

UNIQUE AND SHARED CORRELATES OF SEXUAL VIOLENCE PERPETRATION AND SEXUAL RISK BEHAVIOR AMONG SOUTH AFRICAN ADOLESCENT BOYS

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Associations between sexual risk behavior (SRB) and sexual violence perpetration (SVP) contribute to the intersecting HIV and sexual violence epidemics in South Africa. We examined SVP and SRB, and their potential correlates among South African boys ($N = 80$; ages 15–17). Fifty-one percent endorsed SVP in the past year; 61% engaged in past-3-month SRB. Whereas most unique correlates were socio-structural, family, or community factors, correlates shared across behaviors were behavior-specific social norm perceptions and cognitive factors. In final multivariate models, food insecurity and positive attitudes toward delaying sex were associated with SVP (odds ratios [ORs] = 3.05 and 0.37, respectively), and community violence exposure, gender equitable social norm perceptions, positive attitudes toward delaying sex, and intentions to obtain sexual consent were associated with SRBs (ORs = 1.56–1.57, 0.90–0.38, 0.58–0.60, respectively). Interventions to address HIV/sexual violence risk among adolescents in South Africa should be integrated and multilevel.

Keywords: adolescence, sexual violence, sexual risk behavior, HIV, South Africa

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INTRODUCTION

South Africa is a global priority setting for tackling the intersecting epidemics of HIV and gender-based sexual violence (Jewkes, Sikweyiya, Dunkle, & Morrell, 2015; UNAIDS, 2020). Higher rates of sexual risk behaviors (SRBs) observed in men who perpetrate sexual violence compared to nonperpetrators (Davis, Neilson, Wegner, & Danube, 2018), may partially explain a noncausal association between victimization and HIV risk. The sexual violence–HIV link among adolescents in South Africa is also a concern (Teitelman et al., 2016), as sexual practices, gender beliefs, and peer norms formed during this period likely contribute to young people’s increasing risk for sexual violence and HIV infection in late adolescence and young adulthood (Hueriga et al., 2018; Selin et al., 2019). There is also evidence that among South African men who perpetrate rape, most report their first rape perpetration before the age of 20 (Jewkes, Sikweyiya, Morrell, & Dunkle, 2011). Consideration of adolescent sexual violence perpetration (SVP) in relation to SRBs, particularly among South African boys, who engage in SVP more than girls do (Pöllänen, de Vries, Mathews, Schneider, & de Vries, 2021), is therefore critical for prevention efforts; however, this research is scarce (e.g., Kuo et al., 2019; Shamu et al., 2016). Despite their lower risk for HIV infection in adolescence compared to girls (South African National AIDS Council, 2017), preventive interventions are also needed for boys during this period when patterns of engaging in SRBs emerge and steps can be taken to prevent future risk for contracting and transmitting HIV. To guide intervention programming and ideal focal points, the current study examined associations between SVP and SRB, and the potential correlates of these behaviors, among adolescent boys residing near Cape Town, South Africa.

Behavior-specific models have been used to explain SVP or SRB through recognizing the roles of social norms and cognitions. For SVP, the Integrated Model of Sexual Assault and Acquaintance Rape posits that perceived peer norms—including beliefs promoting gender inequities and acceptance of men’s sexual violence toward women—as well as personal endorsement of SVP-supportive beliefs interact with situational factors and other environmental drivers to increase men’s likelihood of perpetration (Berkowitz, 1992). For SRB, components of the information-motivation-behavioral skills model, previously tested in South Africa (Kalichman et al., 2006), are used to predict safe sex or SRB including exposure to sexual risk-related social norms, perceived susceptibility to sexual risks (e.g., HIV), attitudes toward sexual risk prevention, and self-efficacy and behavioral intentions to engage in safe sex practices (Fisher, Williams, Fisher, & Malloy, 1999).

Broader social contexts where young people are exposed to SRB- and SVP-specific social norms, where they internalize associated beliefs and attitudes, and where they develop behavior-specific abilities and intentions, also deserve attention. Indeed, certain contexts can create vulnerability for either outcome. For example, poverty-related stress, community violence exposure, family relationship problems, and childhood trauma are risk factors for SVP (Gelles, 1985; Hatcher, Stöckl, McBride, Khumalo, & Christofides, 2019; Kaufman-Parks, DeMaris, Giordano, Manning, & Longmore, 2018; Li, Zhao, & Yu, 2020; Peitzmeier et al., 2016) and SRB (Abajobir, Kisely, Maravilla, Williams, & Najman, 2017; Cluver, Orkin, Meinck, Boyes, & Sherr, 2016; Gibbs et al., 2019; Orihuela et al., 2020). The social contexts underlying these risks (e.g., poverty) are believed to lead to SVP and SRB through their influence on social norms and associated cognitions (e.g., Jewkes, Nduna, Jama-Shai, Chirwa, & Dunkle, 2016). Thus, a social-ecological model which accounts for

socio-structural factors, family and community environment factors, and behavior-specific social norms and cognitions guides our exploration of the potential influences associated with adolescent engagement in SVP and/or SRB.

Studies in South Africa have examined whether SVP and SRB have shared or unique risk and protective factors within our social-ecological model (Gibbs et al., 2018; Gottert et al., 2018; Okafor et al., 2018); however, few have investigated these associations in a primarily adolescent sample (Shamu et al., 2016). Researchers in South Africa often focus on poverty-related socio-structural indicators, childhood trauma (including physical and sexual abuse), and gender inequitable norms and attitudes as key factors underlying the connection between SVP and SRB (Gibbs et al., 2018; Jewkes et al., 2016; Okafor et al., 2018).

Less is known about how other contexts, including family and community environments, may jointly or uniquely influence SVP and SRB among South African men or boys. Nevertheless, aspects of these environments are important influences on behaviors that may increase risk for SVP and/or SRB (e.g., substance use; du Plessis, Kaminer, Hardy, & Benjamin, 2015; Tarantino et al., 2018). The influence of norms and cognitions related to sexual risk on SVP is also understudied (Teitelman et al., 2017). Given the connection between perpetration and SRB, we can assume that men and boys who perpetrate, compared to those who do not, have more negative attitudes and beliefs toward safe sex practices, and less intentions to engage in these practices, an association perhaps driven by their adherence to traditional masculine ideologies (Noar & Morokoff, 2002).

CURRENT STUDY

Currently, there is a need for integrated and theory-driven approaches to prevent both HIV and sexual violence among adolescents in South Africa (Righi, Orchowski, & Kuo, 2019). Our study therefore aimed to inform the development of such multi-pronged interventions by exploring the following research questions. First, what is the association between SVP and SRB among adolescent boys from an area of Cape Town with high rates of violence and HIV infection? Second, what factors across social-ecological domains are correlated with SVP and SRB, and are these factors unique or shared between the behaviors? We hypothesized that these associations would be consistent with relevant theories (Berkowitz, 1992; Fisher et al., 1999) and previous research. Finally, to inform the focus of future interventions more broadly, we asked which social-ecological domain had the strongest associations with SVP and SRB.

METHOD

DESIGN

Data were derived from the baseline survey in a pilot study of an integrated intimate partner violence (IPV)-HIV intervention, called Safe South Africa, that took place with 80 adolescents (and their parents; ClinicalTrials.gov #NCT03179982). The study occurred in an urban community outside of Cape Town, South Africa, from 2017 to 2020. The study protocol was approved by an institutional review board and human research ethics committee (Brown University Protocol #17-44, South African Medical Research Council Protocol #EC001-2/2017).

PARTICIPANTS AND PROCEDURES

We recruited a convenience sample of male adolescents from schools with permission of school staff. We visited classrooms and briefly explained the study. Interested boys were sent home with parental consent and adolescent assent forms. Study staff were available to speak to parents by phone to answer questions about the study. Study staff requested a written informed consent form from parents, went over assent procedures, and then secured voluntary informed assent. Study staff assessed eligibility by using a smartphone preprogrammed with eligibility criteria. The smartphone would autocalculate eligibility. The inclusion criteria included: (1) male adolescent and (2) 15–17 years of age inclusive. Participants filled out a baseline survey using a smartphone programmed with skip patterns, and with sensitive questions issued by audio computer-assisted self-interviewing software. Participants could toggle between their chosen language (English or isiXhosa) at any point throughout the survey. After completion of the baseline survey, adolescents received 50 rand.

MEASURES

All measures were offered in English or isiXhosa. For isiXhosa, all measures were professionally translated and then back-translated into isiXhosa. Measures assessing potential correlates of SVP and SRB are described in Table 1.

Sexual Risk Behavior. Two initial items assessed lifetime history of engaging in vaginal and anal sex. Participants endorsing no lifetime sex history were gated out of subsequent questions assessing recent sexual activity and their responses were coded as not engaging in SRB. Three items assessed past 3-month *condomless sex*, including the question “Was there any time in the past 3 months when you did not use a condom,” as well as two questions assessing frequency of condom use with a causal or main partner. For our main analyses, a dichotomous variable was created for condomless sex (0 = no condomless sex; 1 = engaged in condomless sex). For descriptive purposes, we also assessed whether endorsement of condomless sex was for main and/or casual partners. Two items assessed number of vaginal or anal sexual partners in the past 3 months; *multiple sex partners* was defined as more than one sexual partner. Two additional items assessed frequency of sex while the participant or his partner were under the influence of alcohol or drugs in the past 3 months; *sex while under the influence* was defined as any instance of having sex while one person was using substances.

Sexual Violence Perpetration. Past 12-month SVP was assessed through four items from the Sexual Experiences Survey—Short Form focused on frequency of engaging in forced or coerced sexual petting, oral sex, vaginal sex, and anal sex (Koss et al., 2007). A sample item included “How many times in the past 12 months did you fondle, kiss, or rub up against the private areas of someone’s body (lips, breast/chest, crotch or butt) or remove some of their clothes when they did not want this,” with follow-up questions asking whether a coercion (e.g., “Was this by telling lies, threatening to end the relationship”) or force (i.e., “Was this by using force . . .) tactic was used. For our analyses, a dichotomous variable was created (0 = no perpetration; 1 = any perpetration).

TABLE 1. Study Measures: Potential Correlates of Sexual Risk Behavior and Sexual Violence Perpetration

Demographic and socio-structural factors	Demographic factors	Participants reported on their age, current school grade, racial/ethnic population group, language spoken at home, sexual orientation, and household dwelling type (i.e., informal [e.g., shack] or formal [e.g., house]).
	Food insecurity	A three-item scale assessed degree of recent food insecurity with higher scale scores indicative of greater food insecurity (e.g., "In the past four weeks, how often was there no food to eat of any kind in your house because of lack of money?"; Swindale & Bilinsky, 2006). Cronbach's α in this sample was .69.
Family and community environment	Family cohesion	Family cohesion was assessed with a six-item subscale of the Family Relationships Scale (Tolan, Gorman-Smith, Huesmann, & Zelli, 1997). An example item included "Family members ask each other for help"; 4-point item responses ranged from "not at all true" to "almost always or always true." Higher scale scores equaled greater cohesion ($\alpha = .81$).
	Childhood trauma	A 17-item scale assessed emotional, physical, and sexual childhood trauma using 4-point response items ranging from "never" to "very often" drawn from the Childhood Trauma Questionnaire—Short Form (Bernstein et al., 2003). Higher scale scores equated to more frequent and severe trauma ($\alpha = .80$).
	Community violence exposure	Ten items assessed number of community violence exposure events experienced by participants in their lifetime (Selher-O'Hagan, Kindlon, Buka, Raudenbush, & Earls, 1998).
Social-cognitive factors related to sexual risk behavior	Perceived social norms toward using condoms and toward delaying sex	Two scales measured perceptions of peer/family social norms related to SRB. Each four-item scale assessed the degree to which participants perceived their friends, parent/caregivers, other family members, and partners believing that they should either delay having sex until they are older or use condoms (Mathews et al., 2016). Higher scales on each reflected a perception of safer norms (as for current sample = .59–.63).
	Perceived HIV/STI susceptibility and severity	Two two-item scales assessed perceptions of HIV/STI susceptibility and severity, separately. Higher scores indicated that participants endorsed greater susceptibility to contracting HIV or another STI if they did not use a condom during sex, and for the other scale, if they were to contract HIV/STIs, the condition would be taken more seriously (Mathews et al., 2016; $\alpha s = .61$ –.66).
	Attitudes toward condoms and delaying sex	The Condom Attitudes Scale—Adolescent assessed attitudes toward condoms with 19 items (St. Lawrence et al., 1994; $\alpha = .76$). A sample question was "Condoms take away the pleasure of sex" with responses from "strongly disagree" to "strongly agree." Eight items (e.g., "Waiting until I am older before I have sex will help me achieve my life's goals") with the same response options as the previous scale combined to attitudes about delaying sex scale (Mathews et al., 2016; $\alpha = .65$). Higher scores on either scale equated to more positive attitudes.
	Self-efficacy to use condoms and delay sex	Eight-item and three-item scales assessed self-efficacy to use condoms and self-efficacy to delay sex, respectively, each with 5-point item response options (Brafard & Beck, 1991; Mathews et al., 2016; $\alpha s = .62$ –.66). An example item included "I feel confident in my ability to put a condom on myself or my partner."
	Intentions to use condoms	A six-item scale assessed intentions to use condoms under different scenarios (e.g., "... if you are unsure about your HIV or STI status"; Mathews et al., 2016; $\alpha = .73$). Higher scores corresponded to greater intentions to use condoms.
Social-cognitive factors related to sexual violence perpetration	Gender equitable perceived social norms	The Gender-Equitable Men Scale (GEMS; Pulerwitz & Barker, 2008) assessed the level to which participants perceived their peers to hold gender equitable or inequitable beliefs (e.g., "It is the man who decides what type of sex to have"). Higher scores corresponded to more equitable gender norms. For our sample, Cronbach's α was .65.
	Gender equitable beliefs	An 11-item scale based on the GEMS assessed gender equitable beliefs with higher scores corresponding to more equitable beliefs ($\alpha = .58$).
	Intentions to obtain sexual consents	A four-item scale assessed intentions to obtain sexual consent using items with responses ranging from "not at all likely" to "very likely" for questions such as "How likely would you be to stop sexual activity when asked to, even if you are already sexually aroused?" (McMahon, 2010; White House Task Force, 2014; $\alpha = .64$).

ANALYSIS PLAN

First, the bivariate association between SRB and SVP was examined. Next, correlations were examined between all factors across the social-ecological domains and SRB and SVP. To test for independent effects through adjusted odds ratios, correlates with significant bivariate effects ($p < .05$) were then entered in hierarchical regression models for each SRB and SVP, separately. Any significant correlate of an SRB was entered for all SRBs in multivariate models for consistency. In cases where correlates of similar constructs (e.g., condom use norms and delaying sex norms) were both found to be significant, the one with the larger correlation was chosen for multivariate models to reduce the number of predictor variables. Four regression steps were used (Cohen, Cohen, West, & Aiken, 2003), with order of variable entry guided by our social-ecological model starting with structurally broader levels first. The four blocks of variables entered corresponded to (1) demographic and socio-structural factors (e.g., food insecurity), (2) family and community environment factors, including family cohesion, childhood trauma, and community violence exposure, (3) perceptions of social norms operating within these environments, namely perceived norms related to SVP or SRB, and (4) individual-level cognitive factors related to SVP or SRB. Variances accounted for by each domain of factors were determined by changes in pseudo- R^2 (i.e., ΔR^2 ; Nagelkerke R^2 ; Nagelkerke, 1991).

RESULTS

RATES OF SRB AND SVP

Lifetime rates of engaging in oral, vaginal, and anal sex were 35%, 86%, and 34%, respectively, and 89% had a history of engaging in any sexual behavior. In the past year, 51% of participants reported engaging in any form of SVP; 41%, 19%, 19%, and 13% reported perpetrating unwanted sexual petting, oral sex, vaginal sex, and anal sex, respectively. In the past 3 months, 61% of participants reported engaging in any of the three SRBs examined; 49%, 44%, and 33% endorsed having condomless sex, multiple sex partners (>1), and sex while they or their partner were under the influence of alcohol or drugs, respectively. Among participants who reported condomless sex, 21% reported condomless sex with a main partner only, 26% with a casual partner only, 49% with both a casual and main partner, and 5% did not identify partner type. Correlations between SRBs ranged from .36 to .55, and correlations between SRBs and SVP ranged from .30 to .36; all were significant ($ps < .05$). Figure 1 presents rates of SRB by SVP status.

POTENTIAL CORRELATES OF SRB AND SVP

Table 2 presents correlations between factors in the social-ecological model and SVP and each SRB. For SVP, two demographic and socio-structural factors, two family and community environment factors, two social-cognitive factors related to SVP, and six social-cognitive factors related to SRB were significant correlates of perpetration. Food insecurity, identifying as a sexual minority, and childhood trauma were positively associated with perpetration, whereas family cohesion, holding gender equitable beliefs, and having intentions to obtain sexual consent were negatively associated with perpetration. A higher, safer degree of the remaining SRB-related

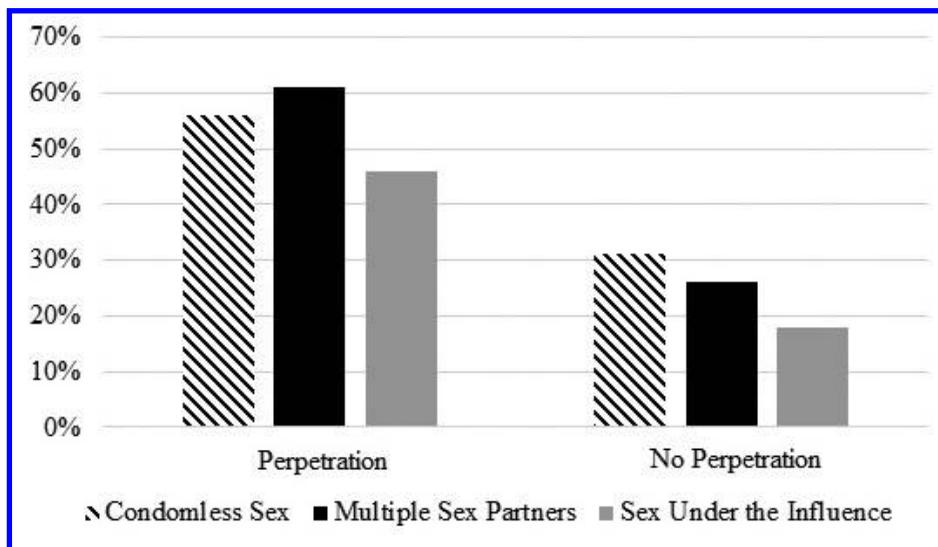


FIGURE 1. Rates of sexual risk behavior by sexual violence perpetration status ($N = 80$).

social-cognitive factors (i.e., perceived social norms about condoms, attitudes about condoms and delaying sex, self-efficacy to use condoms and delay sex, and intentions to use condoms) was associated with a lower likelihood of perpetration.

One family and community environment factor, all three social-cognitive factors related to SVP, and six social-cognitive factors were significantly associated with at least one SRB. Whereas community violence exposure was positively associated with SRB (i.e., sex under the influence), the remaining nine social-cognitive factors were negatively associated with SRB. No demographic or socio-structural factor was associated with SRB.

LOGISTIC REGRESSION MODELS

Table 3 presents the results of hierarchical logistic regression models predicting SVP. As shown, five factors across social-ecological domains were associated with perpetration; however, only two emerged as significant predictors in the final model when broader contextual domains were accounted for: Higher food insecurity was associated with an increased likelihood of endorsing perpetration (odds ratio [OR] = 3.05; 95% confidence intervals [CI] = [1.09, 8.52]), and holding more positive attitudes toward delaying sex was associated with a lower likelihood of perpetration (OR = 0.37; 95% CI [0.14, 0.96]). Identifying as a sexual minority, childhood trauma, and perceived condom use norms were also associated with SVP; however, these associations were not significant in the final model. Relative to other domains, the domain of demographic and socio-structural factors explained the largest amount of variance in SVP likelihood (pseudo- $R^2 = .22$).

Table 4 presents the results of three hierarchical logistic regressions predicting each SRB. In terms of the final models, higher exposure to community violence

TABLE 2. Correlates of Sexual Violence Perpetration and Sexual Risk Behaviors ($N = 80$)

	Sexual Risk Behaviors				$M (SD)$ or % (n)
	Sexual violence perpetration	Condomless sex	Multiple sex partners	Sex under the influence	
% (n)	51 (41)	49 (39)	44 (35)	33 (26)	
<i>Demographic and Socio-structural Factors</i>					
Age	-0.16	0.01	-0.02	0.05	15.79 (0.82)
Grade	-0.18	-0.09	0.04	0.00	10.23 (1.01)
Sexual minority	0.25	0.04	0.04	-0.20	24 (19)
IsiXhosa (vs. other language spoken at home)	-0.05	0.05	0.02	0.07	94 (75)
Lives in informal dwelling (vs. formal dwelling)	0.02	-0.08	-0.09	-0.17	21 (17)
Food insecurity	0.31	0.16	0.00	0.12	1.55 (0.66)
<i>Family and Community Environment</i>					
Community violence exposure	0.13	0.20	0.16	0.24	7.29 (1.60)
Childhood trauma	0.36	0.01	-0.02	0.16	7.45 (5.77)
Family cohesion	-0.24	-0.10	-0.15	-0.02	12.14 (3.44)
<i>Social-Cognitive SVP Factors</i>					
Gender equitable perceived social norms	-0.01	-0.28	-0.21	-0.11	43.35 (5.90)
Gender equitable beliefs	-0.35	-0.25	-0.27	-0.07	2.37 (0.34)
Intentions to obtain sexual consent	-0.32	-0.31	-0.34	-0.30	3.86 (1.28)
<i>Social-Cognitive SRB Factors</i>					
Perceived peer/family norms—condoms	-0.31	-0.25	-0.12	-0.19	4.26 (0.58)
Perceived peer/family norms—delaying sex	-0.15	-0.16	-0.13	-0.17	3.68 (0.80)
HIV infection severity	-0.05	-0.23	-0.24	-0.04	4.43 (0.87)
HIV Infection susceptibility	0.08	0.04	0.00	-0.08	3.76 (1.08)
Positive attitudes about condoms	-0.34	-0.31	-0.18	-0.11	3.63 (0.47)
Positive attitudes about delaying sex	-0.38	-0.12	-0.31	-0.12	3.50 (0.64)
Self-efficacy to use condoms	-0.33	-0.21	-0.28	-0.09	24.04 (4.29)
Self-efficacy to delay sex	-0.22	-0.13	-0.17	-0.16	2.85 (0.97)
Intentions to use condom	-0.23	-0.19	-0.27	-0.06	4.14 (0.87)

Note. Significant correlations ($p < .05$) are bolded.

was associated with an increased likelihood of endorsing recent condomless sex (OR = 1.57; 95% CI [1.04, 2.36]) and sex while under the influence of alcohol and drugs (OR = 1.57; 95% CI [1.02, 2.40]). Perceiving more equitable gender norms was also associated with reduced odds for condomless sex (OR = 0.90; 95% CI [0.81, 1.00]). Participants reporting greater intentions to obtain sexual consent were less likely to endorse sex with multiple partners (OR = 0.60; 95% CI [0.36, 0.99]) and sex while under the influence (OR = 0.58; 95% CI [0.35, 0.97]). Holding more positive attitudes toward delaying sex was also associated with a lower likelihood of reporting sex with multiple partners (OR = 0.37; 95% CI [0.14, 0.96]). Participants'

TABLE 3. Logistic Regression Models Predicting Likelihood of Sexual Violence Perpetration (N = 80)

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI						
<i>Demographic and Socio-structural Factors</i>								
Sexual minority	4.41	1.32, 14.78	3.66	0.98, 13.67	4.24	1.06, 17.01	3.40	0.62, 18.57
Food insecurity	3.19	1.43, 7.09	2.72	1.19, 6.24	2.62	1.12, 6.14	3.05	1.09, 8.52
<i>Family and Community Environment</i>								
Childhood trauma			1.16	1.01, 1.33	1.18	1.02, 1.35	1.15	0.96, 1.37
Family cohesion			0.93	0.80, 1.09	0.99	0.83, 1.18	1.02	0.83, 1.25
<i>Social Norm Perceptions</i>								
Perceived peer/family norms—condoms					0.35	0.13, 0.93	0.39	0.11, 1.35
<i>Cognitive Factors</i>								
Gender equitable beliefs							0.74	0.06, 9.95
Positive attitudes about delaying sex							0.37	0.14, 0.96
Self-efficacy to use condoms							1.04	0.85, 1.27
Intentions to obtain sexual consent							0.72	0.41, 1.25
Intentions to use condoms							0.55	0.26, 1.17

Note. Variables selected for multivariate models were significant ($p < .05$) at bivariate level. Regression steps were guided by a social-ecological framework with earlier steps corresponding to structurally broader contexts. 95% confidence intervals (CIs) that do not cross 1.00 are significant ($p < .05$). Significant effects are bolded. Pseudo- R^2 s for Models 1–4 were .22, .33, .39, and .51, respectively.

TABLE 4. Logistic Regression Models Predicting Sexual Risk Behavior ($N = 80$)

	Model 1		Model 2		Model 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Condomless Sex						
<i>Family and Community Environment</i>						
Community violence exposure	1.30	0.97, 1.75	1.47	1.05, 2.07	1.56	1.04, 2.33
<i>Social Norm Perceptions</i>						
Gender equitable social norms			0.91	0.82, 1.00	0.90	0.82, 1.00
Perceived peer/family norms—condoms			0.40	0.16, 1.00	0.37	0.12, 1.14
<i>Cognitive Factors</i>						
Gender equitable beliefs					0.40	0.05, 3.37
HIV infection severity					0.73	0.38, 1.41
Positive attitudes about delaying sex					1.26	0.54, 2.97
Self-efficacy to use condoms					1.04	0.87, 1.24
Intentions to obtain sexual consent					0.82	0.51, 1.32
Intentions to use condom					0.59	0.29, 1.18
Multiple Sex Partners						
<i>Family and Community Environment</i>						
Community violence exposure	1.23	0.92, 1.65	1.30	0.95, 1.78	1.27	0.85, 1.89
<i>Social Norm Perceptions</i>						
Gender equitable social norms			0.93	0.85, 1.01	0.93	0.85, 1.03
Perceived peer/family norms—condoms			0.71	0.31, 1.64	1.66	0.49, 5.58
<i>Cognitive Factors</i>						
Gender equitable beliefs					1.01	0.14, 7.54
HIV infection severity					0.84	0.41, 1.71
Positive attitudes about delaying sex					0.38	0.15, 0.98
Self-efficacy to use condoms					0.92	0.77, 1.10
Intentions to obtain sexual consent					0.60	0.36, 0.99
Intentions to use condom					0.65	0.34, 1.26
Sex Under the Influence						
<i>Family and Community Environment</i>						
Community violence exposure	1.45	1.03, 2.05	1.61	1.10, 2.35	1.57	1.02, 2.40
<i>Social Norm Perceptions</i>						
Gender equitable social norms			0.97	0.89, 1.06	0.98	0.89, 1.08
Perceived peer/family norms—condoms			0.40	0.15, 1.04	0.51	0.16, 1.61
<i>Cognitive Factors</i>						
Gender equitable beliefs					1.52	0.21, 11.25
HIV infection severity					1.19	0.62, 2.29
Positive attitudes about delaying sex					0.77	0.32, 1.88
Self-efficacy to use condoms					1.02	0.85, 1.21
Intentions to obtain sexual consent					0.58	0.35, 0.97
Intentions to use condom					0.88	0.43, 1.80

Note. Variables selected for multivariate models were significant ($p < .05$) at bivariate level. Regression steps were guided by a social-ecological framework with earlier steps corresponding to structurally broader contexts. 95% confidence intervals (CIs) that do not cross 1.00 are significant ($p < .05$). Significant effects are bolded. Pseudo- R^2 s for Models 1–3, respectively, were .07, .23, and .24 (condomless sex); .03, .11, and .36 (sex with multiple partners); and .09, .17, and .25 (sex under the influence).

perceptions of peer/family norms related to condom use was negatively associated with condomless sex in the second model; however, this association was no longer significant when cognitive factors were considered. Based on pseudo- R^2 , the social-ecological domain of social norm perceptions explained the most variance for condomless sex (.15) and the cognitive domain (particularly positive attitudes in delaying sex and intention to use condom) explained the most for sex with multiple partners ($\Delta R^2 = .25$). For sex while under the influence, variance explained across domains was consistent ($\Delta R^2 = .08-.09$).

DISCUSSION

Our study examined SVP and SRB, and their potential correlates across a range of social-ecological domains, among adolescent boys from Cape Town. Rates of SVP were strikingly high; for example, nearly one in five boys reported engaging in unwanted vaginal sex perpetration in the past year. Among studies in South Africa, this rate was higher than what has been observed among earlier adolescents reporting SVP (Kuo et al., 2019) and ever-partnered same-age adolescents reporting sexual IPV (Shamu et al., 2016), and more consistent with rates of sexual IPV perpetration among South Africa men (Townsend et al., 2011). Rates of past-3-month SRB among this group of adolescents were also high, as almost two-thirds of boys indicated engaging recently in an SRB. Consistent with studies of South African men, boys who reported perpetration were about twice as likely to endorse engaging in all SRBs compared to boys who did not report perpetration. Many but not all correlates unique to SRB and SVP were from socio-contextual domains, whereas all correlates shared by SVP and SRB were from the social-cognitive domain (e.g., peer/family norms related to condoms; intentions to obtain sexual consent); thus, many behavior-specific social-cognitive factors had associations across behavior categories. In addition, we found that all domains explained variance in our final multivariate models predicting SVP and SRBs. However, the demographic/socio-structural domain explained the most for SVP, relative to other domains, and for SRBs, the impact of a given domain depended upon the SRB. The intersection between SRB and SVP therefore highlights the importance of developing integrated prevention approaches by first considering the socio-structural context of adolescents followed by the influences of social norms and related cognitive factors.

One of the strongest predictors of SVP was food insecurity. This relationship likely involves several pathways (Hatcher et al., 2019). For example, researchers have argued that in the context of poverty, men's inability to meet hegemonic masculinity ideals results in men embracing gender inequitable beliefs and actions, including SVP, to regain feelings of power and control (Jewkes et al., 2016). In our sample, food insecurity was associated with perpetration even when accounting for the effects of gender beliefs. Further research is needed to uncover the mechanisms of this association among adolescents, with greater attention given to their evolving gender socialization.

A related contextual factor, community violence exposure, emerged in multivariate models as a significant predictor of two SRBs. This association can also be explained with different and interrelated pathways (Voisin, Jenkins, & Takahashi, 2011). South African adults connected with adolescents exposed to community violence, such as parents and teachers, may also experience community safety concerns, feel strained, and be less able to provide prosocial support (Tarantino et al., 2018).

Consequently, adolescents may turn to deviant peer groups where unsafe norms toward sex exist and SRBs are modeled. Community violence exposure may also lead to other mental/behavioral health problems that increase susceptibility to sexual risks (Voisin et al., 2011). Further, violence exposure may desensitize adolescents to risky sexual situations, making sexual risk-taking more likely to occur (Voisin et al., 2011). In our sample, social norms were also significantly related to condomless sex; boys who perceived peer/family norms to be more gender equitable had a lower likelihood of condomless sex. Nevertheless, our final multivariate models for each SRB explained a relatively low amount of total variance in SRB (e.g., pseudo- $R^2 = .24$ for condomless sex vs. $.51$ for SVP). Researchers are thus encouraged to further investigate how community risks, in addition to strengths (e.g., healthy social norms), create contexts for HIV vulnerability or protection, with a greater focus on the role of adolescent adjustment and peer affiliations.

We hypothesized that factors associated with SRB and SVP would be shared, and indeed, many from the social-cognitive domain were correlated with each behavior type; however, most were not significant in multivariate models, perhaps due to the presence of stronger contextual influences and the relatively small sample size. Nevertheless, in final multivariate models, more positive attitude toward delaying sex was associated with a lower likelihood of SVP and having multiple sex partners. In addition, while intention to garner sexual consent was a significant bivariate but not multivariate factor associated with SVP, in final multivariate models predicting SRBs, adolescents with higher intentions to obtain sexual consent were less likely to have multiple sex partners and sex while under the influence of substances. Attitudes and intentions related to sexual behavior influence behavioral skills and self-efficacy (e.g., condom self-efficacy), which predict sexual practices (Fisher et al., 1999). Given our results, adolescent engagement in SVP and SRB may be partially driven by common cognitive factors. For example, boys who believe they can communicate with sexual partners about condom use may also have greater confidence in their ability to negotiate sexual consent and avoid SVP.

Interestingly, no contextual factor (i.e., socio-structural, community, or family) was a shared correlate of perpetration and SRB. However, the contextual factors we found to have nonsignificant bivariate effects may have significant indirect effects via mediating variables. For example, among South African adolescents, SRB has been found to be predicted by structural deprivation, including food insecurity, via the influence of deprivation on several indicators of adolescent well-being and adjustment (e.g., mental health distress and school drop-out; Cluver et al., 2016). Comparable research with larger and longitudinal samples should determine the mediators of the associations we observed.

Study limitations should be noted. The cross-sectional, nonexperimental design of our study precludes claims related to causality. Given that SVP could have occurred any time in the past year, and SRB any time in the past 3 months, it is possible that engagement in these behaviors reinforced participants' current cognitions and perceptions of social norms. Our study was also limited by its relatively small sample size, which reduced our ability to test more complex models of behavior and power to detect multivariate effects. In addition, all measures were self-report, and biased responding was possible; however, steps were taken to reduce this risk. Many scales also had less than desirable internal consistency reliability ($\alpha = .60-.70$). Moreover, our measure of SVP did not distinguish between partner and nonpartner perpetration. Finally, our study included middle-to-late adolescent males, primarily identified as isiXhosa-speaking and Black African, who resided near Cape Town.

Caution should be taken when generalizing our findings to adolescents with different characteristics.

CONCLUSIONS

The association we found between SVP and SRB underscores the need for integrated prevention programming beginning in early adolescence. Our results highlight potential areas of intervention. Support was found for behavior-specific models of SVP and SRB. By including these models within a social-developmental framework, we were able to show social-cognitive effects in relation to contextual effects. Integrated SVP/SRB interventions for adolescents should therefore be multilevel and multicomponent. Given the strong association between food insecurity, an indicator of poverty, and SVP, these interventions should perhaps begin with structural economic empowerment programs (Bourey, Williams, Bernstein, & Stephenson, 2015), which impact economic well-being, family stress (associated with poor family functioning, family violence, and child abuse), and gender-based inequities contributing to violence against women. They should also include policies aimed at building social capital in communities affected by high rates of crime to mitigate violence exposure; community-wide campaigns to promote gender equitable and safe sex norms; parent-based programs to enhance family relationships; and gender-informed, youth-tailored interventions for adolescent boys targeting social and cognitive influences associated with both SVP and SRB.

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