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ORIGINAL PAPER

Violence and Racial Discrimination in South African Youth: Profiles of a Continuum of Exposure

Kathy Sanders-Phillips[1] · Wendy Kliewer[2]

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Abstract

Objectives In high-violence countries with limited resources, it can be difficult to identify youth who are at greatest risk for poor health outcomes due to violence exposure. Profile analysis can help achieve this goal by identifying at-risk groups based on multi-variable patterns, especially if the indicators of violence exposure are sensitive enough to identify most of the youth who are at-risk for poor health, but specific enough to identify subpopulations of youth who might benefit most from intervention programs.

Methods We conducted profile analyses to identify subgroups of secondary school students in South Africa ($N = 1{,}317$; 54% female; 40% Black; 50% Coloured; 8% White; 2% other races) who were at highest risk for substance use and risky sexual behaviors based on their exposure to different forms of violence, including witnessing violence in the community, at home, and at school, and directly experiencing community violence and racial discrimination.

Results Our analyses yielded five profiles: youth with (1) low-violence exposure; (2) average violence exposure ; (3) high exposure to violence at home; (4) high community victimization; and (5) very high violence exposure characterized by high to very high direct and indirect violence exposure at home, school, and in the community, and moderate levels of personal racial discrimination. Profiles were differentially associated with risk behavior.

Conclusions These data underscore the need to examine racial discrimination on the continuum of exposure to violence, as it may exacerbate the effects of exposure to other types of violence and the likelihood of risky behaviors.

Keywords Violence exposure · Racial discrimination · South Africa · Adolescents · Risk behavior

Youth in South Africa are at high risk for witnessing violence and experiencing victimization in multiple settings including homes, schools, and communities (Shields et al. 2009). Reports of interpersonal violence such as homicide, sexual assault, and physical assaults are common, and the resulting mortality is more than seven times the global rate (South African Police Service 2015). Black males are particularly vulnerable to firearm homicide (Kramer and Ratele 2012). The 3rd South African National Youth Risk Behaviour Survey 2011 (SAYRBS; Reddy et al. 2013) reported that almost two-thirds of students had witnessed someone being beaten; 61% witnessed someone using drugs in their community; 40.4% had seen a stabbing; 21.4% witnessed someone being shot; and 11.7% had witnessed forced sex in the previous 12 months. Rates of sexual violence are also high. Approximately 7% of students had been forced to have sex in the past 12 months and almost 12% feared that they would be forced to have sex in the future (Reddy et al. 2013).

High rates of youth violence exposure in South Africa may also occur in the context of exposure to other forms of violence, such as racial discrimination. There is growing evidence that direct personal racial discrimination is a potential form of perceived societal violence that may exacerbate the effects of exposure to other types of violence and increase risk-taking in youth (Brondolo et al. 2009; Goff et al. 2014; Sanders-Phillips 2009). Direct perceived racial discrimination can be described as everyday "micro-aggressions" that youth and adults often experience as subtle forms of discrimination, often unintentional and unconscious, that send negative and denigrating messages

✉ Wendy Kliewer
wkliewer@vcu.edu

[1] Department of Pediatrics and Child Health, Howard University College of Medicine, Washington, DC, USA

[2] Department of Psychology, Virginia Commonwealth University, Richmond, VA, USA

to individuals and groups in societies that are stratified by race (Huber and Solorzano 2014; Nadal et al. 2015). Although other types of racial discrimination exist (e.g., institutional and structural racism), frequent individual racial microaggressions are critical sources of perceived marginalization and exclusion (Nadal et al. 2015). Apartheid, a legal form of racial discrimination from 1948–1994 in South Africa, was and is seen as a central contributing factor to the country's endemic violence (Seedat et al. 2009). Existing data, while limited, suggest that perceptions and reports of personal racial discrimination may heighten the negative effects of exposure to other types of violence among South African youth (Bruce 2006; Duncan 2012; Eagle 2015).

Associations between high levels of violence exposure and increased risk-taking, especially alcohol and drug use as well as sexual risks, among South African youth are well-documented (Liang et al. 2007; Morojele and Brook 2006; Norman et al. 2010; Reddy et al. 2007, 2003, 2010, 2013). Despite this knowledge, in high-violence countries with limited resources, it can be difficult for violence researchers and health professionals to identify youth who are at greatest risk for poor health outcomes due to violence exposure. Profile analysis can achieve this goal by identifying at-risk groups based on multi-variable patterns or clusters. These analyses include indicators of violence exposure that are sensitive enough to identify most of the youth who are at-risk for poor health but specific enough to identify subpopulations of youth who might most benefit from intervention programs. For example, in racially-stratified countries like South Africa, poor health outcomes may be increased for youth who are exposed to multiple types of violence across settings (e.g., home, community, and/or school) as well as to social violence in the form of racial discrimination. Profile analysis would yield data on the distribution of risk for poor health among violence-exposed South African youth; classification and description of discrete groups of violence-exposed youth based on specific types of violence exposures; and identification of violence exposure groups that might most benefit from programs to improve health. This type of analysis is particularly useful in countries where a majority of youth are exposed to some form of violence (Collings et al. 2014; Leoschut and Kafaar 2017; Musicaro et al. 2019).

Previous studies investigating the effects of exposure to multiple types of violence or violence experienced across multiple contexts among South African adolescents suggested that increased exposure was associated with heightened risk for internalizing symptoms (hopelessness, anxiety, depression, suicidality), aggression, conduct disorders, and risky sexual behaviors (Choe et al. 2012; Du Plessis et al. 2015; Kliewer et al. 2017; Sui et al. 2018). However, none of these studies included assessments of perceived personal racial discrimination as a measure of violence exposure or examined the impact of exposure to multiple forms of violence on drug use in South African youth. Based on previous findings and to address gaps in the literature, this study investigated the presence of profiles (clusters of independent variables indicating forms of violence exposure that included personal racial discrimination) among South African youth and their associations with risk behaviors. We used a subset of data from The 3rd South African National Youth Risk Behaviour Survey 2011 (Reddy et al. 2013) and an additional survey measure that was administered in conjunction with the SAYRBS as part of a research project: *Violence, Drug Use, & AIDS in South African Youth: A U.S./South Africa Research Collaboration* that was funded by the National Institute on Drug Abuse. We assessed profiles to examine the following questions: (1) Can we identify profiles of violence exposure among South African youth? (2) If profiles are identified, how does the probability of profile membership differ by gender, age, and racial group? (3) Accounting for demographic contributions, how is profile membership associated with alcohol and drug use and with risky sexual behaviors?

Method

Participants

Participants in the present study were a subsample of youth living in the Western Cape who were enrolled in the 3rd South African National Youth Risk Behaviour Survey 2011 (SAYRBS; Reddy et al. 2013). Our sample consisted of 1,317 South African adolescents in grades 8 to 11 (53.7% female) who ranged in age from 12 to 25 ($M_{age} = 16.33$ years, $SD = 1.57$). Race was classified according to the South African Department of Labour designated categories: Black African (39.7%), Coloured (mixed Black and White descent) (50.5%), Indian (1.3%), White (7.8%), or Other (0.7%). A power analysis revealed that the sample size was more than adequate to detect mean group differences with a power of 0.80 or greater at $\alpha = 0.05$.

Procedure

The study was approved by the Ethics Committee of the Medical Research Council in South Africa, and active informed consent to conduct the study was obtained from the national department of education, school principals, parents, and learners (the South African word for students). Data were collected in 2011 and 2012. A two-stage cluster sampling procedure was used (see also Kann et al. 2016). In stage one, a list of public schools in the Western Cape Province was obtained from the South African National

Department of Education. Next, 23 public schools were selected with a probability proportional to student size, i.e. larger schools have a greater probability to be selected (schools with an enrolment of more than 25 learners per grade were considered large, those with less than 25 learners per grade were small). In stage two, classes from grades 8 to grade 11 were selected using systematic equal probability sampling of classes from each selected school. All learners in the selected classes were eligible to participate. Each participant was given an information packet to take home which included the background of the study, assent/consent forms, and referral information for violence treatment programs and substance abuse treatment. For those who were under the age of 18, parental consent was required along with the assent forms. The participants were told to bring their signed assent/consent forms to school the next day and the ones who agreed to participate were invited to complete a questionnaire in their classrooms. All questionnaires were completed in English. In addition to questions from the SAYRBS, learners completed an additional survey measure that we administered as part of a research project: Violence, Drug Use, & AIDS in South African Youth: A U.S./South Africa Research Collaboration that was funded by the National Institute on Drug Abuse. On average, learners took 45 minutes to an hour complete surveys in their classrooms under the supervision of study staff.

Measures

Violence exposure

All measures of violence exposure reflected lifetime exposure, and included both witnessing and directly experiencing (i.e., victimization) violence. *Witnessing violence at home*, *witnessing violence at school*, *witnessing violence in the community*, and *directly experiencing violence in the community (victimization)* were assessed using the Survey of Children's Exposure to Violence (Richters and Saltzman 1990), the most widely used measure of exposure to violence in the field which has excellent reliability and validity (Fowler et al. 2009). Response options were 1 (*never*), 2 (*once or twice*), 3 (*a few times*), or 4 (*many times*). Items were summed and for each measure higher scores reflected greater violence exposure. *Witnessing violence at home* was measured with four items: "How many times in your whole life have you seen people chased by someone who wanted to hurt them in your home?" "...have you seen people beaten up by someone in your home?" "...have you seen people using drugs in your home?" and "...have you seen people selling drugs in your home?" The original items did not include context-related wording because the instrument was designed to measure exposure to community violence. To measure witnessing violence at home we added "in your home" to these items. Similarly, *witnessing violence at school* was measured using the same four items as witnessing violence at home, except that the wording was changed to "in your school." *Witnessing violence in the community* was assessed with 18 items reflecting the frequency of an adolescent witnessing or hearing about different types of violence in the community. These included physical violence, threats, deaths, and interpersonal crime, for example, "How many times in your whole life have you seen people slap, hit, or punch someone?" and "....have you seen or heard about people killed by someone else?" *Experiencing victimization in the community* was assessed with 14 items related to an adolescent's direct experience of physical violence, threats, and interpersonal crime in the community in his or her lifetime, for example, "How many times in your whole life have you, yourself, actually been attacked or stabbed by someone with a knife, panga and/or kierrie?" and "...has someone threatened or tried to kill you?" Items were summed to form an index of victimization. *Directly experiencing personal racial discrimination* was assessed with 10 items from the *Schedule of Racist Events Scale* (Landrine and Klonoff 1996). Learners rated how frequently 10 situations occurred due to their race on a scale from 1 (*never*) to 5 (*always*). Sample situations included receiving poor service in stores or shops, people acting as if the learner was dishonest, and being treated with disrespect. An average of the item means was used to index personal racial discrimination. Adequate reliability and validity has been reported for this measure (Landrine and Klonoff 1996). In the current study internal consistency reliability, assessed with Cronbach alpha, was 0.57 for witnessing violence at home, 0.71 for witnessing violence at school, 0.91 for witnessing violence in the community, 0.83 for directly experiencing violence in the community, and 0.88 for directly experiencing personal racial discrimination.

Risk behaviors

Measures of risk behavior included in the 3rd SAYRBS underwent substantial reliability and validity testing based on previous survey administrations and pilot testing (see James et al. 2017 and Reddy et al. 2010, for additional information). We included seven indicators of substance use: (1) lifetime use of alcohol, (2) marijuana, (3) glue, (4) prescription medication (to get high), and (5) hard drugs, and age of first use of (6) alcohol and (7) marijuana. Response options for the measures of substance use were: 0 (*never*), 1 (*rarely, 1–2 times*), 2 (*sometimes, 3–9 times*), 3 (*often, 10–19 times*) and 4 (*very often, 20 or more times*). Response options for substance use onset were: 1 (*never or onset > age 17*), 2 (*onset 15–17 years*), 3 (*onset 13–14 years*), 4 (*onset 11–12 years*), 5 (*onset 9–10 years*), or 6

(*age 8 or younger*). We also included four indicators of risky sexual behavior: (1) number of sexual partners in the past three months; (2) whether or not the adolescent had alcohol (3) or drugs before having sex the last time they had sex, assessed as a dichotomous variable (0 = no, 1 = yes); and (4) frequency of condom use. Response options for condom use were: 0 (*have never had sex*), 1 (*always use a condom*), 2 (*use a condom most of the time*), 3 (*use a condom sometimes*), or 4 (*rarely use a condom*). Thus, higher values reflected riskier behavior for all measures.

Data Analyses

Analyses were conducted in SPSS version 24 and Mplus 8 (Muthén & Muthén 1998–2017). Prior to examining the aims of the study we ran descriptive information on all five indicators of violence and on all of our risk behavior outcomes. We also computed Pearson correlation coefficients among the five indicators of violence, and between the indicators of violence and our risk behavior risk outcomes. In order to investigate the first aim of the study we conducted a series of Latent Profile Analyses (LPAs) to identify distinct patterns of violence exposure. (Our indicators were continuous, thus our analyses were LPAs rather than Latent Class Analyses, which use dichotomous indicators.) Each of the five indicators in our analyses – lifetime witnessing violence in the community, in the home, and at school, lifetime victimization in the community, and personal discrimination – was standardized for these analyses. We chose the optimal number of profiles by comparing models with increasing numbers of profiles (e.g., 2, 3, 4, 5, 6). We compared model fit based on several statistical fit indices, including the Akaike information criteria (AIC), the Bayesian information criteria (BIC), and the adjusted sample-size BIC (ABIC), where lower values indicate better fitting models (Nylund et al. 2007). We used the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR-LRT) to determine when adding an additional class significantly improved the fit of the model (Nylund et al. 2007). We also reviewed the average latent class probabilities (ACPs) for most likely membership. Once we had determined the best fitting model we saved the predicted profile for each adolescent from the Mplus output. We tested the second aim of the study, whether the profiles differed across gender, race, or age, using chi-squares and Analysis of Variance (ANOVA). We employed Analyses of Covariance (ANCOVAs) with profile membership as the predictor; race, gender, and age as covariates; and drug use and risky sexual behaviors as outcomes to test our third aim. Planned contrasts were used to determine which profile means differed significantly from each other.

Results

Descriptive Information on and Correlations among Study Variables

Table 1 presents descriptive information on the study variables and correlations between indicators of violence exposure and risk behavior outcomes. As seen in Table 1, all five indicators of violence exposure were associated with at least half of the risk outcomes. The most robust associations were observed for lifetime victimization and witnessing violence in the community.

Profiles of Violence Exposure among South African Youth

Table 2 presents model fit statistics for the LPA models specifying two to six profiles. Based on the BIC values, and results of the VLMR-LRT and Lo-Mendell Rubin Adjusted LRT Tests, a five-profile model was determined to be the best fit to the data (see Fig. 1). These five profiles consisted of youth with low-violence exposure ($N = 595$, 45.2% of the sample); average violence exposure ($N = 415$, 31.5% of the sample); high exposure to violence at home ($N = 181$, 13.7% of the sample); a high community victimization ($N = 77$, 5.8% of the sample), defined by victimization levels >2 *SD* above the mean; and very high violence exposure ($N = 49$, 3.7% of the sample), characterized by violence >2 *SD* above the mean on community violence victimization and witnessing violence in the home, levels of witnessing violence at school and in the community that were at or close to 1 *SD* above the mean, and the highest level of personal racial discrimination of any group. Chi-square analysis comparing the profiles on race (white/non-white) revealed a significant profile differences across race. Chi-square (4) = 56.74, $p < 0.001$. Whites were overrepresented in the low-exposure profile, and underrepresented in all other profiles compared to non-whites. There also were significant profile differences across gender, Chi-square (4) = 11.52, $p = 0.02$. Males were overrepresented in high community victimization and very high exposure profiles relative to females. Finally, ANOVA revealed a significant age difference across the profiles, $F(4, 1152) = 4.23$, $p = 0.002$. Youth in the very high violence exposure profile ($M = 17.02$ years, $SD = 1.70$ years) were older than youth in the low-violence exposure ($M = 16.18$ years, $SD = 1.59$ years), average violence exposure ($M = 16.38$ years, $SD = 1.43$ years), and high family violence exposure ($M = 16.41$ years, $SD = 1.64$ years) profiles. Additionally, youth in the high community victimization profile ($M = 16.65$ years, $SD = 1.64$ years) were older than youth in the low exposure profile.

Violence Profile Membership and Risk Behavior

Table 3 presents results from the ANCOVAs evaluating the association of violence profile membership with risk behavior after accounting for the impact of race/ethnicity, gender, and age. As seen in the top half of Table 3, violence profile membership conferred an elevated probability of engaging in substance use-related risk behavior after accounting for sociodemographic factors. Specifically, violence profile membership was associated with elevated risk for lifetime alcohol, marijuana, glue, prescription medication use to get high, and hard drug use; and earlier onset of alcohol and marijuana use. Planned comparisons revealed that for both alcohol and marijuana use and onset of use, youth in the high victimization profile and high exposure to violence at home profile were significantly more at risk for these behaviors than youth in the low violence exposure profile. Highly victimized youth also were at higher risk for marijuana use and onset of use than youth in the average violence exposure profile, and were at higher risk than youth in both the low and average exposure profiles for lifetime use of glue and hard drug use. Youth who had very high exposure to violence, including the highest exposure to personal racial discrimination, were at higher risk than youth in the low violence exposure profile on every measure of substance use risk except frequency of alcohol use. These youth also had the earliest onset of marijuana use as compared to youth in any profile except youth high in victimization and were significantly more likely than youth in any other profile to use glue, prescription medication to get high, or hard drugs.

In the bottom half of Table 3 which presents the results for sexual risk behaviors, we see that after accounting for sociodemographic factors, profile membership was associated with elevated risk for more sexual partners and less frequent typical condom use. Planned comparisons revealed that youth in the high exposure to violence at home profile, high community victimization profile, and very high exposure profile were significantly more likely to have more sexual partners and less likely to typically use condoms than youth in the low violence exposure profile. Further, youth in the high community victimization profile and very high exposure profile were significantly less likely to typically use condoms than youth in the average violence exposure profile. Profile membership was not associated with elevated risk of using alcohol or drugs before the most recent sexual activity.

Discussion

Our results confirm the presence of unique profiles of exposure to violence in South African youth, differences in profile membership across gender, age, and race, and

Table 1 Descriptive information on and correlations of risk variables with indicators of violence exposure

Outcome measure	Lifetime Witnessing Violence in the Community	Lifetime Witnessing Violence at Home	Lifetime Witnessing Violence at School	Lifetime Experiencing Victimization in the Community	Lifetime Experiencing Perceived Discrimination	*M* (*SD*)
Alcohol use	0.18***	0.04	0.14***	0.13***	−0.06	1.34 (1.22)
Age of 1st alcohol use	0.16***	0.07	0.14***	0.13***	−0.04	2.29 (1.40)
Marijuana use	0.20***	0.08	0.17***	0.21***	0.06	0.38 (0.84)
Age of 1st marijuana use	0.11***	0.13***	0.13***	0.18***	0.09**	1.49 (1.10)
Use of glue	0.03	0.11***	0.06*	0.21***	0.12***	0.17 (0.60)
Prescription med use	0.03	0.07*	0.02	0.11***	0.17***	0.14 (0.53)
Hard drug use	0.06*	0.16***	0.10***	0.27***	0.20***	0.07 (0.27)
Sexual partners post 3 month	0.13***	0.13***	0.13***	0.19***	0.08*	0.34 (0.67)
Used alcohol before sex	0.06	0.06*	0.08*	0.05	0.03	0.20 (0.40)
Used drugs before sex	0.09***	0.05	0.11***	0.07*	0	0.22 (0.41)
Frequency of condom use	0.15***	0.16***	0.14***	0.22***	0.12***	1.23 (1.80)
M	41.37	5.83	8.41	20.05	26.10	
SD	11.62	2.16	3.07	5.62	9.92	

Substance use reflected lifetime use. For age of first alcohol and marijuana use and frequency of condom use, higher values were coded as more risky behavior. Used drugs or alcohol before sex was coded 0 = no, 1 = yes

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 2 Model fit statistics for latent profile analysis models specifying two to six profiles

	Number of profiles				
	2	3	4	5	6
Loglikelihood	−8762.544	−8548.745	−8451.159	−8339.803	−8291.468
Information criteria					
N of free parameters	16	22	28	34	40
Akaike's information criteria (AIC)	17537.088	17141.490	16958.318	16747.607	16662.935
Bayesian information criteria (BIC)	17640.017	17255.519	17103.445	16923.833	16870.260
Sample-size adjusted BIC (ABIC)	17589.193	17185.635	17014.502	16815.830	16743.198
ACPs	0.91–0.96	0.85–0.92	0.83–0.90	0.82–0.90	0.71–0.95
VLMR – LRT	−9277.524 $p = 0.0007$	−8762.544 $p < 0.0001$	−8548.745 $p = 0.3896$	−8451.159 $p = 0.0307$	−8339.803 $p = 0.2768$
Lo-Mendell-Rubin Adjusted LRT test	1006.604 $p = 0.0008$	417.901 $p < 0.0001$	190.747 $p = 0.3961$	217.661 $p = 0.0322$	94.480 $p = 0.2827$

$N = 0.12$ to 0.59, all $ps < 0.001$. $N = 1317$. *ACPs* = average latent class probabilities for most likely latent profile membership, *VLMR-LRT* = Vuong-Lo-Mendell Rubin Likelihood Ratio Test. Indicators of exposure to violence were correlated.

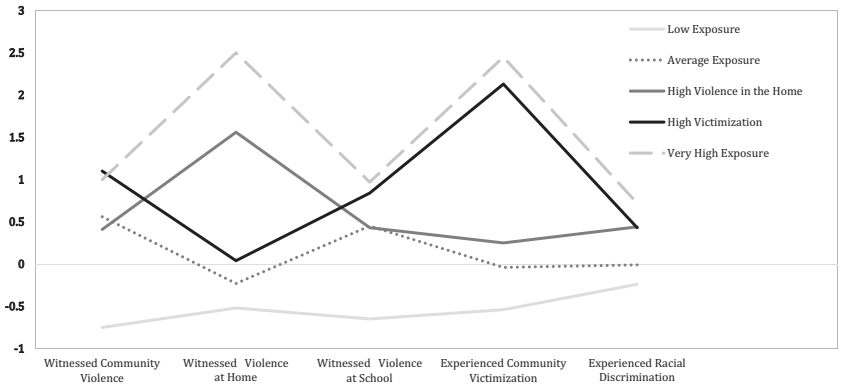

Fig. 1 Profiles of exposure to violence among South African youth ($N = 1317$)

differential links of profile membership to risky behaviors, even after accounting for the contributions of demographic factors to risk outcomes. These findings also reinforce the conclusion that the impact of a child's exposure to multiple forms of violence is more than simply additive. Rather, the findings suggest that the impact of exposure to many forms of violence, particularly if those exposures include racial discrimination, may have interactive effects that are associated with greater risk-taking.

The three "riskiest" profiles uncovered in our data included a group of youth who witnessed high levels of violence in the home; a group of youth who experienced high levels of victimization in the community—and who also witnessed a significant amount of community violence; and a group of youth with very high levels of exposure across the board as well as moderate levels of personal discrimination. In some cases, the youth in these riskiest profiles did not differ from each other on our outcomes of interest, but in other cases there were significant differences—differences that may not have been detected with approaches typically employed in simple poly-victimization or poly-exposure research because typical poly-victimization research does not look for *patterns* of exposure but rather tabulates the number of different contexts in which exposure occurs. For example, the three riskiest profiles did not differ from one another on age of first alcohol use, but differed from youth in the "least risky" profile. Our data also reveal that context matters. Unlike much poly-victimization research that tabulates the number of different contexts in which youth are exposed to violence, but does not attend to what happens in those contexts, profile analysis highlights contextual effects. Youth who witnessed violence in the home—even though their levels on other indicators of exposure were not elevated—showed heighted risk for alcohol and marijuana use relative to youth with low levels of exposure. However, one of the strongest

Table 3 Analyses of covariance results for substance use and sexual risk behavior outcomes

Source	df	MS	*F*	*p*	Partial Eta^2	Profiles of violence exposure					Group differences[a]
						Low Exposure *M (SE)*	Average Exposure *M (SE)*	High Violence at Home *M (SE)*	High Community Victimization *M (SE)*	Very High Exposure *M (SE)*	
Outcome: Frequency of lifetime alcohol use											
Race	1	25.52	17.99	<0.001	0.016						
Age	1	22.57	15.91	<0.001	0.014						
Gender	1	0.83	0.59	0.44	0.001						
Profile	4	9.65	6.78	<0.001	0.024	1.15 (0.05)	1.50 (0.07)	1.55 (0.09)	1.64 (0.15)	1.21 (0.19)	High victimization > low exposure; High violence at home > low exposure
Error	1117	1.42									
Outcome: Age of first alcohol use (higher riskier)											
Race	1	9.92	5.23	0.022	0.005						
Age	1	8.84	4.67	0.031	0.004						
Gender	1	10.59	5.59	0.018	0.005						
Profile	4	18.48	9.75	<0.001	0.034	2.02 (0.06)	2.51 (0.08)	2.57 (0.11)	2.54 (0.18)	2.77 (0.22)	Very high exposure > low exposure; High victimization > low exposure; High violence at home > low exposure
Error	1124	1.90									
Outcome: Frequency of lifetime marijuana use											
Race	1	0	0.001	0.98	0						
Age	1	6.93	10.21	.001	0.009						
Gender	1	11.90	17.54	<0.001	0.015						
Profile	4	6.49	9.56	<0.001	0.033	0.24 (0.04)	0.45 (0.05)	0.46 (0.07)	0.78 (0.10)	0.69 (0.13)	Very high exposure > low exposure; High victimization > low, average, and high violence exposure at home; High violence at home > low exposure
Error	1123	0.68									
Outcome: Age of first marijuana use (higher riskier)											
Race	1	1.24	1.14	0.29	0.001						
Age	1	0.35	0.32	0.57	0						
Gender	1	26.93	24.77	<0.001	0.022						
Profile	4	8.92	8.21	<0.001	0.029	1.32 (0.05)	1.50 (0.06)	1.61 (0.08)	1.82 (0.14)	2.10 (0.17)	Very high exposure > low, average, and high violence exposure at home; High victimization > low & average exposure; High violence at home > low exposure
Error	1107	1.09									

Table 3 (continued)

Source	df	MS	*F*	*p*	Partial Eta^2	Profiles of violence exposure					
						Low Exposure *M (SE)*	Average Exposure *M (SE)*	High Violence at Home *M (SE)*	High Community Victimization *M (SE)*	Very High Exposure *M (SE)*	Group differences[a]
Outcome: Lifetime use of glue to get high											
Race	1	0.10	0.32	0.57	0						
Age	1	0.44	1.39	0.24	0.001						
Gender	1	1.49	4.70	0.03	0.004						
Profile	4	5.26	16.56	<0.001	0.057	0.10 (0.03)	0.13 (0.03)	0.20 (0.05)	0.32 (0.07)	0.82 (0.09)	Very high exposure > low, average, high violence at home, and high victimization; High victimization > low and average exposure
Error	1101	0.33									
Outcome: Lifetime use of prescription medication to get high											
Race	1	0.02	0.08	0.77	0						
Age	1	0.40	1.46	0.23	0.001						
Gender	1	0.11	0.39	0.53	0						
Profile	4	1.22	4.43	0.001	0.016	0.10 (0.02)	0.15 (0.03)	0.14 (0.04)	0.18 (0.07)	0.47 (0.09)	Very high exposure > low, average, high violence at home and high victimization
Error	1082	0.27									
Outcome: Lifetime frequency of hard drug use											
Race	1	0.01	0.09	0.77	0						
Age	1	0.06	0.88	0.35	0.001						
Gender	1	0.97	15.04	<0.001	0.013						
Profile	4	0.82	12.74	<0.001	0.043	0.02 (0.01)	0.04 (0.01)	0.09 (0.02)	0.17 (0.03)	0.43 (0.04)	Very high exposure > low, average, high violence at home and high victimization; High victimization > low, average, and high violence at home exposure; High violence exposure at home > low exposure
Error	1121	0.07									
Outcome: Number of sexual partners in last 3 months											
Race	1	0.43	1.03	0.31	0.001						
Age	1	19.05	46.74	<0.001	0.041						
Gender	1	5.61	13.62	<0.001	0.013						
Profile	4	2.87	6.94	<0.001	0.025	0.25 (0.03)	0.37 (0.04)	0.49 (0.05)	0.54 (0.09)	0.58 (0.11)	Very high exposure > low exposure; High victimization > low exposure; High violence at home > low exposure
Error	1076	0.41									

Table 3 (continued)

Source	df	MS	*F*	*p*	Partial Eta^2	Profiles of violence exposure					
						Low Exposure *M (SE)*	Average Exposure *M (SE)*	High Violence at Home *M (SE)*	High Community Victimization *M (SE)*	Very High Exposure *M (SE)*	Group differences[a]
Outcome: Had alcohol before sex with most recent sexual activity											
Race	1	0.44	2.88	0.09	0.003						
Age	1	2.38	15.60	<0.001	0.014						
Gender	1	0.80	5.24	0.022	0.005						
Profile	4	0.34	2.21	0.066	0.008	0.18 (0.02)	0.22 (0.02)	0.18 (0.03)	0.15 (0.05)	0.35 (0.07)	
Error	1083	0.15									
Outcome: Had drugs before sex with most recent sexual activity											
Race	1	0.42	2.56	0.11	0.002						
Age	1	4.20	25.39	<0.001	0.023						
Gender	1	1.96	11.85	0.001	0.011						
Profile	4	0.28	2.72	0.14	0.006	0.20 (0.02)	0.25 (0.02)	0.25 (0.03)	0.30 (0.06)	0.13 (0.07)	
Error	1064	0.17									
Outcome: Frequency of typical condom use (higher coded as riskier)											
Race	1	17.71	6.07	0.014	0.006						
Age	1	146.98	50.37	<0.001	0.046						
Gender	1	26.33	9.02	0.003	0.008						
Profile	4	26.46	9.07	<0.001	0.032	0.96 (0.08)	1.29 (0.09)	1.59 (0.14)	1.95 (0.23)	1.97 (0.28)	Very high exposure > low and average exposure; High victimization > low and average exposure; High violence at home > low exposure
Error	1084	2.92									

Profile means were adjusted for race/ethnicity, age, and gender. Gender was coded 0 = male, 1 = female. Race was dichotomized and was coded 0 = non-white, 1 = white

[a]Means of the very high exposure, high community victimization, and high violence at home exposure profile groups were compared against each other and against the low and average violence exposure groups when there was a main effect of profile

messages to emerge from our data was that youth with very high levels of exposure to violence in multiple forms, in addition to exposure to moderate levels of personal racial discrimination, were at a significantly elevated risk for a number of substance use and sexual risk behaviors, including lifetime marijuana and hard drug use, age of first marijuana use, number of sexual partners, and typical condom use. Although these findings support other literature from South Africa on poly-victimization (du Plessis et al. 2015; Sui et al. 2018), neither of these previous studies examined the impact of direct personal perceived racial discrimination on risk behaviors nor did these studies identify multi-indicator associations or profiles of violence exposure in youth.

The findings from this study highlight the particular importance of assessing direct personal racial discrimination as a potential form of perceived societal violence that may exacerbate the effects of exposure to other forms of violence and increase risk-taking (Brondolo et al. 2009; Goff et al. 2014; Sanders-Phillips 2009). In this study, non-white (i.e., Black and Coloured) students were more likely to report risk profiles with the highest levels of violence exposure. In addition, youth at the highest risk for drug and alcohol use, and engagement in risky sexual behaviors were those whose profiles included very high rates of exposure to violence in the home, school, and community as victims and/or witnesses in addition to moderate levels of racial discrimination. The fact that even moderate levels of personal perceived racial discrimination in youth were related to greater risk-taking is concerning. Since perceived racial discrimination often increases as youth age, it is possible that these South African secondary school students had not yet experienced extremely high levels of personal racial discrimination or structural racial discrimination in employment or housing (Pachter et al. 2010). However, in light of evidence of the negative impacts of racial discrimination on children as young as 3-5 years (Olson et al. 2011), our findings underscore the need and salience of examining the effects of personal perceived racial discrimination as a form of youth violence exposure (Sanders-Phillips 2009; Sanders-Phillips et al. 2009a, 2009b, 2014).

There is growing awareness that disparities in rates of violence and risk-taking for youth may be directly and indirectly related to perceived marginalization and social exclusion that are associated with racial discrimination, limited educational and job opportunities, and increased social and economic disadvantage (Burt et al. 2012; Honwana 2014; UNESCO 2010; World Health Organization 2001, 2002). Perceived social exclusion and marginalization arise from persistent disadvantage related to historical injustice that often is associated with racial, ethnic, gender, religious or other types of discrimination (Evans and Klasing 2012; UNESCO 2010; WHO 2001, 2002, 2008). This disadvantage results in inequalities and power differentials that limit some groups from accessing resources in a society and moving out of poverty and danger (WHO 2001, 2002). Marginalization also may foster intergroup conflict and violence leading to death and disabilities for children and adults (Lyons-Padilla et al. 2015; WHO 2002). Perceptions and reported experiences of historical and current marginalization and exclusion can be associated with feelings of injustice and unfairness in youth that are related to repeated violence exposure and significant risk-taking with short- and long-term implications for health and re-victimization (Brody et al. 2014; Huber and Solorzano 2014; Musicaro et al. 2019; Ryan et al. 2015; Sanders-Phillips 2009; Sanders-Phillips et al. 2009b).

It is particularly interesting that the findings from this study revealed high risk taking among youth who were not directly exposed to the political violence and marginalization of apartheid. This result may be related to data that marginalization may persist from one generation to the next —which can sustain unfavorable social conditions that promote childhood adversity and trauma that often include greater violence exposure as both victims and perpetrators (Yahyavi et al. 2014). Studies of historical group trauma also suggest that the effects of trauma may transmitted to future generations via complex psychological and biological pathways and that poor outcomes may occur in the second generation of youth born after significant violence and conflict in a family, country, or society (Bowers and Yehuda 2016; Kellerman 2013; Yahyavi et al. 2014).

The findings from this study support theories that adolescent risk behaviors often are related to a set of common causal variables that tend to co-occur, especially in resource-poor populations, and may differ across gender (Jessor 1992; Mustanski et al. 2013). The Accumulation of Risk Model also asserts that youth at high risk for poor outcomes are those who are exposed to multiple risks concurrently (Finkelhor et al. 2011). Social Stratification Theory stresses that preventing poor outcomes in youth exposed to racial discrimination requires attention to historical variables that may contribute to and maintain current risk disparities (McLeod 2013). The Theory of Racial Inequality and Social Integration posits that ignoring the impact of social inequalities like racial discrimination on youth may result in conclusions that are misleading and violence prevention efforts that are ineffective for marginal youth (Constance-Huggins 2012).

Strengths, Limitations and Future Research Directions

Strengths of this study include the assessment of personal perceived experiences of racial discrimination, documentation of violence exposure across multiple contexts, use of sophisticated analytic techniques to model profiles of

exposure, inclusion of a large sample of South African youth, and linkages to both substance use and sexual risk behavior using well-validated measures. Despite these strengths, as with many community-based studies of risk behavior, our data are based on self-report and assessed at one point in time, which limits our ability to draw conclusions about the temporal relations between profiles of violence exposure and risk behavior. Further, our study sample was drawn from the Western Cape of South Africa, which may or may not be representative of the entire country. However, some data on substance use and risky sexual behavior reported on the nationally representative sample from which our subsample was drawn closely mirror that in our study, reducing concerns that our sample is much different from South Africa at large (see James et al. 2017).

South African violence researchers have argued for a developmentally-based understanding of violence exposure in children and adolescents that requires greater knowledge of the cumulative adverse effects of violence exposure that may disrupt behavioral, cognitive, and/or emotional development (Gregorowski and Seedat 2013; Van der Kolk 2005). Childhood is a critical time for developing positive self-perceptions and achieving a sense of mastery over life outcomes that form the basis for healthy behaviors and outcomes over the life cycle (Farrington et al. 2003). Therefore, neighborhood, community, school, and home are important "developmental contexts" for youth that may influence risk-taking as well as moral attitudes and beliefs (Daiute and Fine 2003; Kuther and Wallace 2003; Plybon et al. 2003). Youth exposed to community violence *in addition to* ethnic/racial discrimination may become vulnerable to a "vendetta stage" of moral development where they fail to develop skills for emotion regulation and resort to aggression or other risk behaviors as a dominant response (Hinsberger et al. 2016; Sommer et al. 2017). Similarly, perceived marginalization and anger affect concepts of justice, care, and empathy (Daiute and Fine 2003; Kuther and Wallace 2003). Thus, by influencing feelings of empathy and justice in children, experiences of racial discrimination ("developmental trauma") may occur that alter peer relationships and prosocial behaviors as well as affect youth violence exposure and risk-taking (Dubrow, Huesmann and Boxer 2009; Eisenberg et al. 2006; Gregorowski and Seedat 2013; Margolin and Gordis 2000). Thus future researchers might investigate the effectiveness of programs that acknowledge and address the racial discrimination to which youth are exposed, in addition to relationships between exposure to racial discrimination and exposure to other types of violence in their lives (Jennings et al. 2006; Pearrow and Pollack 2009; Sanders-Phillips 2009). As Blume (1996) concluded early on, violence exposure must be viewed as a social/interpersonal phenomenon that is best understood in the context of social and interpersonal variables that may explain why violence is not universal but instead varies in frequency and intensity. We also must recognize that youth violence research is often "siloed" and conducted without regard to other contextual factors that may influence a child's response to violence.

Similarly, Dubrow et al. (2009) have asserted that exposure to multiple stressors in childhood must be balanced by equal or greater protective or positive experiences to avoid poor outcomes. The findings from this study support the need for more ecological approaches to violence prevention and intervention research and programs that acknowledge the impacts of context, race, marginalization, age, and gender on violence outcomes and identify multi-level prevention and intervention strategies (Hornsby 2016; Scorgie et al. 2017; Ward et al. 2012). At the family level, work that is gaining increasing attention in North America is the role of race/ethnicity in parents' socialization of emotional competence in their children, and how deliberate practices can moderate youth's experiences of racial discrimination on a variety of adjustment outcomes, including academic achievement (Lozada 2019; Lozada and Riley 2019). Researchers might want to investigate whether such racialized emotion socialization processes operate similarly in the South African context. Beyond the family, to prevent future violence and promote resiliency for South African youth, effective programs must address the legacy of apartheid; the continuing interface between youth health outcomes and social justice; and current structural inequalities (Bowman et al. 2015; Duncan 2012; Graham 2013; Hornsby 2016; Scullard 2015). For example, future approaches to violence prevention and intervention in South Africa may need to acknowledge and provide redress for the social and economic inequalities that continue as a result of the apartheid-era past. Programs that promote political action as strategies for improving health in adolescents also may be effective (Jennings et al. 2006; Pearrow and Pollack 2009). In the short-term, within-group studies like this one also may allow countries such as South Africa to target groups of youth who are in greatest need of violence prevention or intervention programs (Graham 2013).

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent was obtained from all individual participants included in the study. IRB approval was secured at the Medical Research Council in South Africa.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Medical Research Council in South Africa and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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