Scale from the Social and Health Assessment (SAHA) study (Ruchkin, Vermeiren, & Schwab-Stone, 2004; Ward et al., 2007). Internal consistency (Cronbach's alpha) of the SAHA subscales were 0.78 *(Witnessing community violence)* and 0.63 (*Community violence victimization).*

"Poly-violence" was determined by having been exposed to more than one of the six forms of violence. Descriptive analyses showed that the majority of adolescents in the sample were exposed to *"poly-violence"* (93.8%). The two *"poly-violence"* categories −*more-frequent* versus *less-frequent exposure*- were identified by applying Latent Profile Analysis (LPA). Table 2 shows the two groups' mean scores for each violence indicators. Adolescents in Profile 1 (n = 60) experienced more-frequent domestic violence (M = 8.394, SD = 1.126, $p < 0.001$), physical abuse (M = 16.772, SD = 2.654, $p < 0.001$), emotional abuse (M = 21.583, SD = 2.347, $p < 0.001$), community violence victimization (M = 1.186, SD = 0.297, p = 0.060), and witnessing community violence (M = 4.305, SD = 0.557, p = 0.001), compared to adolescents in Profile 2 (n = 443). Both groups of adolescents showed similar levels of perceived school violence (p = 0.500). More information on the LPA applied to measure *"poly-violence"* can be found in Herrero Romero et al. (n.d.).

2.2.3. Supportive parenting factors (at baseline)

Table 3 displays the five measures recording supportive parenting factors. *Positive parenting, Consistent discipline, Good monitoring* and *Parental involvement* were measured using adapted versions of the four standardized sub-scales from the Alabama Parenting Questionnaire (APQ, Frick, 1991). The APQ has been used in previous studies with vulnerable adolescents and orphans in South Africa (Lachman, Cluver, Boyes, Kuo, & Casale, 2014). In the current study, internal consistency (Cronbach's alpha) of the APQ subscales were: 0.88 (*Positive parenting*), 0.67 (*Consistent discipline*), 0.75 (*Good monitoring*) and 0.86 (*Parental involvement*). A 5-point Likert scale was used with response options ranging from 'never' to 'always'. Adolescents' recall period was adapted to past-month. The term "main caregiver" was used instead of "mom" and "dad".

Perceived social support from caregivers was measured using an adapted version of the Medical Outcome Study (MOS) Social Support Survey (Sherbourne & Stewart, 1991). The MOS scale, which has been used in previous studies with vulnerable adolescents in South Africa (Cluver & Gardner, 2007), includes questions about emotional/informational, tangible, affectionate, and positive social interactions. In the current study, adolescents were asked how often in the past month they received different types of support from their caregivers. Response options ranged on a 3-point Likert scale from "never" to "sometimes" to "always". Internal consistency (Cronbach's alpha) for *Perceived social support from caregivers* was 0.99.

2.2.4. Covariates (at baseline)

Adolescents were asked about their *age* and *gender*. Furthermore, *poverty* was measured using an 8-item scale recording adolescents' access to basic necessities (i.e. 'a visit to the doctor when someone was ill') in the past week. These items were developed by the Centre for South African Social Policy (Wright, 2008) and endorsed by 80% of the South African population in a nationally representative survey (Pillay, Roberts, & Rule, 2006). Adolescents' responses indicated whether or not they had enough money to cover each basic necessity by answering 'yes' or 'no'.

2.3. Data analysis

In order to investigate the main and moderating effects of parenting factors on school delay, multilevel aggregated Structural Equation Modelling (SEM) was applied using Mplus V7 (Muthen & Muthen, 2012). The multilevel aggregated version of SEM was used in order to correct for the non-independence of observations (adolescents nested in schools and communities). An initial inspection of the study Design Effects and Intra Class Correlation (ICC) indicated that no significant variation on school delay was explained due to differences between schools, while a small proportion of variance on school delay was due to differences between

Table 1
Sinovuyo Teen Study measures recording exposure to violence.

Measures	Sum Scale (# Items)	Items	Items Response Codes
Domestic Violence between household members	ICASTDVT	In the past month, how many days were there arguments with adults shouting in your home?	0 = Never
	ICAST	In the past month, how many days were there arguments with adults hitting each other in your home?	1, 2 3, 4, 5, 6, 7 times
	(2 items)		8 = 8 or more times
Adolescent physical abuse by caregivers	PHYABCPT	In the past month, how often did an adult in your house …Push, grab, or kick you?	0 = Never
	ICAST-TRIAL + APQCP	…Shake you?	1, 2 3, 4, 5, 6, 7 times
	(7 items)	…Hit, beat, or spank you with a hand?	8 = 8 or more times
		…Hit, beat, or spank you with a belt, paddle, a stick or other object?	
		Your caregiver spanks you with their hand when you have done something wrong	Original response values were multiplied by 2. New response codes: 0 = Never; 2 = Almost never; 4 = Sometimes; 6 = Often; 8 = Always
		Your caregiver slaps you when you have done something wrong.	
		Your caregiver hits you with a belt, switch, or other object when you have done something wrong.	
Adolescent emotional abuse by caregivers	ICASTEMT	In the past month how often did an adult … scream at you very loudly and aggressively?	0 = Never
	ICAST-TRIAL	…Call you names, say mean things or swear at you?	1, 2 3, 4, 5, 6, 7 times
	(8 items)	…Make you feel ashamed/embarrassed in front of other people in a way that made you feel bad?	8 = 8 or more times
		…Say that they wished you were dead or had never been born?	
		…Threaten to leave you forever or abandon you?	
		…Lock you out of the home for a long time?	
		…Threaten to call evil spirits against you or hurt or kill you?	
		…Refuse to speak to you because they were angry with you	
Perceived school violence	SCHUNST UNICEF	I feel safe at school (reversed)	0 = Definitely not true
		I feel safe walking both to and from school (reversed)	1 = Mostly not true
	(5 items)	I sometimes don't use the toilets at school because they are not safe	2 = Mostly true
		This school is being ruined by bullies	3 = Definitely true
		This school is badly affected by crime and violence in the community	
Witnessing community violence	WCOMVIOT	Someone else being threatened	0 = Never
	SAHA	Someone else being mugged and his/her your stuff stolen	1 = Once or twice
	(5 items)	People fighting	2 = 3–5 times
		Someone else being hit or harmed	3 = More than 5 times
		People being drunk or on drugs and being argumentative	
Community violence victimization	VCOMVIOT	Threatened by someone else	0 = Never
	SAHA	Mugged and have your stuff stolen	1 = Once or twice
	(5 items)	Caught up in a fight	2 = 3–5 times
		Hit or harmed.	3 = More than 5 times
		With friends that were drunk or on drugs and argumentative	

ICASTDVT = ISPCAN Child Abuse Screening Tool Domestic Violence subscale; PHYABCPT = Physical Abuse and Corporal Punishment; ICAST-TRIAL = ISPCAN Child Abuse Screening Tool trial version; APQCP = Alabama Parenting Questionnaire Corporal Punishment subscale; ICASTEMT = ISPCAN Child Abuse Screening Tool Emotional Abuse subscale; SCHUNST UNICEF = School Unsafety subscale UNICEF Safe and Caring Child-Friendly School Study; WCOMVIOT SAHA = Community violence victimization subscale Social and Health Assessment; VCOMVIOT SAHA = Community violence victimization subscale Social and Health Assessment.

Table 2
Exposure to violence among adolescents from socioeconomically disadvantaged communities in South Africa.

Measures compared across the two profiles	LPA: profile comparison: mean (SE)			Profile comparison: n (%)	
	Profile 1 More-frequent *"poly-violence"* n = 60	Profile 2 Less-frequent *"poly-violence"* n = 443	Wald	Profile 1 More-frequent *"poly-violence"* n = 60	Profile 2 Less-frequent *"poly-violence"* n = 443
Exposure to Violence − Risk Indicators					
Domestic violence between household members	8.394 (1.126)	1.634 (0.212)	< 0.001	54 (90%)	203 (45.8%)
Adolescent physical abuse by caregivers	16.772 (2.654)	6.013 (0.350)	< **0.001**	49 (81.7%)	269 (60.7%)
Adolescent emotional abuse by caregivers	21.582 (2.347)	3.934 (0.393)	< **0.001**	60 (100%)	323 (72.9%)
Perceived school violence	9.198 (0.504)	8.863 (0.130)	0.542	55 (91.7%)	389 (87.8%)
Community violence − Victimization	1.186 (0.297)	0.661 (0.055)	**0.063**	26 (43.3%)	137 (30.9%)
Community violence − Witnessing	4.305 (0.557)	2.517 (0.145)	**0.001**	52 (86.7%)	309 (69.8%)
"Poly-violence"	Na	Na	na	60 (100%)	412 (92.9%)

communities (variance estimate = 0.15, $p < 0.05$; see (Herrero Romero et al., n.d.).

The direct and interaction effects models are displayed in Fig. 2. Analyses were conducted in two steps: first, a school delay main effects model was run with the five parenting factors and *"poly-violence"* as predictors; second, an interaction effects model was run including the five interaction terms of the *"poly-violence"* variable with each of the parenting factors. Both models controlled for the four covariates −age, gender, poverty and trial arm-. *"Poly-violence"* was treated as an observed dichotomous predictor variable: 0 = less-frequent exposure to poly-violence (n = 443); 1 = more-frequent exposure to poly-violence (n = 60). All variables included in the interaction terms were standardized in SPSS using z-scores prior to running SEM analysis in Mplus (Kenny, 2014). Model fit was improved by correlating the error terms between predictor variables (Cole, Ciesla, & Steiger, 2007). For each of the models, acceptable overall model fit was indicated by root mean square error of approximation (RMSEA) values of less than 0.08 and comparative fit index (CFI) values of more than 0.9 (Kenny, 2014).

Finally, in order to test and interpret each significant interaction effect, separate *Johnson-Neyman* graphs were obtained using the MODEL CONSTRAINT: LOOP PLOT command in Mplus (Clavel, 2015). The Johnson-Neyman technique (Johnson & Neyman, 1936) allows one to calculate the *regions of significance*, and is considered a more advanced approach compared to the *simple slopes* technique (Clavel, 2015; Potthoff, 2006; Preacher et al., 2006). The traditional simple slopes technique is based on the dichotomization of a continuous moderator into two mutually-exclusive categories; arbitrarily splitting the moderator variable into "low" and "high" in order to compare their simple means. In opposition, the Johnson-Neyman technique allows for plotting of the interaction effects between a categorical variable and a continuous variable without splitting the data. The Johnson-Neyman technique allows one to test whether the difference in means for the two groups is statistically significant, for any value of the moderator (Miyazaki & Maier, 2011). Therefore, one can actually observe exactly how that X− > Y relationship is constantly changing across continuous levels of the moderator variable. Thus, the Johnson-Neyman technique is based on the identification of the regions of significance, which are the precise regions of the continuum of the moderator values for which the regression slope of X− > Y is estimated to be significantly different from zero (Clavel, 2015). Hence, this technique provides richer information compared to more traditional techniques. By applying the Johnson-Neyman technique one can test for "non-linear interactive effects" going beyond the two traditional moderator categories ("low" vs "high").

3. Results

3.1. Sample characteristics

Table 4 displays sample demographics as well as the main socioeconomic-, school-, violence- and parenting-related characteristics. All adolescents but one spoke Xhosa as their main language at home and around 80% lived in a rural community. Over 60% of adolescents lived in a household with no tapped/piped water inside the home, while around 70% lived in households where no one was employed.

All adolescents in the study attended state schools, of which 86% attended poorly-resourced schools (quintile 1–3 schools in the South African State Schools classification system). The majority of adolescents received daily free meals at school (96.2%). While 13% of the adolescents in the sample were enrolled in at least two grades above their appropriate grade in relation to age, 38% were enrolled in at least one year below the appropriate grade.

The vast majority of adolescents in the study sample were exposed to violence in the past month (99.2%) and 93.8% were exposed to *"poly-violence"* in the past month. Furthermore, 11% of the study sample reported being exposed to all six forms of violence in the past month. Overall, sample means for all perceived parenting factors were high. However, large standard deviations (SD) indicated high variability within the sample: positive parenting (M = 14.49, SD = 5.886), consistent discipline (M = 16.62, SD = 4.678),

Table 3
Sinovuyo Teen Study measures recording supportive parenting factors.

STS Measures		Sum Scale (# Items)	Items	Items Response Codes
Parenting Factors	Positive Parenting	APQ (6 items)	Your caregiver tells you that you are doing a good job Your caregiver rewards you or gives you something extra to you for behaving well. Your caregiver compliments you when you have done something well. Your caregiver praises you for behaving well Your caregiver hugs or kisses you when you have done something well. Your caregiver tells you that he/she likes it when you help around the house	0 = Never 1 = Almost never 2 = Sometimes 3 = Often 4 = Always
	Consistent Discipline	APQ (6 items; all reversed)	Your caregiver threatens to punish you and then does not do it You talk your caregiver out of punishing you after you have done something wrong. Your caregiver gives up trying to get you to obey them because it's too much trouble. Your caregiver lets you out of a punishment early (like lift restrictions earlier than they originally said) Your caregiver does not punish you when you have done something wrong The punishment your caregiver gives depends on their mood	0 = Never 1 = Almost never 2 = Sometimes 3 = Often 4 = Always
	Good Monitoring	APQ (10 items; all reversed)	You fail to leave a note or let your caregiver know where you are going You stay out in the evening past the time you are supposed to be home Your caregiver does not know the friends you are with You go out without a set time to be home You go out after dark without an adult with you. Your caregiver gets so busy that he/she forgets where you are and what you are doing You stay out later than you are supposed to and your caregiver doesn't know it. Your caregiver leaves the house and doesn't tell you where he/she is going. You come home from school more than an hour past the time your caregiver expects you to be home You are at home without an adult being with you	0 = Never 1 = Almost never 2 = Sometimes 3 = Often 4 = Always
	Parental Involvement	APQ (10 items)	In the past month…You have a friendly talk with your caregiver Your caregiver helps with some of your special activities (such as sports, church youth group) You play games or do other fun things with your caregiver Your caregiver asks you about your day in school Your caregiver helps you with your homework Your caregiver asks you what your plans are for the coming day. Your caregiver accompanies you to a special activity. Your caregiver talks to you about your friends You help plan family activities Your caregiver goes to a meeting at school or a caregiver/teacher conference	0 = Never 1 = Almost never 2 = Sometimes 3 = Often 4 = Always
	Social Support	MOSS (19 items)	How often can you count on {caregiver_name} to listen to you when you need to talk? How often does {caregiver_name} give you information and help you understand the situation? How often does {caregiver_name} give you good advice about a crisis? How often can you confide or talk about your problems with {caregiver_name}? How often does {caregiver_name} give you advice you really want? How often can you share your most private worries and fears with {caregiver_name} How often you do turn to {caregiver_name} to talk about how to deal with your personal problems Does {caregiver_name} understand your problems? When you are ill in bed, how often does {caregiver_name} help you? How often does {caregiver_name} take you to the doctor when you need to go? How often does {caregiver_name} prepare meals for you when you are unable to do it? How often does {caregiver_name} help you with your daily chores if you are sick? How often does {caregiver_name} show you love and affection? How often does {caregiver_name} make you feel loved and wanted? How often does {caregiver_name} hug you? Do you have a good time with {caregiver_name}?	0 = Never 1 = Sometimes 2 = Always

(*continued on next page*)

Table 3 (*continued*)

STS Measures	Sum Scale (# Items)	Items	Items Response Codes
		Do you and {caregiver_name} relax together? Do you and {caregiver_name} do enjoyable things together? Do you often do things with {caregiver_name} to help you get your mind off things	

APQ = Alabama Parenting Questionnaire; MOSS = Medical Outcome Study Social Support Survey.

Table 4
Sample Characteristics at Baseline (n = 503).

	Mean (SD)/n (%)
Demographics	
Adolescent Age (years)	13.71 (2.34)
Female adolescent	208 (41.4%)
Adolescent living in a rural community	405 (80.5%)
Adolescent was an orphan	160 (31.8%)
Xhosa as the main language spoken at home	502 (99.8%)
Household socioeconomic characteristics	
More than 2 basic necessities missing in the past month	382 (75.9%)
At least 2 days in the past week with not enough food at home	222 (44.1%)
Living in a household where no one is working	350 (69.6%)
Living in a household with no tap water	318 (63.2%)
Schooling characteristics	
Enrolled in state school	503 (100%)
Enrolled in at least one year below the appropriate grade in relation to age	128 (37.6%)
Enrolled in at least two grades higher than the appropriate grade in relation to age	61 (13.1%)
Attending secondary schools	214 (48.6%)
Attending schools in rural communities	335 (66.6%)
Attending poorly-resourced schools[a]	430 (85.5%)
Receiving free meals at school	484 (96.2%)
Past-month exposure to violence[b]	
Witnessed domestic violence between household members	257 (51.1%)
Experienced physical abuse by caregivers	318 (63.2%)
Experienced emotional abuse by caregivers	383 (76.1%)
Felt unsafe in school	444 (88.3%)
Experienced community violence (victimization)	163 (32.4%)
Witnessed community violence	361 (71.8%)
Exposed to any form of violence	499 (99.2%)
Exposed to *"poly-violence"*	472 (93.8%)
Exposed to all six forms of violence	57 (11.3%)
Supportive parenting	
Positive parenting	14.49 (5.886)
Consistent discipline	16.62 (4.678)
Good monitoring	26.61 (7.385)
Involved parenting	18.61 (9.184)
Social support	22.32 (7.672)

[a] Quintile 1–3 State Schools.
[b] % of adolescents who replied different than *never* to at least one of the violence item questions or% of adolescents who replied *mostly true* or *definitely true* to at least one of the *Perceived School Violence* scale question.

good monitoring (M = 26.61, SD = 7.385), involved parenting (M = 18.61, SD = 9.184), and social support (M = 22.32, SD = 7.672).

3.2. Main effects of more-frequent exposure to "poly-violence" and parenting factors on adolescents' school delay

Step 1 in Table 5 exhibits the main effects of *more-frequent exposure to "poly-violence"* and parenting factors on adolescents' school delay. Results in Table 5 showed that being exposed to *more-frequent "poly-violence"* was associated with higher school delay ($p = 0.005$), while none of the five parenting factors included in the model were directly and significantly associated with school delay. Results also showed that being a male ($p < 0.001$) and older ($p < 0.001$) were significantly associated with school delay.

3.3. The moderating effects of parenting on the relationship between more-frequent exposure to "poly-violence" and adolescent's school delay

Step 2 in Table 5 displays the moderating effects of parenting on the relationship between *more-frequent exposure to "poly-violence"* and adolescents' school delay. Despite parenting factors not being directly associated with the school delay outcome (see Step 1), results in Step 2 showed that two interaction terms were significantly associated with school delay: *more-frequent exposure to poly-violence*positive parenting* ($p = 0.002$) and *more-frequent exposure to poly-violence*consistent discipline* ($p = 0.011$).

A visual inspection of the two significant interaction terms can be found in Fig. 3 and Fig. 4. Fig. 3 shows the Johnson-Neyman plot for the interaction term *more-frequent exposure to poly-violence* by *positive parenting* on school delay. The X-axis in the Loop plot in Fig. 3 depicts a continuous range of positive parenting, while the Y-axis represents a continuous range of values for the adjusted effect of *more-frequent "poly-violence"* on school delay (Clavel, 2015). The straight line represents values of the adjusted effect ("Violence_B") that correspond to the full range of all continuous values of positive parenting (measured in standard deviation units −SD-). The curve lines above and below the straight plot line represent 95% confidence bands around the adjusted effect of *"poly-violence"* on school delay. Consequently, the plot in Fig. 3 shows that the effect of being exposed to *more-frequent "poly-violence"* on school

Table 5
The relationship between more-frequent exposure to poly-violence and supportive parenting factors with school delay, and moderating effects of supportive parenting factors.

	Estimate	SE	p-value
Step 1			
More-frequent poly-violence (P)	**0.186**	**0.067**	**0.005**
Positive parenting	0.002	0.105	0.987
Consistent discipline	−0.009	0.071	0.904
Good monitoring	0.115	0.072	0.107
Involved parenting	−0.049	0.114	0.669
Caregiver's social support	0.031	0.059	0.604
Female Gender	**−0.621**	**0.095**	**0.000**
Older Age	**0.198**	**0.024**	**0.000**
Poverty	0.021	0.027	0.422
Intervention Trial Arm	0.224	0.158	0.156
Step 2			
P*positive parenting	**−0.259**	**0.082**	**0.002**
P*consistent discipline	**−0.151**	**0.059**	**0.011**
P*good monitoring	0.022	0.046	0.639
P*involved parenting	0.149	0.117	0.201
P*social support	0.088	0.050	0.077

Step 1: RMSEA = 0.073; CFI = 0.938.
Step 2: RMSEA = 0.057; CFI = 0.951.

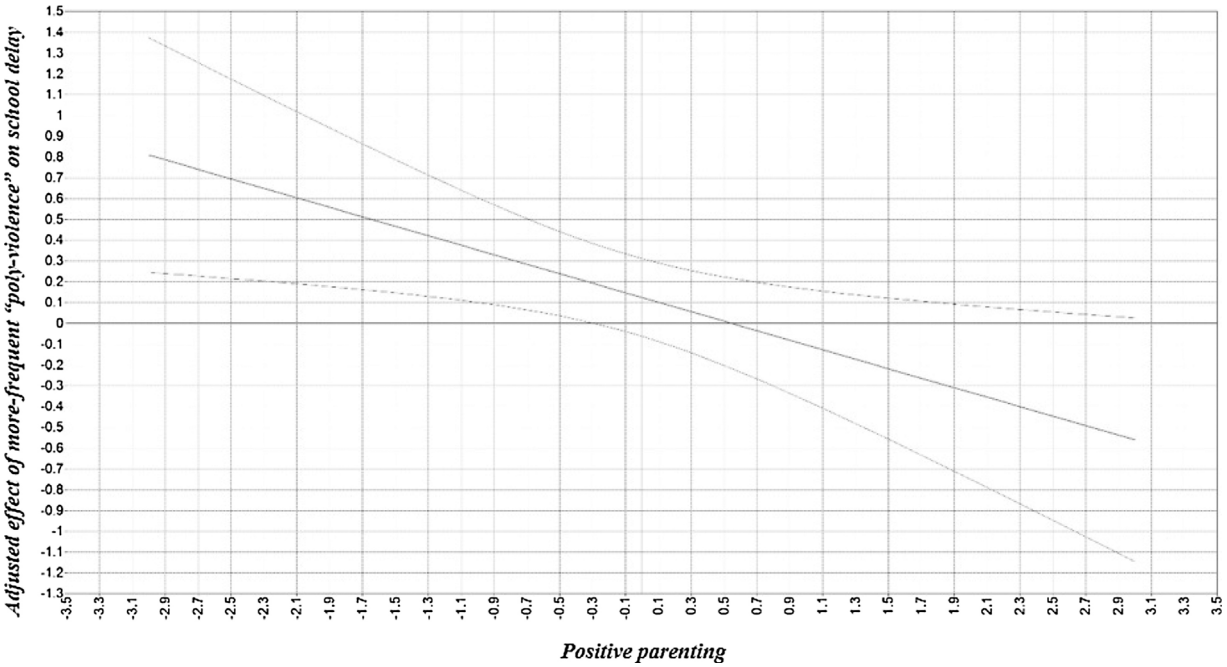

Fig. 3. The interaction between positive parenting and more frequent poly-violence on school delay amongst violence-exposed adolescents in South Africa.
The straight line represents the relationship between school delay and more frequent poly-violence varying as a function of positive parenting (in standard deviations): More positive parenting lessens the association between school delay and more frequent poly-violence. The curved lines above and below the straight plot line represent 95% confidence bands around this relationship.

delay is significant and positive for adolescents experiencing low positive parenting (below −0.3 SD). In contrast, the effect of being exposed to *more-frequent "poly-violence"* on school delay is not significant for adolescents with higher positive parenting (between −0.3 SD and 3.3 SD approximately). Thus, this plot showed that the higher the adolescents' perceived positive parenting, the less being exposed to *more-frequent "poly-violence"* is associated with school delay.

Similarly, Fig. 4 presents the Johnson-Neyman plot for the interaction term *more-frequent exposure to "poly-violence"* by *consistent discipline* on school delay. The plot shows that the effect of being exposed to *more-frequent "poly-violence"* on school delay is significant and positive for adolescents experiencing low consistent discipline (below −0.3 SD). The effect of being exposed to *more-frequent "poly-violence"* on school delay is not significant for adolescents with higher consistent discipline (between −0.3 SD and 4 SD approximately). Thus, this plot shows that the higher the adolescents' perceived consistent discipline, the less being exposed to *more-*

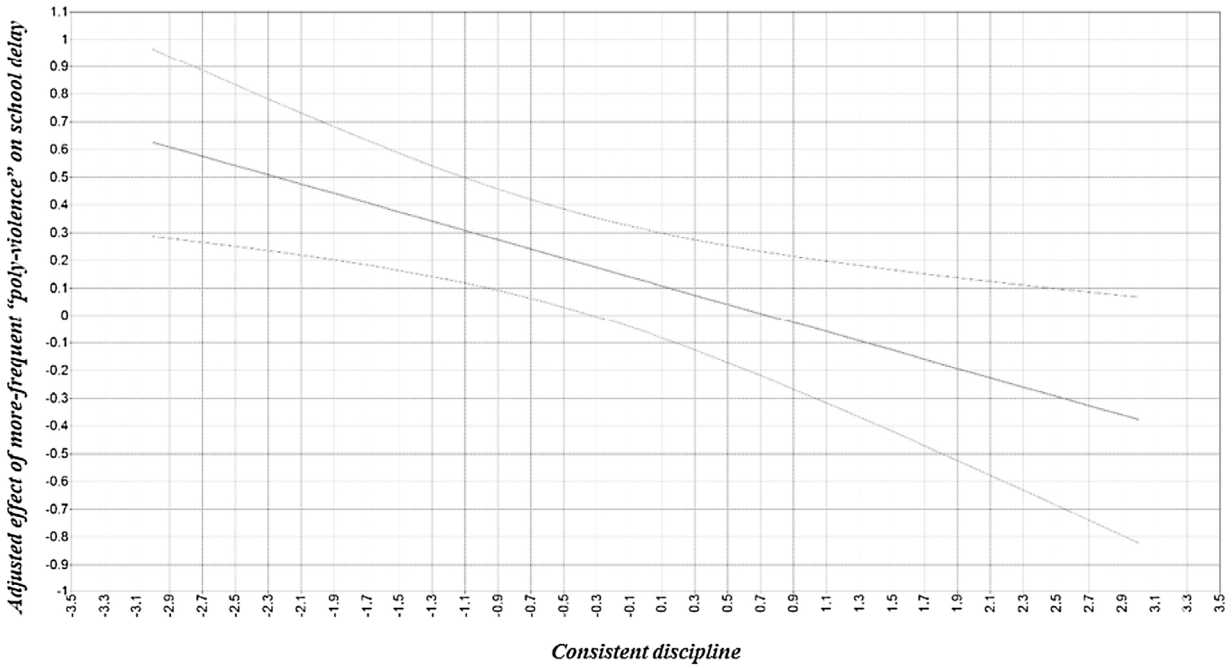

Fig. 4. The interaction between consistent discipline and more frequent poly-violence on school delay amongst violence-exposed adolescents in South Africa. The straight line represents the relationship between school delay and more frequent poly-violence varying as a function of consistent discipline (in standard deviations): More consistent discipline lessens the association between school delay and more frequent poly-violence. The curved lines above and below the straight plot line represent 95% confidence bands around this relationship.

frequent "poly-violence" is associated with school delay.

4. Discussion

The current study investigates the protective role of supportive parenting against school delay in a sample of South African adolescents exposed to multiple types of violence and socioeconomic disadvantage. Two resilience models were investigated to inform potential interventions: first, the "compensatory" protective effect of parenting factors on school delay against overall exposure to violence and socioeconomic disadvantage; second, the "moderating" protective effect of parenting factors on school delay against *more-frequent exposure to 'poly-violence'* (rather than less-frequent). To our knowledge, this is the first study that has examined the potential role of parents in contributing to the educational resilience of adolescents exposed to multiple types of violence and socioeconomic disadvantage in South Africa.

4.1. Prevalence of school delay, socioeconomic disadvantage and "poly-violence"

Thirty eight percent of adolescents in the study sample were enrolled in at least one year below the appropriate grade in relation to age. Thus, adolescents in the study sample showed high rates of school delay, when compared to national estimates (Branson et al., 2014). Furthermore, adolescents in the study sample experienced high rates of socioeconomic disadvantage and multiple exposures to violence at home, in school and in the community when compared to national prevalence rates (Ward et al., 2015). For instance, the vast majority of adolescents in the sample did not pay school fees, received daily free meals in school and were exposed to more than one form of violence in the past month *("poly-violence").* However, results showed that not all adolescents in the study sample were exposed to the same levels of *"poly-violence"* (around 11% of them were exposed to *more-frequent "poly-violence"*). Furthermore, our results indicated that adolescents exposed to *more-frequent "poly-violence*" were less likely to be in the appropriate grade for their age, compared to adolescents exposed to *less-frequent* violence. This result indicated that the higher the frequency of violence that socioeconomically disadvantaged adolescents are exposed to, the worse their school delay.

4.2. The protective role of parents against exposure to violence and socioeconomic disadvantage

Overall, sample means for all perceived supportive parenting factors were high. This finding is in line with previous studies in South Africa using similarly disadvantaged samples. These studies have generally shown high levels of positive parenting despite poverty, sickness and violence (Cluver et al., 2013; Lachman et al., 2014; Meinck, Cluver, & Boyes, 2015a).

Our results indicated that supportive parenting practices and styles have important moderating impacts, but cannot completely compensate against the strong negative effects of exposure to violence and socioeconomic disadvantage on adolescents' school delay.

While global evidence shows the overall positive impact of supportive parenting on adolescents' educational outcomes, most studies have focused on normative or diverse samples representing adolescents from different racial, cultural and socioeconomic backgrounds (Areepattamannil, 2010; Grolnick et al., 2007; Hill & Taylor, 2004; Jeynes, 2007; Selin, 2013). On the contrary, the current study focuses on a highly at-risk sample in South Africa. Thus, our findings suggest that parents cannot completely compensate against the overall, strong negative impact on adolescents' educational outcomes that are linked to them being exposed to multiple types of violence, high socioeconomic disadvantage and poor-quality education.

However, our findings also suggest that supportive parenting can have buffering or moderating effects (may partially compensate) against the negative impact of adolescents being exposed to *more-frequent "poly-violence"*. Thus, our results showed that parents can have a protective role against school delay for adolescents exposed to high frequency of violence. In particular, our findings suggest that high levels of positive parenting and consistent discipline can protect against the negative effect of being exposed to *more-frequent "poly-violence"* (rather than less-frequent) on school delay. Adolescents exposed to *more-frequent "poly-violence"* and receiving positive parenting and consistent discipline from their parents are less likely to be behind their appropriate grade for their age. This is compared to those exposed to *more-frequent "poly-violence"* but having less-positive parenting and inconsistent discipline by parents.

While positive parenting and consistent discipline were found to weaken the relationship between exposure to *more frequent "poly-violence"* and school delay, other parenting factors such as good monitoring, parental involvement and social support were not found to contribute to adolescents' resilience. This finding adds to the limited global evidence on the operating protective mechanisms from parents against exposure to violence for adolescents' good educational outcomes (Rothon et al., 2011; Tajima et al., 2011). In Tajima et al. (2011), primary caregiver 'acceptance and responsiveness' moderated adolescents' outcomes, while 'controlling parenting' did not have a moderating effect on any of the key outcomes. The 'acceptance and responsiveness' factor analyzed in Tajima et al. (2011) measured similar constructs compared to our measure of 'positive parenting'. However, in Tajima et al. (2011), 'controlling parenting' included items on parental discipline which also reflected other parenting control behaviors and practices. Thus, we may infer that differences in the samples and measures used make comparisons regarding these findings limited. Furthermore, a plausible reason why neither of these three factors had moderating effects on school delay may take into account the adolescence developmental stage: it is well known that adolescents spend long unsupervised periods of time with peers and start building important relationships outside their families. Consequently, peers become important influences and in some cases primary sources of comfort and support. Perhaps peer involvement and social support may be more effective as a protective factor against exposure to violence, compared to certain parenting strategies. For instance, while high levels of peer support were found to protect against the negative impact of bullying in Rothon et al. (2011), parental overprotection and high levels of support from parents negatively impacted the academic achievement of bullied adolescents. In conclusion, similar analyses to the ones applied in Tajima et al. (2011) and Rothon et al. (2011) that include potential peer moderators may yield more information on the relative importance of parenting versus peer protective mechanisms against exposure to violence in South Africa.

4.3. Limitations and implications for policy, programming and future research

Our study has several limitations. First, the study sample was purposively recruited for a violence-prevention parenting program in socioeconomically disadvantaged communities. Hence, our findings cannot be extrapolated to all adolescents in South Africa. However, this study has the strength of having included vulnerable adolescents from very vulnerable families. Thus, our results complement findings from other studies which in most cases fail to represent the most vulnerable and the most in-need of interventions. Second, this study analyzed exposure to multiple forms of violence and supportive parenting over a short period of time (past month), while baseline descriptive statistics showed that 38% adolescents in the sample were already enrolled in at least one year below the appropriate grade in relation to their age. It is of course plausible that school delay had occurred over the years prior to our study. Similarly, parenting practices may have been consistent behavior for a long time (Meinck, Cluver, Orkin et al., 2016). Exposure to violence is also highly likely to have happened for longer than a few years before our baseline data collection, which might have affected adolescents' educational outcomes before the beginning of the study. Thus, this study is unable to determine whether school delay happened before or after adolescents' experiences of violence and parenting. However, this study does not claim any causal relationship between violence or parenting and school delay. On the contrary, this study draws conclusions about what may be possible based on a cross-sectional analysis. This is a first step to better understand the associations between violence, parenting, socioeconomic disadvantage and school delay. Finally, this study applies self-report measures which are subject to recall and social desirability bias. Nonetheless, several factors helped us reduce bias: first, we only asked about exposure to violence in the past month, which is a reasonably recent and limited period of time for adolescents to recall (Willoughby, Desrocher, Levine, & Rovet, 2012); and second, we reduced interaction with research assistants by offering adolescents ACASI options for abuse-related and other sensitive questions.

This is the first study looking at the potential contribution of parenting to the educational resilience of adolescents exposed to multiple types of violence and socioeconomic disadvantage in South Africa. Overall, our results suggest that in order to improve the educational outcomes of at-risk adolescents in South Africa, interventions aiming at reducing exposure to violence are urgently needed. Furthermore, school-based interventions providing safe and social environments can have an important role not only at a primary violence-prevention level, but also identifying high risk students exposed to multiple forms of violence (Barbarin et al., 2001; Leoschut & Kafaar, 2017). On the other hand, our results also showed the potential benefit of targeted interventions that promote positive and consistent parenting amongst the most vulnerable families of adolescents exposed to more-frequent *"poly-violence"*. Finally, further studies focusing on other ongoing protective mechanisms from supportive peers and teachers are needed (Tajima et al., 2011; Theron & Theron, 2014). These studies would complement our study findings and better inform evidence-based,

resilience approaches amongst adolescents exposed to socioeconomic disadvantage and violence in South Africa.

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