

How does exposure to violence affect school delay and academic motivation for adolescents living in socioeconomically disadvantaged communities in South Africa?

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Abstract

To date, little is known about the effects of violence on the educational outcomes of adolescents in disadvantaged communities in South Africa. In response, self-report data was collected from a socioeconomically disadvantaged sample of 503 adolescents aged 10 to 18 participating in a child abuse prevention trial in the Eastern Cape. Adolescents were purposively selected in the trial. This study applies Latent Profile Analysis (LPA) to examine relationships between past-month exposure to violence, school delay and academic motivation. 93.8% of adolescents in the sample experienced “*poly-violence*” – exposure to at least two forms of violence in the past month. Results identified two distinct profiles in the socioeconomically disadvantaged sample: Profile 1, adolescents exposed to more frequent “*poly-violence*”, and Profile 2, adolescents exposed to less frequent “*poly-violence*”. Being exposed to more frequent “*poly-violence*” was associated with greater risk of school delay – based on age-appropriate grade in South Africa. However, being exposed to more frequent “*poly-violence*” was not associated with lower academic motivation – adolescents showed high rates of wanting to achieve. Our findings suggest that exposure to more frequent “*poly-violence*” increases risk of school delay among adolescents from disadvantaged communities, while not affecting their academic motivation. Thus, whilst adolescents maintained aspirations and goals to do well at school, exposure to high frequency of violence impacted their capacity to fulfill these aims.

Keywords

Violence, academic motivation, school delay, adolescence, disadvantaged communities, South Africa, LPA

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Adolescents' educational outcomes in disadvantaged communities in South Africa

School delay and low completion rates are common among disadvantaged youths in South Africa (Lam, Ardington, & Leibbrandt, 2011). Nationally representative, South African evidence has shown that adolescents from socioeconomically disadvantaged families and communities attending disadvantaged schools in disadvantaged areas are less likely to perform well and adequately progress in school (Branson, Hofmeyr, & Lam, 2014; Spaull, 2013). For instance, by grade 9 –age 15-, the average student from a poorly-resourced school is likely to perform at a level commensurate with an average student at least three years their junior but attending a more “functional” school – usually one charging fees- (Spaull, 2013). Despite this, past studies have suggested that disadvantaged students in South Africa have high hopes and aspirations in terms of education (Bray, Gooskens, Kahn, Moses, & Seekings, 2010; Mzolo, 2013; Watson, McMahon, Foxcroft, & Els, 2010) as well as high motivation to keep trying in school (Strassburg, Meny-Gibert, & Russell, 2010; Ward, Martin, Theron, & Distiller, 2007). Despite their socioeconomic circumstances, disadvantaged adolescents in South Africa persevere in order to remain in school and complete basic education (Grade 9). This results in a large number of over-aged students due to low performance and consequent grade repetition. Among them, only a very small proportion complete non-compulsory education (Grade 12) (Spaull, 2015).

South African adolescents' exposure to violence

In South Africa, high rates of exposure to violence were reported in the first nationally representative survey on childhood victimization. Amongst adolescents aged 15 to 17, 34.4% reported having experienced physical abuse by caregivers, 21.3% experienced neglect, 16% experienced emotional abuse, and 23.1% witnessed domestic violence –physical, emotional or

sexual violence between other household members such as caregivers and siblings- in their lifetime (Ward, Artz, Burton, & Leoschut, 2015).

In addition to exposure to violence at home, adolescents in South Africa can also be exposed to high levels of violence perpetrated by peers and adults outside the home. For example, harsh discipline in school by teachers, bullying practices by peers, or assaults in the community are common (Ward et al., 2015, 2007). At the school level, 19.7% of all South African adolescents report persistent bullying (Ward et al., 2007), while 66.9% of all high school students in the Eastern Cape have experienced corporal punishment (Burton & Leoschut, 2013b) and 50% reported having witnessed a physical fight in their community in their own lives (Ward et al., 2015). Overall, 64% of all adolescents aged 15 to 17 in South Africa experienced “Lifetime Poly-victimization” - numerous victimizations across different contexts throughout their lives (Leoschut & Kafaar, 2017). “Lifetime Poly-victimization” is more frequent amongst socioeconomically disadvantaged adolescents due to chronic poverty, unemployment, parental stress, and household overcrowding (Burton & Leoschut, 2013a; Leoschut & Kafaar, 2017; Meinck, Cluver, & Boyes, 2013, 2015; Seedat, Niekerk, Suffla, & Ratele, 2009; Ward et al., 2015).

Exposure to violence and poor educational outcomes

There is strong global and South African evidence demonstrating the impacts of exposure to violence on children’s mental and physical health (Barbarin, Richter, & Wet, 2001; Meinck, Cluver, Orkin, et al., 2016; WHO, 2014). However fewer studies have focused on the relationships between children’s exposure to violence and educational outcomes.

While evidence on the relationship between violence and adolescents’ educational outcomes in Sub-Saharan Africa is scarce, more research can be found in other regions. For instance, a recent review found 16 cross-sectional retrospective studies from the US, Canada,

Israel and the UK, showing that childhood maltreatment within the family was associated with later poor academic performance (Romano, Babchishin, Marquis, & Fre, 2015). This review found that physical abuse, sexual abuse and neglect were independently associated with enrolment in lower grades, higher grade repetition, and academic underachievement. Furthermore, the negative impact of maltreatment within the family on academic outcomes was more pronounced for children with multiple maltreatment experiences, as well as children exposed to specific types of maltreatment such as neglect (Romano et al., 2015). Similarly, a cross-sectional study with adolescent students from an urban, ethnically diverse school in the US showed that youth with multiple victimizations outside the home (bullying, conventional crime and sexual victimization) experienced more psychological distress and earned lower grades than their peers (Holt, Finkelhor, & Kantor, 2007). Likewise, a cross-sectional study with young adolescents from urban areas in Jamaica found that school-based peer violence, physical punishment at school, and community violence were independently associated with poor school achievement. In addition, children experiencing higher levels of violence had the poorest academic achievement compared to other children, suggesting a dose-response effect (Baker-henningham, Meeks-gardner, Chang, & Walker, 2009).

In South Africa, one longitudinal and two cross-sectional studies exist investigating the impact of harsh parenting, plus exposure to domestic and community violence on the educational outcomes of children and adolescents (Barbarin et al., 2001; Pieterse, 2015; Sherr et al., 2016). In a cross-sectional study of 4,747 youths aged 14–22 in Cape Town, being physically hit hard on a regular basis was associated with an increased probability of school dropout and a reduction in numeracy test scores (Pieterse, 2015). Similar results were obtained in a study of 626 six-year-old children in South Africa. Here, family violence was inversely associated with academic motivation, and community violence was not found to affect academic functioning (Barbarin et al., 2001). Also, results from a one-year longitudinal study of children aged 4-13 showed that

children exposed to emotional abuse by their parents at baseline were ten times less likely to still be enrolled in school for the one year follow-up (Sherr et al., 2016). In the same study, harsh parenting was also associated with poor grade progression.

The three studies described above all used ‘variable-based analyses’ (Petrenko, Friend, Garrido, Taussig, & Culhane, 2013) to investigate single relationships between specific forms of violence and negative educational outcomes among young children (Barbarin et al., 2001; Sherr et al., 2016) and adolescents (Pieterse, 2015; Sherr et al., 2016) in South Africa. However none of these studies analyzed the impact of exposure to multiple forms of violence on educational outcomes among adolescents. Additionally, contrary to research in other regions none of these South African studies found significant associations between exposure to community violence and educational outcomes.

Measuring exposure to multiple forms of violence

Exposure to multiple forms of violence has been operationalized using two different approaches: variable-centered (i.e. cumulative risk indices) versus person-centered approaches (i.e. Latent Class and Latent Profile Analysis). By creating a continuous measure - an index summing dichotomized items (at risk-thresholds) from several sub-scales-, researchers have considered endorsement to any dichotomized item in the index as a presence of violence victimization (Charak et al., 2016; Finkelhor, Ormrod, & Turner, 2007). Using this construct of violence victimization, researchers have classified adults and children into different groups or classes. These classes range from “none”, “least victimized–exposed” or “one type of violence victimization” to “highly poly-victimized–exposed” and/or, “more than three violence victimizations” (Charak et al., 2016; Finkelhor et al., 2007). Thus, for these researchers, “poly-victimization” indicates that a person has experienced at least four different types of violence victimizations in the past year (Charak et al., 2016; Finkelhor et al., 2007). This approach to

“poly-victimization” has two limitations: first, these models are not able to consider repeated victimization or the frequency of episodes of violence; second, they give the same importance to all different types of experiences of violence.

A second method is to use a person-centered alternative that considers multiple violence experiences based on various violence scale scores, such as Latent Class Analysis (LCA) or Latent Profile Analysis (LPA) (Holt et al., 2007). This approach allows comparisons between different levels of exposure to violence by asking participants how often they have experienced different types of victimization in the past month. For instance, by using Latent Profile Analysis (LPA), participants can be classified in groups based on their victimization profiles (for example, high neglect/low physical and emotional abuse profile versus high neglect, physical and emotional abuse profile versus high sexual and emotional abuse profile). These profiles can then be compared to each other based on their mean scores (Holt et al., 2007). Compared to variable-centered techniques, LPA avoids the use of arbitrary cut-off points on underlying dimensions and makes it possible to retain the continuous nature of frequency ratings of exposure to violence (Pears, Kim, & Fisher, 2008). Thus, the strength of this method, which has been used in other studies on child maltreatment, is its ability to identify various sub-groups of children with similar victimization profiles, based on the frequency and type of violence exposure (Pears et al., 2008).

Current Study

This study examines the relationship between South African adolescents’ exposure to multiple types of violence with subsequent academic motivation and school delay. Exposure to violence is investigated across multiple settings -home, school and community-, and by different perpetrators –caregivers, peers and other adults. The term “*poly-violence*” is used to indicate exposure to more than one of the following six forms of violence: domestic violence between

household members, physical abuse by caregivers, emotional abuse by caregivers, school violence, community violence (victimization) and community violence (witnessing). Six total scores based on standardized sub-scales made the six ‘forms’ of violence. Thus, the current study takes into consideration not only the number of forms of violence that adolescents experience but also the frequency of exposure to each form of violence –based on the mean scores- (Holt et al., 2007). A prospective approach -5 to 9 months- is applied to a sample of adolescents from socioeconomically disadvantaged communities. The current study answers the following research question: Is exposure to violence related to school delay and academic motivation in adolescents from socioeconomically disadvantaged communities in South Africa?

Methods

Study setting

Baseline and post-test survey data were collected from participants of the Sinovuyo Teen Study (STS); a pragmatic cluster randomized-controlled trial (Anonymous 2016). This study evaluated the effectiveness of the Sinovuyo Teen program, a parenting intervention primarily aimed at reducing harsh and abusive parenting. The trial took place in 32 rural and 8 peri-urban disadvantaged communities in the Eastern Cape, South Africa. Communities had high rates of unemployment, HIV prevalence and poor infrastructure. Baseline data collection took place from May until September 2015, while the post-test intervention surveys (hereafter, ‘follow-up’) were conducted from January to July 2016. Additional information regarding the purposive sampling procedure and overall study design can be found in the publication of the trial protocol (Anonymous 2016).

Screening and recruitment procedures

Participants were Xhosa adolescents aged 10 to 18 years and their primary caregivers living in 32 rural and 8 peri-urban disadvantaged communities in the Eastern Cape Province of

South Africa. Due to large numbers of orphans in South Africa and the common geographical mobility of children across extended family households (Yaw, Heaton, & Kalule-Sabiti, 2007), there were no requirements for a biological relationship between caregiver and adolescent. Very low-income communities in the Eastern Cape were selected and local schools, traditional chieftains, and social services in contact with vulnerable families were approached. Participants were recruited through local social workers, school teachers and community guides who identified families experiencing arguments in the household and adolescents with social and emotional problems. Some of the families also self-referred. Families who reported having experienced arguments within the previous month were then given the opportunity to participate.

Adolescents aged 10 to 18 and sleeping in the same dwelling as their caregiver for at least four nights a week were eligible to participate in the overall study (n=552). Of those, four adolescents did not complete baseline interviews, and thus they were not included in this analysis. Finally, only adolescents who did not subsequently drop out from the trial (n=22), and had no missing data on educational outcomes in the follow-up survey (n=23) were included in the current analysis (total included n=503). Adolescents who had missing data on educational outcomes in the post-test survey reported being out-of-school when the post-test interviews took place. Due to the skip patterns designed into the Computer-Assisted Self-Interview Software (CASI) applied in the study, as well as regular data quality and validation checks, missing data was 0% on all the variables used in this study except for one. Perceived school violence had <1% of missing data, corresponding to five adolescents who were out of school at baseline. There were no baseline differences between adolescents lost and retained at follow-up in the overall study (see Supplement Table 1 in Anonymous et al. 2018).

Data collection

Tablet-based questionnaires translated into Xhosa were used within a Computer-Assisted Personal Interviewing (CAPI) process. Local, trained research assistants interviewed participants at their homes or in other settings, such as schools. School level characteristics were also collected from 69 schools which accounted for 94% of the sample's adolescents. Administrative data for those schools where data was not collected directly (n=14) was retrieved from the online master lists of South African schools (Department of Basic Education, 2016; Van Wyk, 2015).

Ethics

Ethical approval was obtained from Research Ethics Committees at the University of Oxford, the University of Cape Town, as well as from the South African Departments of Social Development, and of Basic Education. Both adolescents and caregivers needed to give informed consent to participate. Confidentiality was maintained, except if participants were at risk of significant harm or requested assistance. A total of 33 adolescents and their families were referred to social and health services due to family issues, sexual abuse and suicide risk. A small 'thank you pack' of stationery was given to all adolescents for each completed interview as well as refreshments and certificates of participation. Adolescents were given the choice to answer abuse questions using Audio Computer-Assisted Self-Interview Software (ACASI). School principals gave informed consent for the school to participate in the study.

Measures

Composite variables for educational outcomes (measured at follow-up) and for violence exposure (measured at baseline) are summarized in Table 1.

[Please insert Table 1 about here]

Academic Motivation and School Delay (measured at follow-up)

School delay was assessed using a continuous scale based on grade appropriateness by age in South Africa. The South African Schools Act of 1996 specifies that the age of admission

to Grade 1 is the year in which a child turns 7 (Republic of South Africa, 1996). However, a decision made by the Constitutional Court in 2004, resulted in the school-going age for Grade 1 being changed to age 5 if a child turns 6 on or before 30 June in the Grade 1 year (Department of Basic Education, 2010). Furthermore, many parents decide that their child should start school earlier. Subject to the availability of places, a learner may be admitted to Grade 1 at a younger age if it is in the child's best interests (UNESCO International Bureau of Education, 2006). Thus, school delay calculations used a conservative definition of age norm per grade in the current investigation (e.g. grade 1 + 6 = age 7; grade 9 + 6 = age 15; grade 12 + 6 = age 18). Adolescents who were enrolled in the age-appropriate grade scored 0 in the School Delay scale. A positive score indicated that the adolescent had dropped behind the South African age-appropriate grade, while a negative score indicated a higher number of grades ahead.

(Low) Academic motivation was measured using four adapted items from the standardized 'Academic Motivation Scale' of the SAHA study (Ruchkin, Schwab-Stone, & Vermeiren, 2004); the original scale was validated in the US ($\alpha = .66$) and the adapted items were used in previous research with adolescents from socioeconomically disadvantaged communities in Cape Town (Ward et al., 2007). In the current investigation, these items were answered using a scale from 0 to 9 with lower scores indicating higher levels of academic motivation. The items were adapted to fit the South African school context. For instance, we used, "It is important to me to do well in school this year" instead of "It is important to me to get at least a B average this year".

Measures recording exposure to violence (measured at baseline)

Domestic violence between household members, adolescent physical abuse by caregivers and adolescent emotional abuse by caregivers were measured using a culturally adapted version of the ISPCAN Child Abuse Screening Tool (ICAST); Children's Version ICAST-C (Runyan et

al., 2009), the ICAST-TRIAL. The ICAST-TRIAL measured the prevalence of exposure to violence in the past month. Response codes range from '0' (Never) to '8' (8 times or more) (Meinck et al., n.d.). Higher scale scores indicated a greater frequency of violence experiences. Three additional items from the Alabama Parenting Questionnaire (APQ) Corporal Punishment sub-scale (Frick, 1991), also adapted to measure the past month, were added to the ICAST-TRIAL to composite the teen physical abuse by caregivers measure. APQ items' response options range on a 5-point Likert scale from 'Never' to 'Always'. APQ response values were multiplied by two in order to match the eight response options of the ICAST-C child physical abuse scale before summing. In the current analysis, neglect was not considered a form of violence as such, but as the parents' failure to care for a child even if able to do so (Ward et al., 2015). Furthermore, in the context of high levels of deprivation, neglect is difficult to distinguish from poverty (Ward et al., 2015). Thus, neglect was not included in the analysis. Internal consistency (Cronbach's alpha) of the violence subscales were .67 (Domestic violence between household members, 2 items), .81 (Adolescent emotional abuse by caregivers, 4 items) and .88 (Adolescent physical abuse by caregivers, 4 items). Further information on the psychometric properties of the ISPCAN Child Abuse Screening Tool for use in Trials among South African Adolescents can be found in Meinck et al. (under review).

Perceived school violence was measured using five items from the Student Survey Physical and Emotional Safety sub-scale used in the UNICEF Safe and Caring Child-Friendly Schools Study (UNICEF, 2009). This sub-scale measures how physically and emotionally safe students felt in school in the past term and includes items asking about bullying, and crime in both the school grounds and surroundings. The response code ranged on a 4-point Likert scale from 'Definitely not true' to 'Definitely true' with higher scores showing higher levels of unsafety. The psychometric properties of the original student-reported measure can be found in a cross-national study using data from 68 schools across the Philippines, Nicaragua and South Africa – including

schools in extremely difficult socio-economic conditions in the Eastern Cape province (Godfrey et al., 2012). In the global evaluation, internal consistency of the original Physical and Emotional Safety sub-scale across all countries was .74. Internal consistency of the perceived school violence scale in the current investigation was .94.

Witnessing community violence and community violence victimization were measured using risks identified in the child version of the standardized Exposure to Violence Scale from the Social and Health Assessment (SAHA) study (Ruchkin et al., 2004; Ward et al., 2007). This sub-scale was also validated in the US and has since been used in research with adolescents from socioeconomically disadvantaged communities in Cape Town (Ward, Martin, Theron, & Distiller, 2007; Ruchkin et al., 2004). The scale consisted of two five-item sub-scales assessing incidents of children witnessing and experiencing community violence in the past month. The response code ranged from “Never” to “More than 5 times”. In the current investigation, internal consistency (Cronbach’s alpha) of the SAHA Exposure to Violence subscales were .78 (Witnessing community violence) and .63 (Community violence victimization).

Probabilistic predictors of violence (measured at baseline)

Adolescents’ age (years) and *gender (male/female)* were measured via self-report. *Household poverty* was measured using a continuous measure (8 items) indicating access to the top eight socially-perceived necessities for children, as identified in the SA Social Attitudes Survey (Pillay, Roberts, & Rule, 2006; Wright, 2008). These include items such as, “enough clothes to keep you warm and dry” and ‘a visit to the doctor when someone was ill’. At follow-up, adolescents’ exposure to violence and adolescents’ educational outcomes may have been influenced by their participation in the STS (intervention versus control). In order to control for this participation, *trial arm* was introduced as a covariate.

Data Analysis

All analyses were conducted using the Mplus v7.0 software (Muthén & Muthén, 2010). The effect of families being nested within communities (though not schools) was statistically controlled for via the specification of clustered standard errors. This decision to control for the effect of nesting within one of the two higher levels (cross-classified multilevel data) was made on the basis of two sets of descriptive statistics: Design effects and Intra Class Correlations (ICCs; see Table 2).

[Please insert Table 2 about here]

Putting the statistics within Table 2 into context, within studies considering educational outcomes, a threshold ICC value of 10-15% is considered *medium* to *high effect* (Hox, 2010). Thus, the ICCs shown in Table 2 indicated that a small proportion of variance in School Delay was due to differences between communities (variance estimate=0.15, $p<0.05$, ICC=8.4%). However, no significant results were found due to differences between schools on either School Delay or Academic Motivation. This might be explained by the very similar type of schools that the adolescents attended (see schooling characteristics, Table 3). Clustered standard errors were calculated using the TYPE=COMPLEX feature in Mplus ('disaggregated multilevel modelling'; Muthén & Muthén, 2010). Latent Profile Analysis (LPA) was then used to explore distinct patterns of exposure to violence in the sample. LPA is a person-centered type of analysis; a mixture model which identifies unobserved homogeneous groups or subpopulations from a heterogeneous population; these homogeneous groups are based on mean-level response patterns across multiple continuous risk indicators (Masyn, 2013). In contrast to variable-centered models, person-centered models allow researchers to identify differences in the exposure to multiple and co-occurring risks and outcomes of interest between sub-groups of children (Masten, 2014). Furthermore, Latent Class and Latent Profile Analysis are increasingly used to measure the interplay of different risk factors and multiple forms of exposure to violence (Charak et al., 2016; Clarke et al., 2016; Lanza, Tan, & Bray, 2013; Petrenko et al., 2013).

In the current investigation, incidences of domestic violence between household members, adolescent physical abuse by caregivers, and adolescent emotional abuse by caregivers were measured using count data (number of times a violent episode occurred in the past month). On the other hand, perceived school violence, witnessing community violence and community violence victimization were measured using the Likert response format (ordinal data to indicate frequency of exposure to violence). In the current study, all item scores within each violence sub-scale were added. LPA was therefore applied, treating ordinal data as ordinal approximations to continuous variables. Thus, the total number of categories for perceived school violence, witnessing community violence and community violence victimization were twenty, twenty-five and twenty-five respectively. This is a common practice used by researchers within surveys, as ordinal variables with five or more categories can often be treated as continuous variables without detriment to the analysis (Johnson & Creech, 1998; Norman, 2010; Zumbo & Zimmerman, 1993).

The following six violence risk indicators were included in the LPA: domestic violence between household members, adolescent physical abuse by caregivers, adolescent emotional abuse by caregivers, perceived school violence, community violence (victimization) and community violence (witnessing). Maximum-likelihood estimation was used to estimate missing data on the latent profile risk indicators. In order to compare educational outcomes across profiles, a one-step ‘distal-as-indicator’ model was applied (Lanza et al., 2013) with six exposure-to-violence risk indicators measured at baseline and the two educational outcomes measured at follow-up. With a view to identifying factors associated with individual profile membership, probabilistic predictors (age, gender, poverty and trial arm) were included in the model via the post-hoc AUXILIARY option in Mplus (Muthén & Muthén, 2010). This option applies multinomial logistic regressions with the latent profiles as dependent variables using posterior probabilities (Muthén & Muthén, 2012).

After conducting a two-profile LPA, successive LPAs estimating three through five profiles were then estimated in order to fully test for the possibility of multiple homogenous groups/ latent profiles (Nylund & Muthén, 2007). Three types of indices of relative model fit were computed to inform the number of latent profiles that were deemed to exist (Masyn, 2013; Nylund & Muthén, 2007). First, the Lo-Mendell-Rubin Likelihood Ratio Test (LMR-LRT) of goodness of fit, pointing at the ‘best’ model with the smallest number of classes that is not significantly improved by the addition of another class (Masyn, 2013) Second, information criteria Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) were examined, where lower values indicate a better model, although sometimes minimum values are not reached (Masyn, 2013; Nylund & Muthén, 2007). Finally, classification quality was assessed using relative entropy, with higher values being superior (Masyn, 2013).

Results

Sample characteristics

Table 3 displays the characteristics of the sample at baseline, showing high levels of socioeconomic disadvantage. Three quarters of adolescents lived in households where at least three basic necessities were not covered (75.9%), more than 60% of the adolescents’ households had no tap water and approximately 70% lived with no employed adults at home.

[Please insert Table 3 about here]

All adolescents attended state schools and the vast majority received free meals at school (96.2%). Adolescents mainly attended poorly-resourced schools in low income areas (85.5%). While around 80% of adolescents lived in rural areas, only 66.6% attended schools in rural areas and the rest of the sample (33.4%) attended schools in urban areas, meaning that 14.4% travelled to urban areas in order to attend school. 37.6% of adolescents were in grades lower than those considered appropriate for their age. Overall, adolescents showed a high level of academic

motivation and the mean academic motivation score was 28.35 (scale ranged from 0 to 36). Interestingly, 13% of adolescents in the sample were enrolled two years above the age-appropriate grade. This is consistent with South African statistics of early first-time enrolment in poorer areas, compared to more affluent provinces (Department of Basic Education, 2010, 2013). For instance, in 2009, the poorer provinces of Limpopo and the Eastern Cape showed particularly high proportions of 5-year-olds attending educational institutions, compared to more affluent provinces such as the Western Cape and Gauteng (Department of Basic Education, 2010). The issue of early school enrolment in disadvantaged areas in South Africa has been associated with the national roll-out of public early childhood education (Early Childhood Development and Foundation Phase), as well as the school feeding program (National School Nutrition Programme; UNESCO International Bureau of Education, 2006; Department of Education, 2010). Thus, due to early entrance to school in South Africa, it is possible to find children enrolled in a grade one or two years higher than what is age appropriate, especially in primary school if children did not repeat grades.

Overall, adolescents in the sample experienced high rates of violence in the month prior to the baseline survey: 51.1% witnessed some form of domestic violence, 63.2% experienced some form of physical violence by their caregivers, 76.1% experienced some form of emotional violence by their caregiver, 88.3% felt unsafe in school, and 71.8% had witnessed some form of violence in the community. Exposure to community violence (victimization) was considerably lower in the study sample (32.4%), compared to other forms of violence. Only four adolescents reported never experiencing any form of violence in the past month, while 93.84% of adolescents were exposed to “*poly-violence*”.

LPA Model

The results of the LPAs with 2-5 latent profiles are displayed in Table 4. In terms of information and classification criteria, models with a greater number of profiles had the smaller values of AIC and BIC, and higher values of entropy. An inspection of the interpretability of the models showed that model 3 identified a non-poly-violence profile with 6.96% of adolescents, plausibly corresponding to the combined proportions of adolescents exposed to one type of violence (6.2%) and adolescents not exposed to any type of violence (0.8%). However, LMR-LRT was not significant for models 3, 4 and 5, indicating that none of these significantly improved upon the initial two-profile model (Masyn, 2013). By contrast, LMR-LRT was significant for the 2 latent profile solution, indicating that a model with two latent profiles significantly improved a model with one latent profile. Overall, these results indicated that the two-profile solution was the best-fitting model - for this sample - and the classification of adolescents in the two-profile solution was meaningful and had demonstrated greatest parsimony (Lanza & Rhoades, 2014).

[Please insert Table 4 about here]

Profiles of exposure to violence. The LPA procedure suggested that there were two heterogeneous profiles of adolescents - differentiated according to the frequency of “*poly-violence*” that they were exposed to. Figure 1 compares patterns of exposure to each type of violence for the two profiles identified. Table 5 shows the differences in the estimated means of exposure to violence between the two profiles. Adolescents in Profile 1, adolescents exposed to *more frequent “poly-violence”* (n=60, 11.9%), were characterized by higher mean scores of domestic violence ($p<0.001$), physical ($p<0.001$) and emotional ($p<0.001$) abuse at home as well as higher scores of witnessing community violence ($p=0.001$), compared to adolescents in Profile 2. By contrast, adolescents in Profile 2, adolescents exposed to *less frequent “poly-violence”* (n=443, 88.1%), were characterized by lower mean scores of violence at home and witnessing community violence, compared to adolescents in Profile 1. The two profiles showed

very similar scores of perceived school violence ($p=0.500$) and community violence victimization ($p=0.060$).

[Please insert Table 5 and Figure 1 about here]

Table 6 compares the number of adolescents exposed to each form of violence in the past month for the two profiles identified. 100% of adolescents in Profile 1 and 92.9% of adolescents in Profile 2 experienced “*poly-violence*” in the past month, while 28.3% adolescents in Profile 1 and 9% adolescents in Profile 2 were exposed to all forms of violence in the past month.

[Please insert Table 6 about here]

Educational outcomes and their association with poly-violence. Adolescents in Profile 1 at baseline were less likely to be in the appropriate grade for their age at follow-up (thus experiencing school delay), compared to adolescents in Profile 2 (see Table 6). Hence, more frequent exposure to “poly-violence” was associated with school delay in these adolescents. School delay outcome was measured using a continuous variable (with negative numbers indicating number of grades ahead). Results therefore also show that children in grades higher than those age-appropriate were more likely to be in profile 1, and thus, these children were less-frequently exposed to poly-violence. Academic motivation was not significantly different across profiles.

Predictors of violence. Multinomial results showed a significant relationship between the adolescents’ age and membership of each of the exposure-to-violence profiles (see Table 7). Thus, older adolescents were more likely to be in Profile 1 and to have experienced higher frequency of *poly-violence*, compared to younger adolescents ($p=0.020$). Neither adolescent gender, family poverty, nor trial arm were significantly associated with profile membership.

[Please insert Table 7]

Discussion

This paper contributes to our knowledge on the lives of South African adolescents living in poverty by considering the relationship that exists between their exposure to “*poly-violence*” and subsequent measures of academic motivation and school delay. To our knowledge, this is the first study that has examined the impact of exposure to multiple forms of violence in the home, school and community on the educational outcomes of these adolescents (including younger and older adolescents). Furthermore, this is the first study to do so from a prospective approach, and the first that has applied a person-centered approach to measure any group of adolescents’ exposure to violence in South Africa (the identification of heterogeneous groups).

Exposure to Violence

Overall rates of exposure to any form of violence in the home and in the community were high in the study sample, compared to national estimates of exposure to violence (Akmatov, 2011; Ward et al., 2015). This was to be expected, given the purposive and socioeconomically disadvantaged status of the sample. Perceived school violence was particularly high in our sample, compared to national estimates (Department of Basic Education, 2013). In total, more than 80% of adolescents in the sample felt unsafe in school. Adolescents in the sample attended mainly socioeconomically disadvantaged schools in rural areas and townships. Previous research has demonstrated that endemic crime in socioeconomically disadvantaged communities and a lack of appropriate supervision during school breaks –often due to a lack of resources- are important factors contributing to the poor safety in public schools (Burton & Leoschut, 2013a; Masitsa, 2011).

Despite overall high rates of exposure to “*poly-violence*”, our results strongly confirmed heterogeneity within our sample. All sampled adolescents lived in socioeconomically disadvantaged communities characterized by a lack of infrastructure, and high rates of crime and unemployment. Yet results suggest that not all adolescents were equally exposed to violence and

abuse. Two distinct groups of adolescents can be observed in relation to exposure to violence in socioeconomically disadvantaged communities in South Africa: 1) adolescents that are exposed to more frequent “*poly-violence*” in the home and community, and 2) adolescents that are exposed to less frequent “*poly-violence*”, compared to adolescents in group 1. Addressing exposure to “*poly-violence*” in socioeconomically disadvantaged communities in South Africa is particularly important. Research from other countries has shown that adolescents exposed to multiple forms of violence are more likely to experience more psychological distress and lower academic performance than those with minimal victimization or those exposed to only one specific form of violence (Holt et al., 2007).

Furthermore, profile characteristics in the study sample indicated that different frequencies of exposure to “*poly-violence*”, both direct and indirect, were present in adolescents in socioeconomically disadvantaged communities in South Africa. LPA analyses did not yield profiles characterized by distinct forms of exposure to violence (i.e. exposed to physical versus emotional abuse, exposed to school versus community violence etc.). However, two clear profiles characterized by different frequency of exposure to “*poly-violence*” were identified. This finding is in line with previous research on children’s exposure to violence in South Africa and other Sub-Saharan countries, pointing at high rates of children’s multiple victimization (Clarke et al., 2016; Meinck, Cluver, Boyes, & Loening-voysey, 2016; Ward et al., 2015, 2007). Thus, results suggested that two groups of adolescents exposed to multiple types of violence can be found in socioeconomically disadvantaged communities in South Africa: first, those that are frequently exposed to direct (physical and emotional abuse) and indirect violence at home (domestic violence), as well as indirect violence in the community; second, those adolescents that are similarly exposed to family and community violence but in a less frequent manner. Particularly targeting adolescents exposed to more frequent exposure to “*poly-violence*” in socioeconomically disadvantaged communities in South Africa is important: previous research

from different countries has shown that chronic abuse -recurrent incidents of abuse over time- increases the risk of cumulative negative effects (Ethier, Lemelin, & Lacharit, 2004; Jaffe & Kohn Maikovich-Fong, 2011).

Disadvantage, “*poly-violence*” and educational outcomes

Adolescents exposed to more frequent “*poly-violence*” were less likely to be in the appropriate grade for their age. This finding adds to the limited evidence on the negative effects of exposure to violence on school progression and academic performance among adolescents in South Africa (Pieterse, 2015; Sherr et al., 2016). However, most adolescents in the sample were high-risk adolescents due to multiple economic disadvantages in the home, as well as further disadvantages at school and in the community. For instance, most adolescents in the sample experienced multiple stressors such as coming from impoverished families, living in low-income communities and attending poorly-resourced schools. All these factors measuring socioeconomic disadvantage have been associated with school delay and grade repetition in South Africa (Branson et al., 2014; Lam et al., 2011; Spaul, 2015). Furthermore, the relationship between poverty and lower levels of education during childhood has also been identified as a strong predictor of violence perpetration and victimization in youth and adult life (WHO, 2002).

Our results showed that family poverty was not associated with exposure to violence. However, the poverty measure in the current analysis needs to be interpreted as an indicator of greater disadvantage in an already disadvantaged setting (all adolescents were highly at risk as they came from socioeconomically disadvantaged communities). Further studies which compare the exposure to violence of economically disadvantaged and economically non-disadvantaged adolescents are needed in South Africa. These studies may shed further light on whether incidences of exposure to multiple types of violence and its effects on educational outcomes differ, depending on the socioeconomic status. Finally, our results suggest that the disadvantaged

communities in which participants lived may plausibly have contributed to the high rates of both exposure to violence and school delay in the overall sample. However, a comparison group of adolescents not exposed to violence was not included in the analysis.

Previous research on older adolescents has shown high perseverance, expectations and motivation of disadvantaged South African youth to stay in school, regardless of their socioeconomic circumstances (Bray et al., 2010; Strassburg et al., 2010; Ward et al., 2007). This motivation to stay in school seems not to be associated with school completion and academic achievement (Bray et al., 2010; Strassburg et al., 2010). Similarly, our disadvantaged sample was also characterized by both high levels of academic motivation and school delay. Whilst previous research on young children suggested that family violence negatively affected young children's academic motivation (Barbarin et al., 2001), here adolescents exposed to more frequent "*poly-violence*" do not seem to have lower academic motivation in disadvantaged contexts.

Several South African authors attempt to explain the high aspirations of disadvantaged adolescents despite the lack of opportunities. Some think that youth's aspirations can be considered "unrealistic" within a context characterized by socioeconomic disadvantage due to an inadequate grasping of practical constraints on such aspirations (Watson et al., 2010). Watson et al. (2010) explain this further: 'It is possible that children who live in disadvantaged circumstances do not receive adequate exposure to the practical implications of their occupational aspirations. As a result, they may not realistically understand the potential barriers to actualizing these aspirations'. Certainly, these "unrealistic aspirations" would not be so unrealistic if the majority of adolescents in South Africa were given the same opportunities; such as having access to the same high-quality education that 25% of South African adolescents receive (Spaull, 2015; Spaull & Kotze, 2015). This 25% are from higher socioeconomic backgrounds who are not exposed to these structural barriers (Spaull, 2015). Others explain the

disassociation of dreams and opportunities within the current historical context of South Africa's young democracy, due to either a greater perception of social mobility or as a weapon against misery (Bray, Gooskens, Kahn, Moses, & Seekings, 2010; Mzolo, 2013).

The relationship between adolescent age and their exposure to violence

Our results showed that age is associated with more frequent exposure to “*poly-violence*” in adolescents from disadvantaged communities in South Africa. This finding seems in line with evidence from high income countries where older children are more likely to be high poly-victims, compared to low poly-victims (Finkelhor et al., 2007). However, our study focuses on past-month exposure to violence compared to life time or past-year exposure to violence as used in other studies (Finkelhor et al., 2007). Thus our finding suggests that adolescents' risk to higher levels of exposure to “*poly-violence*” is not only due to their longer lifespan, compared with younger children. This risk of experiencing more frequent “*poly-violence*” in the past month might be explained by a wider range of movement and more contact with peers; adolescents tend to be less well monitored by caregivers due to increasing levels of autonomy among older adolescents compared to younger ones.

Implications and Limitations

The study has several limitations. First, a purposive sampling approach was applied. Adolescents were recruited from schools, community guides and social workers based on knowledge of relational issues at home. Furthermore, families were selected using a screening tool which asked about past arguments in the home. However, our recruitment and selection procedures allowed for the inclusion of very vulnerable adolescents and their families. Second, baseline characteristics showed that adolescents in the sample were simultaneously disadvantaged in other ways (attending poorly-resourced schools, experiencing family poverty etc.) Hence, it is likely that findings on the educational delay of adolescents may not be

explained by exposure to violence alone. Third, the six measures of exposure to violence used adolescents' self-reports. Self-report has often been criticized for being subject to recall bias. Compared to other studies using past year or lifetime exposure to violence, this study used past month report. The risk of recall bias was thus plausibly low, allowing us to identify very vulnerable adolescents. Furthermore, the use of ACASI in the violence sections of the questionnaire allowed us to reduce adolescents' social desirability bias.

Fourth, period of reference for all the measures recording exposure to violence was adapted to "in the past month" due to the RCT design and the intention to reduce participants' recall bias. Although it is plausible that exposure to violence changes from one month the next month, it is likely that certain practices leading to violence exposure in the home, such as harsh parenting occurred as a consistent behaviour over the years (Meinck, Cluver, Orkin, et al., 2016). Similarly, adolescents came from contexts characterized by deep-rooted community violence. Thus, past-month exposure to school and community violence may be indicative of long-term exposure to violence. Fifth, the time period of the present study (5 to 9 months) is not long enough to understand the medium and long-term effects of adolescents' exposure to violence on education. Although all follow-up interviews were conducted during the next academic year, compared to baseline interviews, we only measured a snapshot of adolescents' experiences. It is of course plausible that school delay had occurred over the years prior to our study; baseline descriptive results showed that more than a third of all adolescents in the sample were already enrolled in at least one grade lower than the one corresponding to their age. As previously mentioned, it is also plausible that exposure to violence is likely to have happened more than a month before our baseline data collection, which might have affected adolescents' educational outcomes before the beginning of the study. However, this study does not claim any causal relationship between violence and school delay. In contrast, this investigation draws conclusions

about what may be possible based on a cross-sectional analysis. This is a first step to better understanding the associations between violence, socioeconomic disadvantage and school delay.

A small proportion (n=31) of the sample did not report being exposed to multiple types of violence including four adolescents who reported no violence exposure at all. However, the analysis used in the present study yielded two distinct profiles, grouping all adolescents in the sample based on the frequency of exposure to poly-violence. This is something that has occurred in other studies. For instance, in Flannery, Wester, & Singer (2004), Gorman-smith et al. (2004) and Yorohan (2011), children not exposed or exposed to one form of violence have constantly been grouped with other children exposed to multiple types of violence in a low frequent manner. These children have been considered as children exposed to 'low' levels of violence (Flannery et al., 2004; Gorman-smith et al., 2004; Yorohan, 2011). However, our own study differs on the methodology used, compared to these other studies. The main strength of using LPA is that we have avoided using intuitive cut-off points to identify subgroups of adolescents similarly exposed to violence and school delay.

There are at least three plausible reasons for our model not identifying a third group of adolescents who had not been exposed to poly-violence nor violence. Firstly, this may be due to having a very small representation of adolescents not exposed to poly-violence nor violence. Secondly, in this socioeconomically disadvantaged context, adolescents not exposed to poly-violence nor violence may experience similar school delay experiences compared to those adolescents exposed to less-frequent poly-violence. Thirdly, the four adolescents who report not being exposed to any type of violence were only doing so in the areas asked about in the past month. These adolescents were living in the same communities as the vast majority of the sample who reported the experience of poly-violence. This raises a number of possibilities that future research might investigate: 1. It may be that there is a small proportion (<1%) of adolescents in these communities who experience none of the violence that this paper

investigates (even the indirect violence); 2. It may be that some adolescents in these communities do not want to report the experience of violence to researchers; 3. It may be that some adolescents don't remember or don't notice the violence in their communities; 4. It may be that adolescents were exposed to poly-violence but not in the past month. The extent to which any of these are true would make for an interesting follow-up investigation. Further research studies including more adolescents not necessarily exposed to more than one type of violence (less at-risk adolescents) may shed further light on the different impacts of exposure to violence on the educational outcomes of adolescents from socioeconomically disadvantaged communities in South Africa.

Our findings suggest that adolescents from socioeconomically disadvantaged communities are exposed to multiple stressors at home, in the school and in the community. Poverty and exposure to violence affect adolescents' lives and their education opportunities. There is a need for a greater collaboration between different departments and stakeholders to reduce domestic violence, abuse, school violence and crime in the community. Promoting positive parenting practices while reducing financial stress at home may help reduce domestic violence; addressing not only parent-adolescent relations but also socioeconomic structural risk factors associated with abuse (Meinck, Cluver, & Boyes, 2013). Furthermore, more efforts are needed to ensure that adolescents in South Africa feel safe within the school grounds. For instance, low cost initiatives such as the Good School Toolkit study in Uganda can reduce violence against children from school staff (Devries et al., 2015). Increased communication among families, school teachers, police, community workers and social workers in the communities is needed. Improving or developing networks for early referral systems between all organizations working with children in order to prevent "*poly-violence*" is essential. More research into resilience to family and community violence is much needed as well as further

studies looking at protective factors for educational outcomes in adolescents exposed to violence. These may inform policy further and help tailor specific interventions for “*poly-victimized*”, disadvantaged adolescents in South Africa.

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Table 1 Sinovuyo Teen Study measures recording exposure to violence, academic motivation and school delay

Measures		Sum Scale (# Items)	Items	Items Response Codes
Exposure to violence	Domestic Violence between household members	ICASTDVT ICAST (2 items)	In the past month, how many days were there arguments with adults shouting in your home? In the past month, how many days were there arguments with adults hitting each other in your home?	0= Never 1, 2 3, 4, 5, 6, 7 times 8= 8 or more times
	Adolescent physical abuse by caregivers	PHYABCPT ICAST-TRIAL + APQ (7 items)	In the past month, how often did an adult in your house ...Push, grab, or kick you? ...Shake you? ...Hit, beat, or spank you with a hand? ...Hit, beat, or spank you with a belt, paddle, a stick or other object?	0= Never 1, 2 3, 4, 5, 6, 7 times 8= 8 or more times
			Your caregiver spansks you with their hand when you have done something wrong 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.	Original response values were multiplied by 2. New response codes: 0= Never; 2= Almost never; 4= Sometimes; 6= Often; 8= Always
	Adolescent emotional abuse by caregivers	ICASTEMT ICAST-TRIAL (8 items)	In the past month how often did an adult ...scream at you very loudly and aggressively? ...Call you names, say mean things or swear at you? ...Make you feel ashamed/embarrassed in front of other people in a way that made you feel bad? ...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	0= Never 1, 2 3, 4, 5, 6, 7 times 8= 8 or more times
	Perceived school violence	SCHUNST UNICEF (5 items)	I feel safe at school (reversed) I feel safe walking both to and from school (reversed) I sometimes don't use the toilets at school because they are not safe This school is being ruined by bullies This school is badly affected by crime and violence in the community	0= Definitely not true 1= Mostly not true 2= Mostly true 3= Definitely true
	Witnessing community violence	WCOMVIOT SAHA (5 items)	Someone else being threatened Someone else being mugged and his/ her your stuff stolen People fighting Someone else being hit or harmed People being drunk or on drugs and being argumentative	0= Never 1= Once or twice 2= 3-5 times 3= More than 5 times
	Community violence victimization	VCOMVIOT SAHA (5 items)	Threatened by someone else Mugged and have your stuff stolen Caught up in a fight Hit or harmed. With friends that were drunk or on drugs and argumentative	0= Never 1= Once or twice 2= 3-5 times 3= More than 5 times
Educational Outcomes	(Low) Academic Motivation	LAMST3 SAHA (4 items)	It is important for me to do well in school this year (reversed) It is important to me to be considered clever by my fellow learners and my teachers (reversed) I try hard in school (reversed) I can't wait to leave school	<i>How strongly do you agree with the statements?</i> Continuous response options from 0 to 9. Sum scale ranges from 0 to 36
	School Delay	SDECONT3 School Delay (1 item)		-3= Three grades higher -2= Two grades higher -1= One grade higher 0= Age appropriate grade 1= One grade lower 2= Two grades lower 3= Three grades lower

Table 2 Design effects and Intra Class Correlations (ICCs) of cross-classified levels of nesting in Sinovuyo Teen Study (n=503)

	School Delay			Low Academic Motivation		
	Design effect	Variance Estimate (p-value)	ICC	Design effect	Variance Estimate (p-value)	ICC
Community	1+ (12.575-1)*0.152= 2.759	0.152 (0.03)	8.4%	1+ (12.575-1)*0.254= 3.94	0.254 (0.201)	2.3%
School	1+ (5.41-1)*0.072= 1.32	0.129 (0.072)	7.2%	1+ (5.41-1)*0.294= 2.3	0.294 (0.212)	2.8%

School Average cluster size= 5.41

Community Average cluster size = 12.575

Table 3 Sample Characteristics at Baseline (n=503)

	Mean (SD)/ n (%)
<i>Demographics</i>	
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%)
<i>Household socioeconomic characteristics</i>	
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%)
<i>Schooling characteristics</i>	
Enrolled in 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%)
Academic Motivation	28.35 (4.34)
Attending secondary schools	214 (48.6%)
Attending state schools	503 (100%)
Attending schools in rural communities	335 (66.6%)
Attending poorly-resourced schools ¹	430 (85.5%)
Receiving free meals at school	484 (96.2%)
<i>Past-month exposure to violence²</i>	
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%)
Not exposed to any form of violence	4 (0.8%)
Exposed to “poly-violence”	472 (93.8%)
Exposed to all six forms of violence	57 (11.3%)

¹ Quintile 1-3 State Schools² % 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

Table 4 Statistical Criteria and profile sizes for latent profile analyses estimating 2-5 latent profiles

Number of profiles	N=503 (100%)					
	Log-L	AIC	BIC	Entropy	LMR test	LMR, p value
2	-10126.363	20302.725	20408.240	0.934	432.8	0.016
3	-9941.713	19951.425	20094.925	0.945	362.819	0.18
4	-9833.472	19752.944	19934.429	0.971	212.683	0.1
5	-9765.403	19634.807	19854.278	0.965	133.747	1
	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	
2	60 (11.9%)	443 (88.1%)				
3	59 (11.73%)	35 (6.96%)	409 (81.31%)			
4	32 (6.36%)	372 (73.96%)	28 (5.57%)	71 (14.12%)		
5	353 (70.18%)	33 (6.56%)	71 (14.12%)	28 (5.57%)	18 (3.58%)	

Table 5. Mean exposure to violence scores by profile membership

Exposure to Violence – Risk Indicators	Total sample: mean (SE)	LPA: profile comparison: mean (SE)		
		Profile 1 More frequent 'poly-violence' n=60	Profile 2 Less frequent 'poly-violence' n=443	p-value (Wald Test)
Domestic violence between household members	2.44 (0.16)	8.4 (1.13)	1.63 (0.21)	<0.001
Adolescent physical abuse by caregivers	4.86 (0.28)	16.77 (2.65)	6.01 (0.35)	<0.001
Adolescent emotional abuse by caregivers	6.03 (0.36)	21.58 (2.35)	3.93 (0.39)	<0.001
Perceived school violence	6.19 (0.12)	9.2 (0.5)	8.86 (0.13)	0.542
Community violence – Victimization	0.72 (0.06)	1.19 (0.3)	0.66 (0.06)	0.063
Community violence – Witnessing	2.73 (0.12)	4.31 (0.56)	2.52 (0.14)	0.001

Table 6 Characteristics of Adolescents exposed to more frequent ‘poly-violence’ and Adolescents exposed to less frequent ‘poly-violence’

	Total Sample n=503	Profile 1 More frequent ‘poly-violence’ n=60	Profile 2 Less frequent ‘poly-violence’ n=443
<i>Demographics</i>			
Female (%)	208 (41.4%)	27 (45%)	181 (45%)
Age (mean, years) ¹	13.71 (2.34)	14.5 (2.38)	13.55 (2.88)
Family Poverty (mean, # of basic necessities missing)	3.28 (0.1)	3.63 (2.07)	3.23 (2.17)
Intervention Trial Arm (%)	252 (50.1%)	30 (50%)	221 (49.9%)
<i>Exposure to violence</i>			
Domestic violence between household members (%)	257 (51.1%)	54 (90%)	203 (45.8%)
Adolescent physical abuse by caregivers (%)	318 (63.2%)	49 (81.7%)	269 (60.7%)
Adolescent emotional abuse by caregivers (%)	383 (76.1%)	60 (100%)	323 (72.9%)
Perceived school violence (%)	444 (88.3%)	55 (91.7%)	389 (87.8%)
Community violence – Victimization (%)	163 (32.4%)	26 (43.3%)	137 (30.9%)
Community violence – Witnessing (%)	361 (71.8%)	52 (86.7%)	309 (69.8%)
Not exposed to any form of violence (%)	4 (0.8%)	0	4 (0.9%)
Exposed to “poly-violence” (%)	472 (93.8%)	60 (100%)	412 (92.9%)
Exposed to all six forms of violence (%) ²	57 (11.3%)	17 (28.3%)	40 (9%)
<i>Educational outcomes</i>			
(Low) Academic Motivation (mean)	7.65 (0.19)	8.55 (0.74)	7.53 (0.23)
School Delay (mean) ¹	0.03 (0.06)	0.52 (0.19)	-0.04 (0.1)

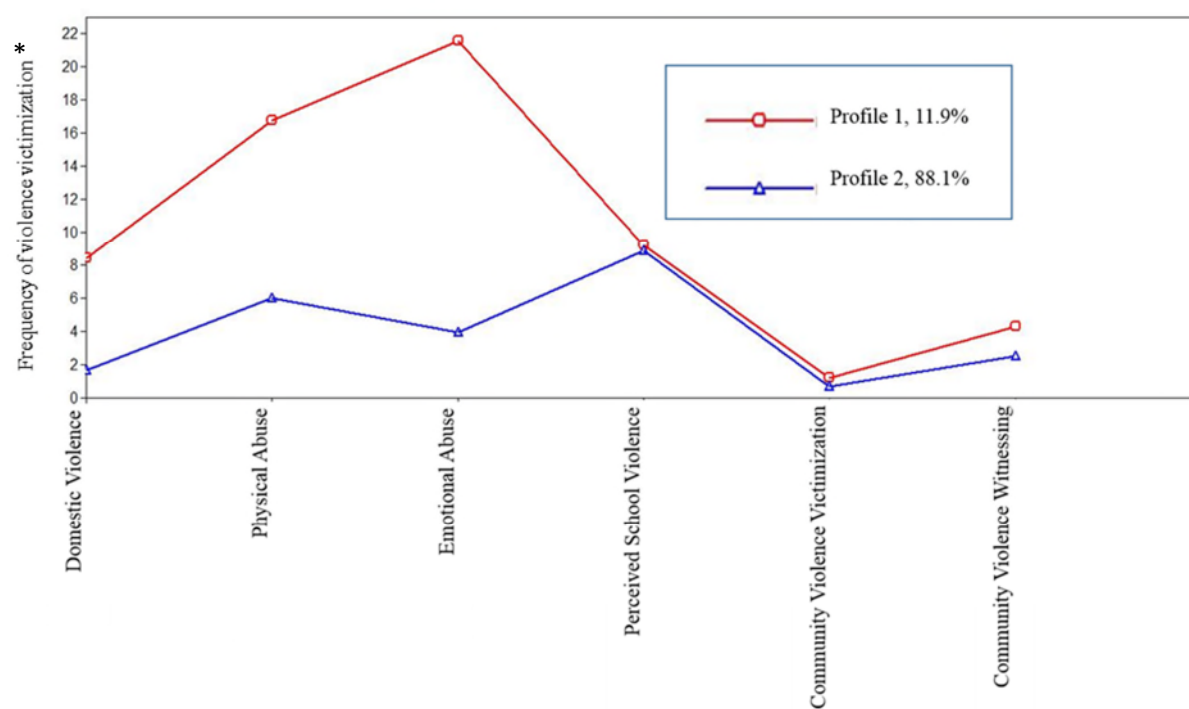
¹Wald Test is statistically significant (p=0.007)²Chi-square Test is statistically significant (p < 0.001)

Table 7. Predictors of violence among adolescents from socioeconomically disadvantaged communities in South Africa

Factors associated with exposure to violence – Predictors or violence	Multinomial Logistic Regression: comparison of Profile 1 vs Profile 2¹		
	Standardized Estimate (Beta)	SE	p-value
Female (coded high)	0.22	0.31	0.470
Age (years, older coded higher)	0.16	0.07	0.020
Family Poverty	0.08	0.07	0.230
Membership of Trial Arm (intervention)	0.06	0.3	0.840

¹Profile 2 is the reference category

Figure 1 *Patterns of exposure to violence among adolescents from socioeconomically disadvantaged communities in South Africa*



* Episodes of violence