

Correlates of condom use and condom-use motivation among young South Africans

Hannah Devine-Wright¹, Charles Abraham², Hans Onya, Susan Ramatsea³, Mahlapahlapana Themane³, Leif Edvard Aarø^{4,5}

¹Placewise Ltd, Sunnymead, Eastlands, Hemyock, Cullompton, Devon

²University of Exeter Medical School, University of Exeter, Exeter, Devon

³Health Promotion Unit, School of Public Health, University of Limpopo, Polokwane

⁴Department of Health Promotion and Development, Faculty of Psychology, University of Bergen

⁵Division of Mental Health, Norwegian Institute of Public Health

Correspondence concerning this article should be addressed to Charles Abraham University of Exeter Medical School, University of Exeter, Exeter, Devon. EX1 2LU, UK.
E-mail: c.abraham@exeter.ac.uk

doi: 10.1111/jasp.12328

Abstract

A survey of South African secondary school students aged 12–17 years ($n = 893$) included measures designed to investigate relationships between beliefs about HIV/AIDS, condom use, interpersonal relationships, and two dependent measures: motivation to use condoms and reported condom use. We predicted that motivation would be an important correlate of reported condom use and that traditional cultural beliefs included in social cognition models would predict condom use motivation. Hierarchical multiple regression showed that 10% of the variance in reported condom use was accounted for by condom use motivation and age. Condom self-efficacy, beliefs about condoms and injunctive norms accounted for much of the variance. Other beliefs included susceptibility to HIV and attribution of HIV to asexual sources such as witchcraft indicating that an expanded model of modifiable cognitions may be optimal when designing HIV interventions among young South Africans.

Introduction

People in Sub-Saharan Africa account for 68% of worldwide HIV cases and 80% of those living with HIV (UNAIDS report on the global AIDS epidemic, 2010; UNESCO strategy for HIV and AIDS, 2011). The pressing research question is, which HIV-preventive interventions are likely to work in which contexts? School-based interventions with adolescents have been recommended (Maticka-Tyndale, Wildish, & Gichuru, 2007; Ross, Dick, & Ferguson, 2006) and it is critical to identify strong and modifiable predictors of consistent condom use among sexually active young people in Sub-Saharan Africa (Izugbara, 2005; Paul-Ebhohimhen, Poobalan, & van Teijlingen, 2008). A review of 75 studies conducted in South Africa between 1990 and 2000 found that 50% of youth are sexually active by age 16 and that most young people use condoms inconsistently, if at all (Eaton, Flisher, & Aarø, 2003) so emphasising the need for preventive intervention with young people. There are several examples of how behavioral regulation models can be translated into education practice (e.g., Henderson et al., 2007; Wight & Abraham,

2000) but it is unclear which modifiable cognitions should be primary targets in HIV-preventive interventions for young South Africans (Aarø & Flisher, 2012; Bandura, 2002).

Condom use and condom use motivation

Condom use is critical for those engaging in penetrative sex who do not know the status of their partners in relation to sexually transmitted infections, including HIV (Izugbara, 2005; Paul-Ebhohimhen et al., 2008). Yet even amongst highly educated, sexually active young South Africans for whom the acceptability of condoms is high, only 25% report consistent condom use (Maharaj & Cleland, 2006). A variety of demographic and contextual factors have been found to be associated with condom use including wealth and educational achievement (Jewkes, Levin, & Penn-Kekana, 2003; Onya, Aarø, & Madu, 2009), interpartner violence (Pettifor, Measham, Rees, & Padian, 2004; Schaalma et al., 2009), age at sexual debut (Onya et al., 2009), and having an older partner (Maticka-Tyndale, 2010). It has also been suggested that when there are wide age disparities between a young person

and their sexual partner this creates an imbalance of power in the relationship that makes it difficult to negotiate condom use (Jewkes et al., 2003; Maticka-Tyndale, 2010). However, some studies have failed to find any significant associations between having an older partner, age at sexual debut and intention to use condoms (Pettifor et al., 2004).

Inconsistent condom users are more likely to report low condom self-efficacy, to be less able to negotiate condom use, to have been forced to have sex by their most recent partner and to perceive themselves to be at high risk of HIV (Pulerwitz, Gortmaker, & DeJong, 2000). Others have identified social norms such as the social desirability of women maintaining their virginity or boys being sexually active at a young age as factors that lead to disparities in age of sexual debut amongst women and men (e.g., MacPhail & Campbell, 2001; Sayles et al., 2006) and impact on condom use motivation. A series of social cognition models have been used to predict condom use and condom use motivation, including, for example, the theory of planned behavior (TPB) (Ajzen & Madden, 1986) which has been found to provide a good predictive model of condom use across studies (for meta analyses see, Albarracin et al., 2005, Sheeran, Abraham, & Orbell, 1999) and to predict whether or not young people ensure they have condoms available (Arden & Armitage, 2008; van Empelen & Kok, 2008). The TPB proposes, and other social cognition models identify intention as the most proximal antecedent of behavior. Intention is seen as an indication of a person's readiness to perform a given behavior. Intention is in turn determined by attitudes, subjective norms, and perceived behavioral control. Attitudes refer to a person's evaluations of performing a specific behavior. Subjective norm refers to anticipated social approval for performing the behavior. Perceived behavioral control (Ajzen & Madden, 1986), a similar construct to self-efficacy (Bandura, 1992), refers to a person's perceived ability to perform a particular behavior in particular circumstances. Other beliefs and cognitions may predict behavior over and above intention. For example, the TPB proposes that perceived behavioral control may be a direct predictor of behavior under certain circumstances. Previous models of modifiable cognitions predicting condom use and interventions to promote condom use have been based on social cognition models such as the TPB (Harrison, Newel, Imrie, & Hoddinott, 2010) and have been found to be adequate but not exhaustive for explaining condom use intention amongst South African secondary school students (Schaalma et al., 2009).

Cognitions other than those specified in the original TPB have been found to be important predictors of health behavior patterns, including condom use. For example, in addition to subjective norms, descriptive norms (i.e., the perception of what others do) have been found to be important (e.g., Rivas & Sheeran, 2003). Descriptive norms may be especially important among adolescents (Gibbons, Gerrard, & Lane,

2003; Liddell, Giles, & Rae, 2008) and may also influence whether young people have condoms available (van Empelen & Kok, 2008). In addition, other researchers have proposed that sociocultural factors be included in predictive models that have been developed for use mainly within Western contexts (Harrison et al., 2010) with a more nuanced approach taking into account local factors such as sensitivity to the research topic and culture-specific beliefs.

Low condom use self-efficacy has been linked to inconsistent condom use amongst young South Africans (Pulerwitz et al., 2000) but observed relationships between condom use self-efficacy and condom use have not been strong (Bryan, Kagee, & Broaddus, 2006). It is possible that condom use and condom use motivation can be better explained by consideration of other culture-specific factors such as local gender norms and cultural narratives about sex, sexuality, and relationships (Izugbara, 2005). For example, if sexual intercourse is viewed as indicative of a trusting relationship, this may undermine condom use motivation (Jewkes et al., 2003; Leclerc-Madlala, 2002; MacPhail & Campbell, 2001).

In South Africa, some people believe that unprotected sex is important for good health (Liddell, Barrett, & Bydawell, 2006) and that unprotected sex is neither necessary nor sufficient as a cause of HIV/AIDS (Liddell et al., 2008). Some South Africans believe that HIV/AIDS is caused by witchcraft (Liddell et al., 2006), spirits or supernatural forces (Kalichman & Simbayi, 2004) or by a curse from God (Ragnarsson, Onya, & Aarø, 2009). Eleven to fifteen percent of South Africans aged under 24 believe that AIDS can be caused by witchcraft and 36% are unsure (Liddell et al., 2006). Such lay models of illness can influence condom salience and motivation to use condoms at next sex in a number of ways. For example, if HIV/AIDS is attributed to witchcraft or supernatural forces the individual is unlikely to be able to exert personal control over how it is contracted. Furthermore, traditional healers can be seen to be well-placed to treat HIV/AIDS with traditional medicines (Kalichman & Simbayi, 2004, Ragnarsson et al., 2009) rather than anti-retrovirals (ARVs). An association of HIV/AIDS with people who are "other" than oneself (Joffe, 1996) and the attribution of blame for HIV/AIDS to these people, for example, clinic staff that are believed to inject patients with infected blood (Ragnarsson et al., 2009) may contribute to a sense of lack of control. Condoms may also be thought to protect against "polluting" substances contained in sexual fluids (Abraham, Sheeran, & Henderson, 2011). Clearly, these beliefs may generate motivations other than reducing the risk of viral transmission and, consequently, more complex models of condom motivation may be necessary to guide interventions in South African contexts.

The ability to negotiate condom use has been shown to be affected by beliefs about the meaning of the word "no,"

notably whether when a woman says “no” she actually means “yes,” whether sex is considered necessary for the continuation of a relationship and norms of social acceptance, such as whether friends use condoms and the acceptability of sexual coercion (Collins & Stadler, 2000; Johnson, Bodenstern, & Winkler, 2011). Comparing studies that have identified factors influencing motivation to use condoms is difficult because there is no standard measure for condom use intention. We identified three attributes of existing measures that need to be addressed within a measure of condom use motivation. First, scales should avoid conflating condom use motivation with condom use self-efficacy (Liddell et al., 2008). Second, items within scales should reflect the variety of different relationship contexts in which condoms can be used, for example, even when a partner does not want to use a condom or with different types of sexual partners. This is important since 33% of young South African people aged 13–25 years report always using a condom with a casual partner but only 14.3% report always using a condom with a regular partner (MacPhail & Campbell, 2001). Third, measures should distinguish between reasons for condom use, for example, to prevent pregnancy and/or to prevent HIV infection (Maticka-Tyndale, 2010). In this study, we ensure that motivation to use condoms is measured independently from condom use self-efficacy, second, we include additional measures that have been shown to influence motivation, for example, mortality salience, and third, we investigate a range of beliefs, including those representing local culture-specific beliefs relevant to condom use, including, for example, the view that sexual intercourse occurs in serious, trusting relationships rather than “playful” encounters (Collins & Stadler, 2000).

Study aim and research question

The purpose of our study was to provide an evidence base to guide the design of condom use promotion and HIV-prevention interventions for South African school students, including those attending schools outside major cities. We developed a questionnaire that combined measures of modifiable cognitions used in social cognition models such as the theory of planned behavior with a range of other measures found to be relevant to condom use by young South Africans in previous studies or identified during our own pilot work. Our study was exploratory and employed a demographically representative sample of South African school students in a region that included rural schools. We did not test one particular social cognition model or begin with hypotheses about particular relationships between modifiable cognitions and reported condom use. Instead, we addressed one research question, namely, which modifiable cognitions are most predictive of condom use among secondary school students in Mankweng, South Africa?

Methods

Measures

A questionnaire was developed following (1) a review of studies of safer sex motivation and (2) a thematic analysis of transcripts of six focus group and nine interviews among young people from Mankweng. A pilot study was undertaken to assess the feasibility of administering the questionnaire in multiple schools in the Mankweng region and to assess the appropriateness and comprehension of item wording for this audience. The questionnaire was initially administered in two Mankweng schools with students aged between 12 and 15 years using both an English ($N = 183$) and a Northern Sotho ($N = 166$) version.

Following piloting, items were reconsidered in collaboration with Limpopo University colleagues to optimize comprehension, readability, and concept convergence. Some items were removed or modified following pilot work because local school students found them difficult to understand. The final questionnaire contained 200 items representing a series of measures, some of which were not directly relevant to the research aims of this study. Many items were based on measures used in previous studies of predictors of condom use in South Africa and elsewhere. These included items measuring cognitions specified by social cognition models such as the theory of planned behavior.

Unless otherwise stated, items employed a 5-point response scale: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. Multi-item scales were created using mean scores across items. The final questionnaire was administered to between 105 and 215 students in each of nine secondary schools yielding a total of 1,166 completed questionnaires.

Dependent variables

Consistent Condom Use (CCU) was measured using two items that asked respondents to record (1) the number of times during the last six weeks they had had vaginal sexual intercourse and (2) the number of times during the last six weeks they had used a condom during vaginal sex. There were 12 response options: I have never had vaginal sex, none in the last six weeks, 1 through to 9 times, and 10 or more times. Those who reported either never having had vaginal sex or not having had vaginal sex in the last six weeks were excluded. The *CCU* measure was constructed by first, dividing the frequency of reported condom use by frequency of reported vaginal intercourse (taking into account that if the incidence of reported condom use exceeded the incidence of reported vaginal intercourse then reported condom use was reduced to be the same as the reported incidence of sexual intercourse). Second a percentage score of protected vaginal

intercourse during the last six weeks was calculated by multiplying this figure by 100 (cf. Sheeran & Abraham, 1994).

Motivation to Use Condoms was measured using a 6-item scale (Cronbach's alpha [α] = .68) based on existing measures (Liddell et al., 2008; Maticka-Tyndale, 2010): ("I plan to use a condom when I have sex to protect against HIV"; "I will insist on using a condom even if my partner doesn't want to"; "I plan to use a condom when I have sex to prevent pregnancy"; "If I have not been tested for HIV, I will insist that a condom is used every time I have sex"; "I intend to carry a condom if I think I am going to have sex"; "Next time I have sex and I do not want to have a child I will use a condom").

Independent variables

Unless otherwise stated all the independent variables were single item measures developed from research in South Africa and which had face validity for respondents. Where possible items were based on those already used in previous studies as referenced below. We used five measures of condom self-efficacy. First, *self-efficacy: consistent condom use* ("I would be able to use a condom every time I have sex") (Maticka-Tyndale, 2010). Second, *Self-efficacy: correct condom use* was measured using the item ("I am able to use a condom correctly") (Maharaj & Cleland, 2006). Third, *Self-efficacy: condom use negotiation* was measured using the item ("I feel able to talk to a boyfriend/girlfriend about using condoms") (Maticka-Tyndale, 2010; Pettifor et al., 2004) and the fourth, *Self-efficacy: refuse condom* was measured using the item ("I would be able to refuse sex if my partner did not want to use a condom") (Schaalma et al., 2009). The fifth condom self-efficacy item, *Self-efficacy: access condom* was measured using a single item ("It would be easy for me to get or buy a condom") (Paul-Ebhohimhen et al., 2008).

The social meaning of condom use was measured using two items: *Condoms mean cheating* ("If a partner suggests using a condom it does not mean they are cheating") (Paul-Ebhohimhen et al., 2008) and *Condoms mean respect* ("If I use a condom when I have sex it means I respect my partner") (Maticka-Tyndale, 2010). A single evaluative item assessed *Importance of sex* ("I do not think it is important to have sex" (Maticka-Tyndale, 2010). Perceived *HIV Susceptibility* was appraised using ("If I use a condom when I have sex, I reduce my risk of HIV") (Paul-Ebhohimhen et al., 2008). *Injunctive Norm: condom use* was measured using ("My friends think that I should use a condom when I have sex") (MacPhail & Campbell, 2001). *Descriptive Norm: condom use* was assessed using ("My friends do not use condoms when they have sex") (MacPhail & Campbell, 2001). Gender equality or *Equal rights* was gauged using ("Boys and girls have equal rights to speak about what they want in a relationship" (Jewkes et al., 2003).

HIV Stigma was measured using ("It is safe to touch someone who is HIV+") (Kalichman & Simbayi, 2004). *HIV Infection Beliefs* consisted of 6-items (α = .66) ("People can get HIV from witchcraft" (Liddell et al., 2006); "People can get HIV/AIDS from sharing soap or a cup (of tea)" (Kalichman & Simbayi, 2004; Liddell et al., 2008); "You can get HIV/AIDS from spirits or supernatural forces" (Liddell et al., 2006, 2008); "A mosquito can give you HIV when it bites you" (from focus groups); "When a woman keeps a needle or money in her mouth she can give a man HIV/AIDS" (Liddell et al., 2006; Ragnarsson et al., 2009) and "Clinic staff inject patients with HIV infected blood in clinics") (Ragnarsson et al., 2009).

Two single-item sexual experience measures were included: an interval measure of *Age at Sexual Debut* ("How old were you the first time you had sex?" with age-range response options) and a categorical question about sexual experience with *Older Partners* ("Have you ever had sex with someone who is 3 or more years older than you?" yes/no).

In addition to *Gender* (1 = male, 2 = female) and *Age* ("What is your date of birth?" converted to age in years) we included a measure of *Educational Achievement* using a single binary measure: ("Have you ever repeated a year due to failing exams?" yes/no). Socioeconomic status (*SES*) consisted of a proxy measure constructed using a cumulative measure of 8 facilities available at home (tap water, a toilet inside the house, electricity, a house telephone, a mobile telephone, a fridge, a television and a car) so that a higher score indicated a greater number of facilities.

Participants

A total of 1,166 young people completed the questionnaire. However, since we were primarily interested in modifiable cognitions predictive of condom use that could be targeted in interventions in secondary schools, we only retained questionnaires from students 12–17 years for analyses. This generated a sample of 893. Of these 59.1%, ($N = 528$) were female and 40.3%, ($N = 357$) were male (eight missing answers, .9%).

Results

Sexual activity

Forty percent (40.4%, $N = 361$) of young people reported that they had had sex with at least one person in their life. Of these, 64% (64.3%, $N = 232$) were young men and 34% (34.3%, $N = 124$) were young women. The incidence of vaginal sexual intercourse in the last six weeks was relatively low. Half (51.8%, $N = 187$) of young people who had engaged in sexual intercourse (ever) reported that they had had vaginal intercourse in the last 6 weeks, of whom two thirds were male (66.5%, $N = 123$) and one-third female (33.5%, $N = 62$). Of this sexually active group almost half (44.9%, $N =$

Table 1 Correlations with Consistent Condom Use (CCU) and Motivation to Use Condoms (MUC)

	CCU	MUC	M	SD	N
Motivation to Use Condoms (MUC)	.27***	—	4.07	.67	892
Self-efficacy: consistent condom use	.05	.47***	3.88	1.21	838
Self-efficacy: correct condom use	.05	.27***	3.82	1.25	867
Self-efficacy: condom use negotiation	.00	.34***	3.87	1.18	868
Self-efficacy: refuse condom	.14	.27***	3.47	1.40	849
Self-efficacy: access condom	.00	.26***	3.41	1.28	847
Condoms mean cheating	.17*	.31***	3.60	1.26	862
Condoms mean respect	.06	.31***	3.82	1.22	869
Importance of Sex	.07	.14***	3.37	1.39	870
HIV Susceptibility	.00	.26***	3.62	1.35	851
Injunctive Norm: condom use	.23**	.39***	3.83	1.24	855
Descriptive Norm: condom use	.04	-.02	3.26	1.21	854
Equal Rights	.03	.34***	4.22	1.07	874
HIV Stigma	.07	.26***	3.58	1.29	861
HIV Infection Beliefs	.09	-.09**	2.62	.82	867
Age at Sexual Debut	.08	.00	3.65 ^a	3.42	873
Older Partners	-.08	.03	1.74	.71	849
Gender	.04	-.03	1.6	.49	885
Age	.18*	.09*	15.61	1.07	893
Educational Achievement	-.09	-.11***	1.25	.43	879
SES	-.05	.13***	4.43	1.19	892

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

^aage range response to this item indicate that, on average, sexually active students report sexual debut at approximately 14-years old.

84) had had vaginal sex just once in the last 6 weeks. However, a small minority (9.1%, $N = 17$) reported having had vaginal sex 10 or more times in the last 6 weeks.

Condom use

More than two-thirds (70.1%, $N = 122$) of young people who reported having had vaginal sex in the last six weeks reported 100% condom use, that is, they had used a condom as many times as they had had sex in the last 6 weeks. Approximately one-third (29.9%, $N = 52$) of young people in Mankweng reported having unprotected vaginal sex at least once in the last 6 weeks. A tenth (10.9%, $N = 19$) reported zero condom use during vaginal sex in the last 6 weeks. Of those who reported zero condom use during vaginal sex ($N = 19$), a third were aged 14 ($N = 6$, 31.6%), a third aged 15 or 16 ($N = 6$, 31.6%), and a third aged 17 ($N = 7$, 36.8%). Approximately half of young people aged 14 ($N = 9$, 56.2%) and 15 ($N = 37$, 54.1%) reported 100% protected vaginal sex compared to more than three-quarters of people aged 16 ($N = 40$, 80%) or 17 ($N = 53$, 74.6%). Of those who reported zero condom use during vaginal sex ($N = 19$), three-quarters were male ($N = 14$, 73.7%), and

Table 2 Hierarchical Regression of Consistent Condom use on Significant Correlates ($N = 174$)

Step	Variable(s) entered	β	β
1.	Motivation to Use Condoms	.267**	.269**
2.	Age		.184*
R^2		.071	.105
ΔR^2		.071	.034
Model F		13.24	10.06

* $p \leq .05$; ** $p \leq .001$.

one-quarter female ($N = 5$, 26.3%). The percentage of 100% protected vaginal sex was similar across males and females in that 69% ($N = 80$) of males and 73.2% ($N = 41$) of females reported 100% safe sex. Reported age at sexual debut was significantly associated with the number of sexual partners reported over the last six weeks ($r = .15$, $p \leq .05$) with younger debut predicting more partners.

Correlates of consistent condom use (CCU)

For those who had had vaginal sex in the last six weeks ($N = 187$), Table 1 shows that *CCU* was significantly correlated with 4 measures: *Motivation to use condoms (MUC)* ($p \leq .001$), *Condoms mean cheating* ($p \leq .05$), *Injunctive norm: condom use* ($p \leq .01$), and *Age* ($p \leq .05$).

Nonsignificant correlations may arise due to chance and are unlikely to indicate real-world relationships between variables. The significant univariate correlations may identify measures predictive of our dependent measure but do not clarify the relative importance of these measures. Consequently, significant correlates of *CCU* were entered into a four-step, hierarchical multiple regression model. Order of entry of independent variables followed their theorised proximity to condom use with motivation (*MUC*) being regarded as a more proximal determinant than *Age* (see Table 2).

We found that the *Condoms mean cheating* and *Injunctive norm: condom use* did not explain additional variance in *CCU scores* so these variables were removed from the final regression equation. More than 10% (10.5%) of the variance in *CCU* was explained by the remaining two variables: *MUC* accounted for the majority of the variance (7.1%), ($F_{\text{Change}[1,172]} = 13.24$, $p \leq .000$, $R^2_{\text{Change}} = .071$) whilst *Age* contributed 3.4% of the variance (*Age*, $F_{\text{Change}[1,171]} = 6.46$, $p \leq .05$, $R^2_{\text{Change}} = .034$). The variance inflation factor was 1.0 for both independent variables. Of these two variables, only motivation is modifiable. Therefore, we investigated what factors correlated with motivation to use condoms (*MUC*).

Correlates of motivation to use condoms (MUC)

Table 1 shows mean (*M*), standard deviation (*SD*), and sample size (*n*) for each independent variable as well as

Table 3 Hierarchical Regression of Motivation to Use Condoms on Significant Correlates ($n = 892$)

Step	Variable(s) entered	β										
1.	Self-efficacy: consistent	.471**	.431**	.396**	.362**	.349**	.335**	.323**	.269**	.246**	.237**	.240**
2.	Self-efficacy: correct		.181**	.131**	.142**	.126**	.135**	.141**	.123**	.113**	.118**	.129**
3.	Self-efficacy: negotiation			.237**	.203**	.181**	.181**	.183**	.158**	.157**	.153**	.152**
4.	Condoms mean cheating				.214**	.195**	.188**	.164**	.156**	.138**	.135**	.133**
5.	Condoms mean respect					.200**	.191**	.183**	.173**	.161**	.158**	.165**
6.	Importance of sex						.083*	.069*	.068**	.056*	.054*	.055*
7.	HIV Susceptibility							.159**	.147**	.136**	.119**	.122**
8.	Injunctive Norm								.199**	.188**	.194**	.192**
9.	Equal Rights									.153**	.135**	.122**
10.	HIV Stigma										.104**	.098**
11.	HIV Infection Beliefs											-.096**
	R^2	.222	.255	.306	.349	.387	.394	.418	.451	.472	.482	.491
	ΔR^2	.222	.033	.051	.043	.038	.007	.024	.034	.021	.010	.009
	Model F	212.67	127.38	109.38	99.66	93.72	80.16	75.77	75.90	73.27	68.47	64.42

* $p \leq .05$; ** $p \leq .001$

correlations with consistent condom use and motivation for condom use across the sample ($n = 893$). As hypothesised, *MUC* was significantly correlated ($p \leq .001$) with each of the five condom *self-efficacy* items (*consistent condom use*, *correct condom use*, *condom use negotiation*, *refuse condom* and *access condoms*). *MUC* was significantly correlated ($p \leq .001$) with a further eight items (*condoms mean cheating*, *condoms mean respect*, *importance of sex*, *HIV susceptibility*, *injunctive norm*, *equal rights*, *HIV stigma* and *SES*). *HIV infection beliefs* and *educational achievement* were significantly correlated with *MUC* at the $p \leq .01$ level. Age was significantly correlated with *MUC* at the $p \leq .05$ level.

The significant correlates of *MUC* were entered into a sixteen-step, proximal-to-distal hierarchical multiple regression model from *self-efficacy: consistent condom use* to *SES* (see Table 3). We found that the three sociodemographic factors *age*, *educational achievement*, and *SES* were nonsignificant predictors of *MUC* and the beta-coefficients of *self-efficacy: refuse* and *self-efficacy: access* were not significant in the final regression equation.

Approximately half (49.1%) of the variance in *MUC* was explained using 11 independent variables. Three types of condom self-efficacy accounted for the majority (30.6%) of the overall variance with *self-efficacy: consistent condom use* accounting for two-thirds of this variance ($F_{\text{Change}[1,745]} = 212.67$, $p \leq .000$, $R^2_{\text{Change}} = .222$), *self-efficacy: correct condom use* accounting for 3% ($F_{\text{Change}[1,744]} = 32.96$, $p \leq$

.000, $R^2_{\text{Change}} = .033$) and *self-efficacy: negotiation* accounting for 5% ($F_{\text{Change}[1,743]} = 54.92$, $p \leq .000$, $R^2_{\text{Change}} = .051$). Two meaning of condom items contributed 4% each to the overall variance in *MUC* (*condoms mean cheating*, $F_{\text{Change}[1,742]} = 49.20$, $p \leq .000$, $R^2_{\text{Change}} = .043$; *condoms mean respect*, $F_{\text{Change}[1,741]} = 45.85$, $p \leq .000$, $R^2_{\text{Change}} = .038$). *Importance of sex* contributed almost 1% to the variance in *MUC* ($F_{\text{Change}[1,740]} = 7.97$, $p \leq .05$, $R^2_{\text{Change}} = .007$). Perceived *HIV susceptibility* accounted for 2% of the variance ($F_{\text{Change}[1,739]} = 30.38$, $p \leq .000$, $R^2_{\text{Change}} = .024$). Condom use *injunctive norm* explained 3% of the variance in *MUC* ($F_{\text{Change}[1,738]} = 30.38$, $p \leq .000$, $R^2_{\text{Change}} = .034$) and *equal rights* contributed 2% to the overall variance ($F_{\text{Change}[1,737]} = 29.12$, $p \leq .000$, $R^2_{\text{Change}} = .021$). Both *HIV stigma* ($F_{\text{Change}[1,736]} = 13.80$, $p \leq .000$, $R^2_{\text{Change}} = .010$) and *HIV infection beliefs* ($F_{\text{Change}[1,735]} = 12.86$, $p \leq .000$, $R^2_{\text{Change}} = .009$) contributed 1% to *MUC* variance explained. No multicollinearity problems were indicated as the variance inflation factor range across the 11 independent variables was 79–.96 (tolerance range 1.04–1.36).

Discussion

This study explored associations between reported condom use and a range of potentially modifiable cognitions, including cognitions correlated with condom use in previous studies and culture-specific beliefs. A demographically

representative sample of secondary school students in a region of South Africa that included rural schools was surveyed. Few such surveys have been conducted and the results are important for identification of change targets in condom promotion and HIV-prevention intervention in sub-Saharan Africa.

Our results suggest that the reported incidence of sexual activity amongst young people is lower than expected and compares favourably with studies that have reported 50% of South African youth being sexually active by 16 (Eaton et al., 2003). In our study, 40% of young people aged 17 or less reported that they had had sex with at least one person in their life. Encouragingly, more than two-thirds of young people in our sample who reported having had vaginal sex in the last six weeks reported 100% condom use. However, approximately one-third reported having unprotected vaginal sex at least once and a tenth reported zero condom use in the last six weeks of whom three-quarters were male. We did not find significant associations between age at sexual debut and consistency of condom use over the past six weeks but those with younger sexual debut reported more sexual partners in the last six weeks.

Motivation to use condoms was the strongest correlate of reported consistency to use condoms over the past six weeks. The belief that condoms imply sexual infidelity (“cheating”) and the belief that others approve of condom use were both correlated with condom use consistency but neither measure added to the variance explained once motivation to use condoms and age were included in the regression equation. Since age is immutable and this study was designed to identify modifiable cognitions, we focussed on identifying factors that impact on motivation to use condoms.

A series of measures have been included in social cognition models (such as the TPB) and used to predict condom use. These measures have included both scales and single-item measures. Measures such as self-efficacy, social norms, and attitudes, have been found to predict motivation to use condoms amongst South African secondary school students (Schaalma et al., 2009). We included similar measures in addition to culturally specific cognitions and were able to account for a relatively high level of variance in motivation to use condoms (Bryan et al., 2006). Our results show that self-efficacy, injunctive norms, and beliefs accounted for half of the variance in condom use motivation so endorsing targeting of these cognitions in interventions designed to promote motivation in South African schools.

All five measures of self-efficacy were significantly correlated with motivation to use condoms. Self-efficacy in relation to condom use negotiation, consistent condom use and correct condom use, collectively accounted for 31% of the variance in motivation to use condoms. However, consistent condom use accounted for two-thirds of the variance and this accords with other studies (Pulerwitz et al., 2000) in

which inconsistent condom users were more likely to report low condom self-efficacy and to be less able to negotiate condom use. This suggests that promoting consistent condom use across multiple partners is an important target for educational interventions.

Unlike Schaalma et al (2009), we did not find any significant correlation between motivation to use condoms and forced sex or gender and neither condom access nor SES were significant predictors of condom use motivation in our final model. However, we did find that local gender norms and cultural narratives about sex and condoms influenced young peoples’ motivation to use condoms. Condom use motivation could be predicted by taking into account social and peer norms about gender equality. An injunctive norm to use condoms and belief that boys and girls have equal rights to discuss what they want contributed 5% of the overall variance.

Our results support the finding that associating condoms with a serious and trusting relationship encourages non-use of condoms (Collins & Stadler, 2000; Jewkes et al., 2003; Leclerc-Madlala, 2002; MacPhail & Campbell, 2001). We found that associating condoms with cheating or respect contributed to the overall variance in motivation to use condoms. This finding suggests that future interventions should reinforce the message that protected vaginal sex is a way to show respect for a boyfriend/girlfriend and that suggesting condom use need not mean infidelity. In addition to educating young people about the right of women to be able to refuse sex, it is useful to educate about the right of both girls and boys to speak about what they want in a relationship.

Condom use motivation could be predicted by taking into account social and peer norms about gender equality and HIV beliefs such as perceived HIV risk and beliefs about HIV acquisition. We found that perceived reduction in risk of HIV through condom use and a number of beliefs, notably traditional beliefs about HIV acquisition and the right of boys and girls to talk about what they want in a relationship made a significant contribution to the overall variance in motivation to use condoms. This finding is similar to MacPhail and Campbell (2001) whose focus group study identified six factors that affected motivation to use condoms: the extent to which young people had internalised the threat of HIV infection and saw themselves as personally vulnerable, the influence of peer norms regarding sexual activity and condom use, availability of condoms locally, adult approval/disapproval of sex and condoms, power in heterosexual gendered relationships, and economic constraints limiting opportunities for young people locally.

In addition to building condom use self-efficacy our results suggest that it is important to reinforce the belief that HIV is principally contracted through sexual intercourse rather than through asexual contact with an HIV infected person or “supernatural” means, that other people use

condoms when they have sex and that condoms are an effective way to reduce the likelihood of contracting HIV. There are some young people for whom sex is important but they do not think it is necessary to use a condom every time they have sex to prevent HIV. The importance of condom use may depend on the context in which sexual intercourse occurs. For example, in South Africa when young people engage in “jolling” (dancing, drinking, going out and recreational sex) they are “just playing” and because it is “play” rather than serious relationship development they may not see any need for “serious” discussion of condom use (Collins & Stadler, 2000).

Knowing someone who had died of AIDS only motivates condom use if a young person thinks that they are at high risk of HIV (Pulerwitz et al., 2000). Our results suggest that some young people downplay their personal susceptibility to HIV, fail to (through choice and/or necessity) associate HIV with sexual intercourse and instead attribute HIV infection to asexual sources such as witchcraft, spirits or supernatural forces, mosquitoes, or touching someone who is HIV+. These findings are important in several ways. First, they suggest that there are particular beliefs that could be modified to increase motivation to use condoms. Second, they show how important it is to go beyond individual cognitions and include sociocultural cognitions. Third, they imply that social identity is important, not only in defining who one is and how one fits with age-appropriate norms for behavior but also for defining the “other,” particularly if HIV is associated with an “other” rather than oneself or one's social group (Joffe, 1996).

Overall the findings emphasise the appropriateness of targeting cognitions included in social cognition models that have been tested primarily with Western samples, such as self-efficacy for specific condom-relevant behaviors and normative beliefs. The results also emphasise the importance of beliefs about the meaning of condom use in relation to, for example, sexual fidelity and respect for one's partner. In addition, beliefs about HIV, about gender equality and about the importance of sex may be important determinants of condom use motivation that should be targeted in HIV-preventive interventions with young people in South Africa. Although the amount of variance attributed to culturally specific beliefs, particularly HIV Infection Beliefs, was small their contribution was significant over and above the contribution of standard sociocognitive factors. Therefore, it is important and necessary to include culturally specific beliefs when framing educational interventions to promote condom use amongst adolescents in the Limpopo region of South Africa. Furthermore although existing socio-cognitive models are highly predictive of behavior in Western contexts there is still scope to improve their overall predictive capacity. Our research suggests that this might be achieved by expanding existing models to include culturally specific beliefs (and the underlying values that shape these beliefs).

Some limitations of the research warrant caution in interpretation. Our extensive preparatory and pilot work indicated that there were items that we expected to correlate highly and form reliable scales but in this sample they did not. This led us to favour the use of single item measures that had been used in similar studies undertaken in South Africa and had good face validity following the pilot work stage. For example, some of the single item measures and scales that we used were derived from research conducted in other parts of South Africa where the Nguni language/culture (e.g., isiZulu, isiXhosa) was prevalent (Kalichman & Simbayi, 2004; Liddell et al., 2006, 2008) rather than the Sotho language/culture (eg sePedi, seSotho) (Ragnarsson et al., 2009) typical of Limpopo provinces. It also led us to accept a somewhat lower than ideal alpha coefficient for the six-item HIV infection belief scale ($\alpha = .66$) and the six-item Motivation to Use Condoms scale ($\alpha = .68$). Although the HIV Infection Belief Scale alpha coefficient was suboptimal it addresses a relative paucity of Sotho language/culture specific research whilst suggesting that with minor modification particular HIV Infection Beliefs that are commonly held across South Africa can be identified and measured using a simple scale.

This study relied on self-reported past sexual behavior. We found that sexual behavior was a sensitive topic not only amongst the young participants but also amongst teachers and researchers who administered the questionnaire, particularly those people who had a strong religious (Zionist) faith. It is possible that in some cases there was over-reporting amongst boys and girls for whom higher levels of sexual experience might be seen as socially desirable, for example, for some South African women having more than one boyfriend is a way to boost their social status and self-esteem (Jewkes & Morrell, 2010). Addressing the meaning and acceptability of multiple partners is important when it impacts on consistent condom use.

Our results show that it is important to develop measures of condom use motivation that are distinct from condom use self-efficacy, contain items that reflect different relationship contexts and acknowledge culturally and socially derived beliefs about illness and condom use (Abraham et al., 2011). This study has been instrumental in shaping the design and implementation of an educational intervention to promote safe sex behavior amongst Limpopo students. The degree to which these social cognitions and shared beliefs are modifiable is an empirical question that is currently being addressed in an analysis of preintervention and postintervention data.

Conclusion

Overall, those with greater confidence in their ability to use condoms consistently and correctly and those who believed they could discuss condom use with potential partners were more likely to intend to use condoms. Those who believed

condom use reduces HIV risk, that their friends approved of condom use, that condom use implied respect for a partner and that boys and girls have equal rights to speak about what they want in a relationship were also more likely to intend to use condoms. Unsurprisingly, those who believed that condom use implied sexual infidelity or that HIV could be acquired through touch or witchcraft were less likely to intend to use condoms.

Acknowledgments

This publication is based on data from a larger study that involved researchers from four African and four European universities. It is dedicated to Susan Ramatsea, research associate at the University of Limpopo who died tragically during the preparation of this paper. The title of the project is: “Promoting sexual and reproductive health among adolescents in southern and eastern Africa – mobilising schools,

parents and communities.” Acronym: PREPARE. The PREPARE study is funded by the EC Health research programme (under the 7th Framework Programme). Grant Agreement number: 241945. The partners and principal investigators include: University of Cape Town (Cathy Mathews), Muhimbili University College of Health Sciences (Sylvia Kaaya), University of Limpopo (Hans Onya), Makerere University (Anne Katahoire), Maastricht University (Hein de Vries), University of Exeter (Charles Abraham), University of Oslo (Knut-Inge Klepp), University of Bergen (Leif Edvard Aarø – coordinator). The work was partially funded by the UK National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care of the South West Peninsula (PenCLAHRC) but the views expressed in this paper are those of the authors and not necessarily those of NIHR or the UK Department of Health. For more information on PREPARE please visit <http://prepare.b.uib.no/>

References

- Aarø, L. E., & Flisher, A. J. (2012). Health behaviour in context. In B. Wold & O. Samdal (Eds.), *An Ecological Perspective on Health Promotion: Systems, Settings, and Social Processes*. Sharjah, UAE: Bentham Science Publishers.
- Ajzen, I., Madden, T. J. (1986). Prediction of goal-directed behaviour: Attitudes, intentions and perceived behavioural control. *Journal of Experimental Social Psychology*, 22, 453–474.
- Albarracín, D., Gillette, J. C., Earl, A. N., Glasman, L. R., Duranti, M. R., Ho, M. H. (2005). A test of major assumptions about behavior change: A comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychological Bulletin*, 131(6), 856–897.
- Arden, M., & Armitage, C. (2008). Predicting and explaining transtheoretical model stage transitions in relation to condom-carrying behaviour. *British Journal of Health Psychology*, 13(4), 719–735.
- Bandura, A. (1992). Exercise of personal agency through the self-efficacy mechanism. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action*. Washington: Hemisphere Publishing Corporation.
- Bandura, A. (2002). Social cognitive theory in a social context. *Applied Psychology*, 51, 269–290.
- Bryan, A., Kagee, A., & Broaddus, M.R. (2006). Condom use among South African adolescents: Developing and testing theoretical models of intentions and behavior. *AIDS and Behavior*, 10, 387–397.
- Collins, T., & Stadler, J. (2000). Love, passion and play: Sexual meaning among youth in the northern province of South Africa. *Anthropologie des sexualités*, 82–83, 325–337.
- Eaton, L., Flisher, A. J., & Aarø, L. E. (2003). Unsafe sexual behaviour in South African youth. *Social Science & Medicine*, 56(1), 149–165.
- Gibbons, F.X., Gerrard, M., & Lane, D.J. (2003). A social reaction model of adolescent health risk. In J. M. Suls & K. A. Wallston (Eds.), *Social Psychological Foundations of Health and Illness*. Oxford, UK: Blackwell.
- Harrison, A., Newell, M. L., Imrie, J., & Hoddinott, G. (2010). HIV prevention for South African youth: Which interventions work? A systematic review of current evidence. *BMC Public Health*, 26(10), 102.
- Henderson, M., Wight, D., Raab, G.M., Abraham, C., Parkes, A., Scott, S., et al. (2007). Impact of a theoretically based sex education programme (SHARE) delivered by teachers on NHS registered conceptions and terminations: Final results of cluster randomised trial. *BMJ*, 334, 133–136.
- Izugbara, C.O. (2005). The socio-cultural context of adolescents’ notions of sex and sexuality in rural south-eastern Nigeria. *Sexualities*, 8(5), 600–617.
- Jewkes, R.K., Levin, J.B., & Penn-Kekana, L.A. (2003). Gender inequalities, intimate partner violence and HIV preventative practices: Findings of a South African cross-sectional study. *Social Science & Medicine*, 56(1), 125–134.
- Jewkes, R., & Morrell, R. (2010). Gender and sexuality: Emerging perspectives from the heterosexual epidemic in South Africa and implications for HIV risk and prevention. *Journal of the International AIDS Society*, 13: 6
- Joffe, H. (1996). Social representations of AIDS: Towards encompassing issues of power. *Papers on Social Representations*, 4(1), 29–40.
- Abraham, C., Sheeran, P., & Henderson, M. (2011). Extending social cognition models of health behaviour. *Health Education Research*, 26(4), 624–637.
- Johnson, S., Bodenstein, M., & Winkler, G. (2011). Teaching about HIV and AIDS in Caribbean Secondary Schools. *Macmillan Education*, 2011.
- Kalichman, S.C., & Simbayi, L. (2004). Traditional beliefs about the cause of AIDS and AIDS-related stigma in South Africa. *AIDS Care*, 16(5), 572–580.
- Leclerc-Madlala S. (2002). Youth, HIV/AIDS and the importance of sexual cul-

- ture and context. *Social Dynamics*, 28(1), 20–41.
- Liddell, C., Barrett, L., & Bydawell, M. (2006). Indigenous beliefs and attitudes to AIDS precautions in a rural South African community: An empirical study. *Annals of Behavioral Medicine*, 32(3), 218–225.
- Liddell, C., Giles, M., & Rae, G. (2008). The culture of condoms: Culturally grounded variables and their association with attitudes to condoms. *Psychosomatic Medicine*, 70(4), 496–504.
- MacPhail, C., & Campbell, C. (2001). 'I think condoms are good but, aai, I hate those things': Condom use amongst adolescents and young people in a South African township. *Social Science & Medicine*, 52(11), 1613–1627.
- Maharaj, P., & Cleland, J. (2006). Condoms become the norm in the sexual culture of college students in Durban, South Africa. *Reproductive Health Matters*, 14(28), 104–112.
- Maticka-Tyndale, E. (2010). Sustainability of gains made in a primary school HIV prevention programme in Kenya into the secondary school years. *Journal of Adolescence* 33(4), 563–573.
- Maticka-Tyndale, E., Wildish, J., & Gichuru, M. (2007). Quasi-experimental evaluation of a national primary school HIV intervention in Kenya. *Evaluation and Program Planning*, 30, 172–186.
- Onya, H., Aarø, L.E., & Madu, S.N. (2009). Social outcome expectations regarding delayed sexual debut among adolescents in Mankweng, South Africa. *Scandinavian Journal of Public Health*, 37(Suppl 2), 92–100.
- Paul-Ebhohimhen, V.A., Poobalan, A., & van Teijlingen, E.R. (2008). A systematic review of school-based sexual health interventions to prevent STI/HIV in sub-Saharan Africa. *BMC Public Health*, 8, 4.
- Pettifor, A.E., Measham, D.M., Rees, H.V., & Padian, N.S. (2004). Sexual power and HIV risk, South Africa. *Emerging Infectious Diseases*, 10(11), 1996–2004.
- Pulerwitz, J., Gortmaker, S.L., & DeJong, W. (2000). Measuring relationship power in HIV/STD research. *Sex Roles*, 42(7/8), 637–660.
- Ragnarsson, A., Onya, H.E., & Aarø, L.E. (2009). Young people's understanding of HIV: A qualitative study among school students in Mankweng, South Africa. *Scandinavian Journal of Public Health*, 37(Suppl 2), 101–106.
- Rivis, A., & Sheeran P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology: Developmental, Learning, Personality, Social*, 22(3), 218–233.
- Ross, D.A., Dick, B., & Ferguson, J. (2006). *Preventing HIV/AIDS in young people: A systematic review of the evidence from developing countries*. Geneva: World Health Organization.
- Sayles, J.N., Pettifor, A., Wong, M.D., MacPhail, C., Lee, S.J., Hendriksen, E., et al. (2006). Factors associated with self-efficacy for condom use and sexual negotiation among South African youth. *Journal of Acquired Immune Deficiency Syndromes*, 43(2), 226–233.
- Schaalma, H., Aarø, L.E., Flisher, A.J., Mathews, C., Kaaya, S., Onya, H., et al. (2009). Correlates of condom use among Sub-Saharan African youth: The applicability of the theory of planned behaviour. *Scandinavian Journal of Public Health*, 37(Suppl 2), 87–91.
- Sheeran, P., & Abraham, C. (1994). Measurement of condom use in seventy-two studies of HIV-preventive behaviour; a critical review. *Patient Education and Counseling*, 24, 199–216.
- Sheeran, P., Abraham, C., & Orbell, S. (1999). Psychosocial correlates of heterosexual condom use: A meta-analysis. *Psychological Bulletin*, 125(1), 90–132.
- UNAIDS report on the global AIDS epidemic. (2010). Geneva: Joint United Nations Programme on HIV/AIDS (UNAIDS).
- UNESCO strategy for HIV and AIDS. (2011). Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO), Education Sector, Division of Education for Peace and Sustainable Development Section of Education and HIV & AIDS.
- van Empelen, P., & Kok, G. (2008). Action-specific cognitions of planned and preparatory behaviors of condom use among Dutch adolescents. *Archives of Sexual Behavior*, 37(4), 626–640.
- Wight, D., & Abraham, C. (2000). From psycho-social theory to sustainable classroom practice: Developing a research-based teacher-delivered sex education programme. *Health Education Research*, 15, 25–38.