

## Linking psychosocial factors to young South Africans' intention to use condoms: The moderating role of HIV/AIDS information

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### Abstract

**Purpose:** The present study examined the constructs of the theory of planned behaviour regarding their predictability of intentions to use a condom among Xhosa-speaking adolescents in Eastern Cape, South Africa, using HIV/AIDS information as a moderator.

**Design:** Quantitative data were collected from 196 adolescents in Eastern Cape, South Africa. A regression analysis was used to test the hypotheses.

**Results:** A regression analysis showed that attitude and perceived behavioural control were significantly related to the intention to use a condom, but subjective norm was not. However, due to the moderating effect of HIV/AIDS information, attitude, perceived behavioural control and subjective norm predicted intention to use a condom.

**Conclusion:** The findings show that HIV/AIDS information plays an important role in increasing the effect of the theory of planned behaviour on intention to use a condom. Thus, more emphasis should be on beliefs about the adverse effects of condom use, the ability to negotiate condom use, and the importance of other significant others in increasing awareness about HIV/AIDS in order to increase intention to use a condom.

**Key words:** Condom use; theory of planned behaviour; perceived behavioural control; HIV/AIDS.

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## Introduction

South Africa has one of the highest HIV infections rates in the world, with an estimated 6.3 million people living with the virus and 330,000 new infections and 200,000 deaths from AIDS-related illnesses in 2013 (UNAIDS Gap Report, 2014). The HIV/AIDS pandemic in South Africa accounts for 25% of the HIV infections in Sub-Saharan Africa (Shisana *et al.*, 2009), resulting in a poor labour supply and the South African government spending billions of dollars to run HIV/AIDS programmes and provide condoms (National Treasury, 2003; Vas, 2003).

Sexual transmission is the major infection route for the majority of HIV infections in South Africa (Shisana *et al.*, 2005), resulting in higher HIV prevalence rate among women than among men according to an HIV survey in 2012 (Shishana *et al.*, 2014). This could be because men claim to have multiple girlfriends (Bhana & Pattman, 2009), raising the prospect of a single man infecting many women. The infection rate is generally worrying for young South Africans, but more so for female youths, aged 15-24, where the infection rate is more than four times higher than the infection rate among males in the same age group (Human Science Research Council, 2012). Studies have shown that young girls between the ages of 15-24 are twice as likely as men and boys to be infected by HIV/AIDS (Bhana & Pattman, 2009), and black African females aged 20-34 years are said to have the highest incidence of HIV compared to other population groups (Shisana *et al.*, 2014).

A number of reasons have been reported for the disparity in infection rates between men and women. For example, women's biology has been cited because it is less possible for a man to contract HIV if he sleeps with an infected person as opposed to a woman due to the biological make-up of the female genitalia and its structure (Singh, 2003; Baiden & Rajulton, 2011). Poverty, the low status of women, and gender-based violence have also been cited as reasons for the disparity in HIV prevalence among men and women in South Africa (Hunter, 2005; Bhana & Pattman, 2009). Worse still is the risky behaviour of engaging in unprotected sexual activities with multiple partners by young people who are more likely not to use condoms (Moore & Rosenthal, 1993; Coggan, Disley, Patterson & Norton, 1997), and whose youthful exuberance may encourage them to experiment with dangerous sexual intercourse practices (Kelly & Parker, 2000; Eaton, Flisher & Aarø, 2003). Ideally, with these aforementioned facts about HIV in the South African context, a study aimed at helping to develop prevention strategies should focus on the general population. However, the vulnerability of women, especially young girls, is a cause for concern. Hence, this study will focus on young girls between the ages of 14 to 19.

Given the risky behaviour of the young people, appropriate behavioural change such as the use of condoms is required to prevent HIV infection. Promoting protective behaviour, in particular, condom use, to halt the spread of HIV has been a priority for public health interventions. Besides abstinence from sexual intercourse, condoms are regarded as one of the most effective means of preventing sexually transmitted diseases (Kalichman, Carey & Johnson, 1996). Hence, continuous condom use is emphasized as a means to reduce the risk of infection by HIV and other sexually transmitted diseases (Gavin *et al.*, 2009). However, despite condoms' effectiveness in preventing HIV, several studies have pointed to a myriad of reasons why it is not a preferable and acceptable means of HIV prevention for young people. For example, a study carried out in a township in South Africa indicates, among other factors, that young people do not like using condom because it reduces their sexual pleasure (MacPhail & Campbell, 2001; Eaton *et al.*, 2003). A similar study in the UK found the same, among other reasons (Williamson, Buston & Sweeting, 2009). Thus, in order to increase the rates of condom use among young girls in Eastern Cape, South Africa, it is important to understand the reasons some choose to use or not use condoms. In this regard, Fisher and Fisher (1992) recommended a study based on sound analytic theory to address the population vulnerable to HIV infection and examine the variables that might predict the intention to use a condom. In the next section, the theory informing this study will be discussed with respect to how its constructs predict the intention to use a condom when engaging in sexual intercourse.

## Theory of planned behaviour

In this study, the intention to use a condom when engaging in sexual intercourse will be examined with a theoretical model known as the theory of planned behaviour (TPB) in order to understand female adolescents' sexual risk behaviour in four semi-urban communities in the Eastern Cape Province, South Africa. According to the TPB, the intention to use condoms is indirectly influenced by three predictors: Attitudes towards the specific behaviour, subjective norms regarding the behaviour and perceived behavioural control over the behaviour (Reinecke, Schmidt & Ajzen, 1996).

Attitude towards behaviour refers to a person's behavioural beliefs about the consequences of performing the behaviour (Armitage & Conner, 2001), or a person's assessment of how favourable or unfavourable his/her behaviour would be (Yzer, 2012). For instance, attitudes towards condom use explain a person's perceptions about whether condoms decrease the associated sensation that accompanies sexual intercourse and/or whether a person acknowledges that condoms help to mitigate the risk of HIV infection.

Subjective norms refer to an individual's normative beliefs about whether specific referent persons or groups would approve of his/her participation in the behaviour. It refers to the social pressure an individual expects when performing the behaviour. In this case, respondents tend to include sexual partners such as husbands and wives as significant others in their decisions to use condoms. Other significant others include adolescents' parents, peer groups, and doctors in the community (Bosompra, 2001) as well as religious leaders such as pastors (Jemmott *et al.*, 2007). For example, a person may use condoms when knowing that his/her parents, friends, and sexual partners would approve his/her behaviour (Ajzen & Fishbein, 1980).

Perceived behavioural control refers to the ease or difficulty associated with the person's ability to perform a behaviour. Perrewe and Ganster (1989) described behavioural control as referring to the perceived ability to exert influence over one's situation. Thus, a person has positive behavioural control when he/she is able to influence the decision to use a condom in his/her relationship. Positive behavioural control toward condom use may be negative for most women in some societies due to the gender power imbalance, which leaves decisions about condom use solely in men's control (see Richard & van der Pligt, 1991; Hardeman, Pierro & Mannett, 1997; Eaton *et al.*, 2003). The addition of perceived behavioural control to the original theory of reasoned action (TRA) model is meant to reflect the effect of non-volitional behaviour in addition to volitional behaviours, i.e., attitude and subjective norms (Ajzen, 1991).

According to the TPB model, it is expected that the intention to perform a particular behaviour increases as the person's attitudes, subjective norms and perceived behavioural control become more positive (Ajzen, 1991). Intention is assumed to be the direct antecedent of condom-use behaviour. In sum, the TPB theorizes that if an intention is stable, the actual performance of behaviour is more likely (Armitage & Christian, 2003).

The behaviour of interest in the present study is the intention to use condoms in heterosexual intercourse by young girls between ages 14 and 19 in four semi-urban townships in the Eastern Cape Province, South Africa. The study tested the hypothesis that attitude, subjective norms, and perceived behavioural control would predict the intention to use condoms among young girls between the ages of 14-19. The TPB is generally successful in predicting intention to use a condom; however, the TPB constructs in many contexts still cannot account for a significant proportion of variance between intentions and behaviour. Previous studies have also indicated that there may be other variables that affect the predictability of TPB constructs and the intention to use condoms (see Bryan, Broadus & Akagee, 2006). Ajzen (1991), who developed the TPB model, did not rule out the addition of more variables to the model if the variables were shown to increase the TPB model's ability to predict intention towards condom use or any other desired behaviour. Hence, recent studies have been trying to identify a possible moderator or mediator variable that could influence the relationship between the TPB and intention to use condoms and which might contribute to the amount of the variance noted (Cooke & Sheeran, 2004).

Previous research among Sub-Saharan African adolescents has also stated that there may be additional predictors of intention such as HIV/AIDS information or other variables that could influence the TPB constructs (see Bryan *et al.*, 2006). It is argued that HIV/AIDS information can both serve as a predictor of the intention to use condoms and could have effect on the relationship between the TPB constructs and the intention to use condoms. The hypothesis tested in this study is that the possession of accurate information about HIV/AIDS will influence the three predictors (attitude, subjective norms and perceived behaviour control) of the intention to use condoms.

## HIV/AIDS information

A view that is common in the literature is that the provision of appropriate HIV information can influence behaviour change (Gallant & Maticka-Tyndale, 2004). Past studies have also indicated that communication that exposes adolescents to information about HIV is regarded as a necessary step towards its prevention (Klepp *et al.*, 1997; Shuey *et al.*, 1999).

Most adolescents are aware of the deadly consequences of HIV infection that in most cases will result in AIDS. However, there is a gap in the research with respect to information about how HIV is transmitted, its relation to AIDS, and the effectiveness and practical use of condoms in the prevention of infection (Bryan *et al.*, 2006). An earlier study by Madu and Peltzer (2003) described the gap as an HIV and condom use information deficit, which has negative consequence on condom use. Fisher, Fisher and Shuper (2009) found that there is a relationship between information and attitudes towards self-efficacy in the use of condoms in some populations. There is also support for the importance of HIV/AIDS information in a study of condom use among South African adolescents by Bryan *et al.* (2006); they found a significant correlation between HIV information and attitudes towards the intention to use condoms.

A communication survey across South Africa in 2009 by Johnson *et al.* (2010) found that HIV communication programmes promote attitudes that result in condom use and HIV testing but does not result in a reduction of multiple sexual partners. An evaluation of a youth programme referred to as LoveLife in South Africa—noted for its combination of multimedia, community outreach and support programmes—showed that inclusion of HIV information in the programme reduced the possibility of being infected with HIV significantly, and young people are more likely to state that they used condoms in their last sexual encounter consistently (Pettifor *et al.*, 2007). This confirms the effectiveness of HIV/AIDS educational campaigns as a strategies to influence people to practise safe sex, and it emphasizes the view that appropriate information influences HIV/AIDS preventive behaviour directly and indirectly via behavioural skills (Ajzen & Fishbein, 1980; Kalichman *et al.*, 2006; Ndebele, Kasese-Hara & Greyling, 2012). A meta-analysis conducted by Sheeran and colleagues (1999) states that previous studies have found that communication with a partner as an information exchange about the risk of sexually transmitted diseases is associated with safer sex (Noar, Morokoff, & Redding, 2001).

According to Hartell (2005), young people from poor backgrounds start having sexual experiences at a very early age as compared to their wealthier counterparts, and in most cases, they lack the necessary information and skills to protect themselves. This may be because they have little or no information about HIV/AIDS. In this respect, Fisher and Fisher (1992) emphasized that young people of school-going age are likely to be informed through intervention programmes that provide them with appropriate knowledge, influencing them to change unsafe sexual behaviour. Findings with respect to university students showed that HIV information predicts behavioural skills but not behaviour (Fisher *et al.*, 1994). In general, research is inconsistent with respect to the relationship between information and HIV/AIDS preventive behaviour (see Norris & Ford, 1991; Albarracin, Kumkale & Johnson, 2004; Johnson *et al.*, 2010; Ndebele *et al.*, 2012; Mpofo & Salawu, 2014). The intention of the present study is to provide more insight about the moderating effect of HIV/AIDS information because information will be used as a moderator of the three TPB constructs in this study.

This type of analysis may clarify whether the TPB is predictive for these categories of the population and especially whether the predictive power of attitude, subjective norms and perceived behavioural control increases with the addition of HIV/AIDS information as a moderator. This is necessary because studies have shown that a significant percentage of young South Africans have problems with understanding the nature of HIV, the mechanism of transmission, and the methods for prevention (Eaton *et al.*, 2003).

This study extends the scope of TPB and condom use further by adding HIV/AIDS information to the TPB constructs in order to find out if the amount of HIV/AIDS information influences other variables in the TPB model. Very few studies in the African context have added HIV/AIDS information to the TPB constructs to examine issues about condom use. The assumption is that the TPB will assist with the main thrust of this study, which is to find out why female adolescents use or resist using condoms in four semi-urban townships of the Eastern Cape Province, South Africa.

## Literature Review

Because HIV has no cure, scholars across the globe have been focusing on strategies to stem its spread. One effort that has gained considerable attention is to understand the behaviour surrounding decisions or intentions to use or not to use condoms. Several scholars have stated that the intention not to use a condom is linked to behaviours such as trust of sexual partners, the desire for emotional connection with sexual partners (Gebhardt, Kuyper & Greunsvan, 2003; Shernoff, 2005), and the desire for intimacy (Hart & Heimberg, 2005; Shernoff, 2005). Other motivations to use and not use condoms taken from samples of college students are a lack of ability to ensure condom use and the spontaneity of sexual experiences (Crosby *et al.*, 2008), which is captured in the TPB model as relating to perceived behavioural control. In other words, because sexual experiences occur without both parties giving much thought to it, the likelihood of not using a condom is high. Davis *et al.* (2014) noted that sexual experiences occur in this way because both parties are drunk and consequently lose their ability to consider the danger of having sex without a condom. Participants in Davis *et al.*'s (2014, 638) study described a moment where all that matters at that point is that "you just go for it" and "damn the consequences." Several other reasons cited by people for not using condoms were the perception of monogamy or steady relationships with one sexual partner over an extended period of time and the current use of alternative forms of birth control such as pregnancy prevention tablets (Reece *et al.*, 2010). In addition, some perceive that there is minimal threat or risk of contracting HIV/STI because the intended sexual partner looks healthy or appears decent in character (Davis *et al.*, 2014). Women whose use of condoms is for birth control would use condoms less when they do not have issues about falling pregnant (Bertrand *et al.*, 1991).

From the pros and cons perspective of condom use, Noar *et al.* (2001) argued that the perception that using condoms has more advantages as opposed to disadvantages is significantly related to condom use in young people. Hence, individuals whose views of condoms are negative resist using condoms with their partners (LaBrie *et al.*, 2008). This argument explains why several studies confirm resistance to condom use among young people. For example, a study of urban college students shows that 49% of women and 44% of men reported not using condoms at least once since the age of 16 due to their partners' influences (Smith, 2003), suggesting the failure to use condoms has its root in the partner's view of condom use. Generally, people's opinions about condom use are also a product of their opinions about the social problems that have increased the call for people to use condoms. In light of this, many researchers have sought to examine their participants' levels of information about HIV/AIDS, which in the case of the present study, is hypothesized to influence the TPB constructs and predict the intention to use condoms in the semi-urban township sample selected for this study.

The desire for sexual intercourse is described as the need to fit in with the prevailing in-group practice. In Lesch and Bembridge's (2006) study, participants indicated that it was necessary to have experience of sex in order for their friendships with their female friends to continue. This is consistent with Eaton *et al.*'s (2003) findings that young black South African men reported feeling pressurized by their male peers to prove their manliness. Researchers have

also documented the role of peer pressure in adolescents' motivations to engage in sexual intercourse (Campbell & McPhail, 2002).

Because Africa is a multicultural continent with different socio-cultural and economic settings, it is possible that findings in one country will not extrapolate to other countries in Africa. For example, two studies conducted in Ghana demonstrated that subjective norms predicted condom use intentions more than did attitudes (Lugoe & Rise, 1999; Bosompra, 2001). In contrast, in Jemmot *et al.* (2007), a multiple regression analysis revealed that subjective norms did not predict intentions in an adolescent population in South Africa. Studies conducted in Zimbabwe failed to find a significant association between social influences and the intention to use condoms (Wilson, Zenda & Lavelle, 1992). Thus, it is not clear whether the TPB will provide a sufficient explanation of intended and self-reported condom use.

## Method

### Context

This study was conducted in four semi-urban townships (Zwelitsha, Dimbaza, Phakamisa and Ginsberg Location) near Bhisho and King William's Town in the Eastern Cape Province, South Africa. The participants were 196 Xhosa-speaking Black adolescents, all females, aged 14 to 19. Levels of HIV in these villages are high, particularly among the younger population groups. There are also significant differences in the prevalence of HIV between the sexes, with young girls and middle-aged women showing higher infection rates as compared to men of the same age. These semi-urban townships were selected because annual surveys conducted among young people in schools in South Africa in the 2009-2010 period showed there were 45,276 pregnancies, with the Eastern Cape Province (the province in which the four semi-urban townships the participants are located) accounting for 8,420 of those pregnancies, indicating significant numbers of adolescents are having sex without using condoms. An unconfirmed report by the headmen of the communities also claimed there were hardly any households that had not lost one or two persons to HIV/AIDS, many of whom were young women. As HIV takes several years to develop into full-blown AIDS, most of the people who succumb to the disease might have been infected quite early in their lives.

Participants were eligible for the study if they met the following criteria: Between 14 and 19 years old; self-reported HIV-negative; not pregnant or wanting to become pregnant in the next 9 months, and willing to be available for the study. In addition, sex was defined to them as a consensual sexual experience in which a male's penis is inserted into a female's vagina. Participants also answered questions relating to their sexual behaviour in order to characterize the sample, including whether they had ever had sexual intercourse and whether they were ever forced to have sexual intercourse. They were asked whether they had sexual intercourse in the past three months and are still having sexual intercourse in order to qualify for the survey. Forced sexual intercourse was not included as a behaviour because forced sexual intercourse is not genuine and does not offer the possibility for deciding whether to use a condom or not.

### Procedure

The townships chairpersons, as well as the parents or guardians of the adolescents gave their consent for the study to be conducted. In addition, although some of the participants were still minors, they were informed of what the study entailed and told to feel free not to participate in the study or to request withdrawal at any time from the study. The chairpersons, parents or guardians, and participants were all informed that the study was anonymous, and this quickened consent for the study to take place in the townships. Participants were all given consent forms to sign in their various homes before their participation in the study was initiated. A total of 250 questionnaires were distributed, and 196 were returned, giving response rate of 78%. The questionnaires were handed to the participants and collected after they had been completed. This implied phoning and visiting participants to find out if their questionnaires were ready to be collected. Assistance for collecting data was provided by a team of four Xhosa-speaking research assistants, and they also helped some of the participants who wanted further explanations in their mother-tongue (Xhosa) with respect to the questionnaire. These few participants who wanted further explanations received the explanation they requested and they,

like the other participants, responded to the questionnaires in writing. The four research assistants have experience in working in the Magistrate Court as interpreters, and they had qualifications matching their interpreting jobs and previous experience as research assistants. The distribution and collection of the questionnaires started in September 2011 and ended in February 2012.

### **Focus groups**

The study included four focus-group interviews among representative samples from the four townships to identify the behavioural, normative, and control beliefs that were common among the population in the study and to discover what the questionnaire should address. The focus-group interviews involved a total of 40 Xhosa young girls from 14 to 19 years of age in the four semi-urban townships selected. The focus-group participants did not participate in completing the final questionnaires used in the study.

### **Measures**

An existing TPB questionnaire by Ajzen (2006) and Molla, Nordrehaug and Brehane (2007) was adopted. Questions about behavioural belief, normative belief, and control beliefs were subsumed under their respective variables and adapted. An HIV/AIDS information questionnaire developed by Carey and Schroder (2002) was adapted for use in the present research. All the measures were adapted based on an analysis of the findings from the focus-group interviews. The mean scores of each variable were calculated and used in the analysis. The higher the mean score of the scale, the less positive the response.

The intention to use a condom was measured with three items using the following response categories: (1) 'Very likely' (2) 'Likely' (3) 'Neutral' (4) 'Unlikely' (5) 'Very unlikely'. The items were the following: 'How likely is it that you will decide to use a condom if you have sex in the next 3 months?', 'I will try my best to use condoms if I have sex in the next 3 months', and 'I plan to use condoms if I have sex in the next 3 months.'

Attitude towards using a condom was measured by means of six statements using the following response categories: (1) 'Strongly agree' (2) 'Agree' (3) 'Neutral' (4) 'Disagree' (5) 'Strongly disagree'. The measures used with respect to attitude examined the perceived benefits and negatives of condom use. A sample of the items is, 'Sex feels just as good when a condom is used.'

The variable subjective norms were measured by participants rating of six statements regarding parents, boyfriend, friends, and significant others. Responses categories were as follows: (1) 'Completely true' (2) 'True' (3) 'Neutral' (4) 'Not true' (5) 'Completely false.' An example of the item is, 'My boyfriend would approve of me using condom in the next three months.'

Perceived behavioural control was measured by means of seven statements. Response categories to one of the seven statements were, (1) 'Very easy' (2) 'Easy' (3) 'Neither easy nor hard' (4) 'Hard' (5) 'Very hard'. An example of the statements used is, 'I am sure that I can use a condom when I have sex in next three months.' To six of the statements, response categories were the following: (1) 'Strongly agree' (2) 'Agree' (3) 'Neutral' (4) 'Disagree' (5) 'Strongly disagree.' An example of the statements used is, 'I can get my partner to use a condom, even if my partner doesn't want to.'

HIV information was measured using 18 items, with the following response categories: (1) 'Definitely true' (2) 'True' (3) 'Neutral' (4) 'Not true' (5) 'Definitely false.' An example of the statements the participants were asked to respond to is, 'A person can get HIV by sharing a glass of water with someone who has HIV.' The questionnaire focused on general facts about HIV/AIDS, including issues such as HIV transmission.

### **Data analysis**

The biographical details of the 196 participants who took part in the study were analysed using simple descriptive statistics as detailed in Table 1

**Table 1:**  
*Demographic characteristics of the participants*

Age	Frequency	Percent
14-16	112	52%
17-19	84	48%
Education		
Primary	58	29%
High school	68	35%
Undergraduate	70	36%

All statistical analyses were performed using SPSS 22. Descriptive statistics, including the means, frequency distributions, and percentages were calculated to indicate the sample in terms of socio-demographic characteristics. A simple linear regression analysis was used to test the predictive power of attitude, subjective norms, and perceived behavioural control with respect to the intention to use a condom. A hierarchical multiple regression analysis was used to test the moderating effect of HIV/AIDS information on the relationship between each of the TPB's variables and the intention to use a condom. All procedures were based on Baron and Kenny (1986) recommendations. In line with Howell's (2002) recommendation, all the independent variables were centralized by calculating the mean for each variable in order to reduce the potential effects of multicollinearity. The centred values were then used to calculate the interaction terms by multiplying each of the constructs of the TPB with HIV/AIDS information (e.g. attitude towards a condom use x HIV information). For the moderation analysis, each of the variables of the TPB (e.g. subjective norms and HIV/AIDS information) were entered in the first model, and the individual interaction term was entered in the second model with the dependent variable being the intention to use a condom.

A factor analysis was undertaken to extract the variables by using the principal axis factoring set at a cut-off point of .50. The process identified five factors with eigenvalues greater than one, and these five factors explained 85.38% of the variance. Equally, Bartlett's test for sphericity was significant ( $\chi^2$  value = 13257.524,  $p < 0.001$ ) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.944. The internal consistency of the items was supported with Cronbach's alpha reliability coefficients above the minimum level (0.70) recommended by Nunnally and Bernstein (1994). The Cronbach's  $\alpha$  for the three variables of TPB: attitude, subjective norms, and perceived behavioural control with respect to the intention to use a condom were 0.963, 0.949 and 0.978 respectively. The Cronbach's  $\alpha$  for HIV/AIDS information and intention to use a condom were 0.923 and 0.990 respectively. In addition, a correlation matrix shows that all the variables correlated significantly with each other except for the demographic variables. The correlations among the variables were above the recommended minimum of 0.3, and none was above 0.9. Hence, the question of multicollinearity was not an issue. Because the demographic variables were not statistically significant, they were excluded from the analysis. Table 2 shows the means, standard deviations, and correlations for all the variables.

**Table 2:**  
*Mean, standard deviations and correlations*

Variables	M	SD	1	2	3	4	5	6	7
1. Age	1.43	.49	1						
2. Education	2.06	.80	-.130	1					
3. Intention to use a condom	1.84	1.07	.045	.066	1				
4. Attitude towards condom	2.03	1.20	.070	.041	.550**	1			
5. Subjective norm	2.30	1.41	.066	-.014	.099	.161*	1		
6. Perceived control	2.33	1.38	.079	.102	.569**	.604**	.201**	1	
7. HIV information	2.13	1.29	.104	.103	.635**	.632**	.237**	.693**	1

Note: N = 196, \* Correlation is significant at the 0.05, \*\*. Correlation is significant at the 0.001 level (2-tailed).



## Results

### *Predicting the intention to use a condom with TPB*

The multiple regression analysis revealed that attitude and perceived behavioural control significantly predicted the intention to use condom, while subjective norms was not a significant predictor. The model accounted for 28.3% of the variance in intention to use a condom ( $R^2 = .392$ ,  $F = 41.183$ ,  $p < 0.0001$ ). The regression coefficients for each of the predictors are the following: attitude,  $B = 0.33$ ,  $t = 4.627$ ,  $p < 0.0001$ , subjective norms,  $B = -0.08$ ,  $t = -.509$ ,  $p < 0.61$  and perceived behavioural control,  $B = 0.28$ ,  $t = 5.292$ ,  $p < 0.0001$  (see Table 3).

**Table 3:**

*Multiple regression analysis detailing the relationships between intention to use a condom on attitude toward condom use, subjective norm, and perceived behavioural control*

Predictor	B	B	SE <sub>B</sub>	R <sup>2</sup>
				0.39****
Constant	0.62		0.19	
Attitude toward condom use	0.33***	0.33***	0.07	
Subjective norm	-0.25	-0.29	0.05	
Perceived behavioural control	0.34***	0.38***	0.06	

N = 196, \*\*p < .001, \*\*\*p < .0001.

### *Moderation: HIV/AIDS information*

Three separate hierarchical regressions were performed to determine whether the predictive power of TPB depends on the level of HIV/AIDS information. The potential effect of HIV/AIDS information was tested on each specific variable of TPB (attitude, subjective norms and perceived behavioural control), and the findings are explained below.

In the first model, attitude and HIV/AIDS information were entered in step one. The interaction term (that is, the products of attitude and HIV/AIDS information) was entered in step two. The first step was statistically significant with an  $R^2$  of 0.440 ( $F = 75.821$ ,  $p < 0.0001$ ). The second step was also statistically significant with an  $R^2$  change of 0.03 ( $F = 8.787$ ,  $p < 0.003$ ). The analyses are presented in Table 4.

**Table 4:**

*Moderated hierarchical regression predicting intention from attitude towards condom use and HIV/AIDS information*

Variables entered	R	R <sup>2</sup>	R <sup>2</sup> Change	F	B	B	SE	t
<b>Step 1</b>	0.66	0.44	0.43***	75.82***				
Constant					0.53		0.14	3.81**
Attitude towards condom					0.25	0.25	0.07	3.57**
HIV information					0.45	0.48	0.07	6.88**
<b>Step 2</b>	0.68	0.47	0.03**	8.79**				
Constant					-0.15		0.27	-0.58
Attitude towards condom					0.61	0.60	0.14	4.39**
HIV information					0.71	0.80	0.11	6.52**
Attitude × HIV information					-0.11	-0.59	0.04	-2.964*

Notes: N = 196, \*\*p < 0.005, \*\*\*p < 0.0001

The second model tested the effect of HIV/AIDS information on the subjective norms. The predictor variables (subjective norms and HIV/AIDS information) were entered in step one and the interaction term (subjective norms x HIV/AIDS information) was entered in step two. The first step was statistically significant with an  $R^2$  of 0.406 ( $F = 65.910$ ,  $p < 0.0001$ ). The second step was also statistically significant with an  $R^2$  change of 0.030 ( $F = 10.091$ ,  $p < 0.002$ ). The analyses are presented in Table 5.

**Table 5:**  
*Moderated hierarchical regression predicting intention from subjective norm and HIV/AIDS information*

Variables entered	R	$R^2$	$R^2$ Change	F	B	$\beta$	SE	t
<b>Step 1</b>	0.64	0.41	0.41***	65.91***				
Constant					0.84		0.18	4.72***
Subjective norms					-0.05	-0.06	0.05	-0.96
HIV information					0.61	0.65	0.05	11.34***
<b>Step 2</b>	0.66	0.44	0.03**	10.01**				
Constant					0.66		0.30	0.22
Subjective norms					0.19	0.22	0.09	2.14**
HIV information					1.02	1.08	0.14	7.32***
Subjective norm x HIV information					-0.12	-0.60	0.04	-3.18**

Notes: N = 196, \*\*p < 0.005, \*\*\*p < 0.0001

The third model tested the effect of HIV/AIDS information on perceived behavioural control. The predictor variables (perceived behavioural control and HIV/AIDS information) were entered in step one, and the interaction term (perceived behavioural control x HIV/AIDS information) was entered in step two. The first step was statistically significant with an  $R^2$  of 0.435 ( $F = 52.120$ ,  $p < 0.0001$ ). The second step was also statistically significant with an  $R^2$  change of 0.019 ( $F = 6.572$ ,  $p < 0.011$ ). The analyses are presented in Table 6.

**Table 6:**  
*Moderated hierarchical regression predicting intention from perceived behavioural control and HIV/AIDS information*

Variables entered	R	$R^2$	$R^2$ Change	F	B	$\beta$	SE	t
<b>Step 1</b>	0.66	0.44	0.44***	74.29***				
Constant					0.56		0.14	4.05***
Perceived behavioural control					0.22	0.25	0.07	3.31**
HIV information					0.44	0.46	0.07	6.17***
<b>Step 2</b>	0.67	0.46	0.02*	6.57*				
Constant					-0.06		0.28	-0.22
Perceived behavioural control					0.46	0.51	0.11	4.06***
HIV information					0.77	0.81	0.15	5.25***
Perceived behavioural control x HIV information					-0.10	-0.57	0.04	-2.56*

Notes: N = 196, \*p < 0.05, \*\*\*p < 0.001

To move beyond the demonstration of statistical significance detailed in the tables and results above towards the practical significance of the results, magnitude of effect sizes needed to be determined, especially in relation to the moderating variable in this study. Thus, Cohen's  $f^2$ —a measure of effect size (the magnitude of the effect of interest)—is used with multiple regression.  $R^2$ , defined as the proportion of variance in the criterion that can be accounted for by the predictors in combination, is an adequate index of effect size for multiple regression, but it is also possible to calculate Cohen's  $f^2$  for both regression models and interaction variables.

For calculating the effect size of the full-model that includes the predictor variable, the moderator variable (HIV information) and the interaction between these two variables, the formula is,

$$\text{Effect size} = \frac{R^2}{1 - R^2}$$

Using the values for  $R^2$  shown in Tables 4,5 and 6 to calculate Cohen's  $f^2$ , attitude full-model is 0.88 (a large effect size), subjective norms full-model is 0.79 (a large effect size), and perceived behavioural control full-model is 0.85 (a large effect size).

Cohen's  $f^2$  provides the proportion of systematic variance accounted for by the interaction relative to the unexplained variance in the criterion.

$$f^2 = \frac{r_{Y.AI}^2 - r_{Y.A}^2}{1 - r_{Y.AI}^2}$$

Using the  $R^2$  values shown in Tables 4,5 and 6 for calculating effect size of the interaction variables in each model, attitude x HIV information is 0.057 (= 0.06, a small to medium effect), subjective norms x HIV information is 0.054 (= 0.05, a small to medium effect), and perceived behavioural control x HIV information is 0.037 (= 0.04, a small to medium effect).

According to Cohen (1988), an  $f^2$  of .02 can be considered small, an  $f^2$  of .15 can be considered medium, and an  $f^2$  of .35 can be considered large. Because the effect sizes are higher than .02 and less than .15, the effective sizes are regarded as small to medium. Scholars have cautioned against arbitrary interpretation of effect sizes (Thompson, 2007) because small sizes could have real-world consequences (Rosenthal, 1994; Lakens, 2013) and no certainty for suggesting unimportant findings (Prentice & Miller, 1992). In the context of the issues examined in this study with respect to HIV/AIDS, a small to medium effect is regarded as having practical significance.

## Discussion

The aim of the study was to examine the predictive power of the TPB constructs on the intention to use a condom and whether HIV/AIDS information moderates the relationship between the TPB variables and the intention to use condoms among female adolescents between 14 and 19 years in the four semi-urban townships selected in the Eastern Cape Province, South Africa. To our knowledge, this is the first study that has examined the applicability of the TPB variables on intention to use condoms using HIV/AIDS information as moderator. It was expected that the findings would provide useful information for the development of HIV intervention and public health communication programmes in the communities examined and other communities with similar socio-economic characteristics. In this respect, the results of this study suggest that any future evaluation of the TPB model in the context of condom use among female adolescents needs to take into account the significant effects of HIV information on each of the TPB constructs.

The results in this study indicate that the condom use intentions of the participants are predicted by their attitudes to condoms and perceived behavioural control, but not by subjective normative influences of significant others such as their mothers, boyfriends, fathers, and friends. Although no similar study, to our knowledge, has been conducted that focused on female Xhosa-speaking adolescents of 14 to 19 years in the four semi-urban townships (Zwelitsha, Dimbaza, Phakamisa, and Ginsberg Location), the findings are consistent with previous findings that focused on participants from different communities and age groups in South Africa. For example, Jemmott *et al.*'s. (2007) study based on South Africans aged 10 to 16 demonstrated similar findings. Likewise, a meta-analysis conducted by Armitage and Connor (2001) showed that across 185 studies, subjective norms are a weaker predictor of intentions than are attitudes and perceived behavioural control.

With respect to the individual TPB construct's direct influence on the intention to use a condom, the findings of this study are consistent with the findings of Gredig, Nideroest and Parpan-Blaser (2006): The intention to use a condom is mainly determined by perceived behavioural control in the German-speaking part of Switzerland. The same is true with respect to attitude among male and female adolescents from Venda, South Africa (Boer & Mashamba, 2007), and in a comparative study of condom use predictors among students in the USA and South Africa by Heeren *et al.* (2007). Our findings suggest that TPB predictors of attitudes and perceived behavioural control are suitable for explaining condom use intentions of female adolescents in the four semi-urban townships in the Eastern Cape Province, South Africa.

In summary, the results indicate that female adolescents in this study who have positive attitudes towards condoms and who perceive that they could use condoms would be certain of their intentions to use condoms.

Studies conducted in other African countries also help to explain why subjective norms were found to be not significant in this study. For example, studies carried out in Zimbabwe failed to identify any statistically significant relationship between subjective norms and the intention to use condoms among Zimbabwean students (Wilson *et al.*, 1992), and intention to use condoms among these females was not related to social norms on condom use (Bogale Boer & Seydel, 2010). The same finding was reported in a recent study among college students in the USA (Asare, 2015).

The lack of a statistically significant effect for subjective norms on intention to use condoms may be attributed to the fact that participants regard sexual issues, as they apply to HIV decision-making, as an individual issue. It may also point to an element of assertiveness on the part of female adolescents about the issues concerning them. It is also worth noting that since the upsurge of HIV in South African communities, successive governments and non-profit organizations have made significant strides in projecting relevant information about HIV/AIDS to its citizens. Therefore, it may be speculated that because of availability of other sources of HIV/AIDS information, the participants in our study seemed confident of their independence to make decisions about condom use without being influenced or seeking advice from significant others. This may help to explain why HIV information was statistically significant as a moderator in the relationship between subjective norms and the intention to use condoms as explained below. Another possible reason is that in African culture, it is not considered appropriate to discuss sexual matters with parents, and adolescents may have little idea about the appropriate social norms for such discussion. Hence, it is likely that female adolescents do not see their parents as factor or an influence on their decisions about using condoms. The findings about subjective norms in this study are in disagreement with findings from previous studies (*see* Albarracin *et al.*, 2004; Lesch & Bembridge, 2006) that posited that teenagers tend to defer to what their peers would think of them and are thus influenced by normative pressure from their groups of friends. Future research will have to examine these TPB variables in other communities.

The second aim of this study was to investigate the interactive effect of HIV/AIDS information on the relationship between the three TPB constructs and intention to use condoms. As hypothesized, HIV/AIDS information has an interactive effect in the relationship between the three TPB constructs and the intention to use condoms. The findings in this regard are consistent with Albarracin *et al.*'s (2004) meta-analysis where information moderated social norms of individuals who enjoy higher social power, those with higher educational qualifications, and ethnic majorities as compare to individuals who are socially more disadvantaged. The importance of HIV/AIDS information is emphasized by Hardeman *et al.* (1997) who found in their study that information about HIV/AIDS did not predict intentions to practise safe sex but still went further to suggest that a certain level of information is necessary to take appropriate HIV preventive action.

As opposed to the direct relationship of subjective norms as a predictor of the intention to use condoms, the findings from this study indicate that the effect of subjective norms on the intention to use condoms is conditional upon levels of HIV information, indicating the importance

of not disregarding the influences of significant others over female adolescents' intentions to use condoms. The subjective norms measures used in this study examined, among others, the possible influences mothers, fathers, sisters, and boyfriends have over the participants' intentions to use condoms. Because mothers, fathers, and close acquaintances (characterized as the significant others of the participants) are still the primary means of information, especially to young ones and adolescents who are still welded to their parents' influences, the suggestion is that when participants' significant others are informed of the social and medical context of HIV, they may constitute an informed environment for influencing the subjective norms of the participants. This view is considered because many scholars (see Barbato, Graham & Perse, 2003) have suggested the way children see the world is significantly dependent on the nature of their communication with their parents. In addition, Haslett and Samter (1997) stated that the medium through which interpersonal communication and relations are formed is the family because, according to Waldron *et al.* (2014), parents play an important role by fostering relationships among family members and imparting knowledge, skills, and values to their children.

This study contributes to the body of literature by adding another perspective to the TPB. The TPB has been used to examine different segments of different population groups in different societies, and many studies have pointed to contexts that may influence its constructs with respect to the intention to use condoms. The study has taken note of the context in terms of HIV/AIDS information. Hence, the moderator effects on the TPB variables were tested by including interaction terms in the models. The results showed that at the level of both statistical significance and practical relevance, HIV information moderated the effects of each of the TPB variables on the intention to use condoms. As such, HIV information warrants being included in any future research associated with campaigns related to this area of health behaviour.

## Implications for HIV/AIDS interventions and HIV communication

In terms of interventions, the findings of this research suggest that providing female adolescents with HIV/AIDS information regarding condoms and safer sex practices would increase the predictability of their positive attitude towards condom use in terms of subjective norms and perceived behavioural control over condom use intentions. In line with Fishbein and Yzer's (2003) observation, a behaviour that is attitudinally driven in one population or culture may be normatively driven in another. The same argument applies to the consideration of perceived behavioural control. As such, Fishbein and Yzer (2003) recommend that in the process of developing communication to change intentions, it is necessary to first determine the extent to which intentions are under attitudinal, normative, or perceived behavioural control in the communities in question.

Given the items examined in attitude towards condom use is an independent variable and the intention to use condoms a dependent variable, HIV/AIDS intervention campaigns that are targeting adolescents should focus on messages that increases positive attitudinal behaviour with respect to condom use. Such messages should include the protective benefits of condom use, such as how they curtail the spread of HIV/AIDS, other sexually transmitted diseases, and unwanted pregnancies.

The findings showed that HIV information contributes a small to medium moderating effect on all the variables. In the context of this study, where the intention to use condoms is the dependent variable, any effort that contributes to the use of condoms should be acknowledged. In this light, if strategies are used to scale up the existing HIV/AIDS information, HIV intervention programmes will be better positioned to improve the state of condom use among female adolescents or youths.

Given the extent to which HIV/AIDS information interacted as a moderator of the effects of the TPB constructs, it appears that HIV communication training programmes aimed at increasing HIV information should increase positive female adolescents' attitudes, perceived behavioural control and subjective norms. Taken together, this will increase the possibility of

the participants and similar participants elsewhere to make informed judgements as they pertain to the three TPB constructs and the intention to use a condom.

Furthermore, intervention campaigns that are targeting female adolescents should focus on an approach that includes sexual partners as well as broader social networks in the community as a way of enhancing the provision of the relevant HIV/AIDS information.

The findings of the present study hold some promising outlooks for HIV/AIDS intervention and communication programmes, especially in relation to the female age groups studied. All that is required is to ensure that the findings are carefully pre-tested on the chosen population before the intervention programme is implemented (Fishbein, 2008). The results of this study suggest that it may be possible to predict intention to use condoms by using interventions designed to increase HIV/AIDS information. HIV programmes could make use of awareness initiatives that are designed to improve the knowledge of HIV/AIDS. In doing so, such programmes could provide information and options for decision making that can increase condom use.

### Limitations of the study

There are limitations to the study that suggest some caution when drawing conclusions from the findings. The participants consisted of South African young girls in four semi-urban townships in the Eastern Cape Province, South Africa. Hence, the findings may not be generalisable to all young girls in the same age group across cities and villages in South Africa. However, the study offers an opportunity for a similar study with a view to finding out if the results can be replicated or if the TPB constructs predict the intention of condom-use behaviour when moderated with HIV/AIDS information in similar semi-rural townships with young girls in cities and towns. The use of self-reports, which may be subject to response bias, is also a limitation. Many scholars are critical of this approach (see Jemmott *et al.*, 1999). Scholars indicate that self-reports are, to some extent, unintentionally or intentionally inaccurate and may lead to socially desirable answers (McAuliffe, Difranceisco & Reed, 2007). In this respect, there were several situations where research assistants had to go over the questions with the respondents to explain what the questions meant, and this must have added bias to some extent. In addition, the participants might have underreported or over-reported about certain aspects about their unsafe sexual behaviour, and future research might include other measures such as the short version of Social Desirability Scale to mitigate self-response bias or intentional inaccuracies.

It should be noted that the intention to use condoms may change over time. Hence, similar studies of this nature should be prospective or longitudinal to see if the intention as predicted by the TPB constructs is transient or sustained over time.

It is important to point out that there was a considerable sample size (196 participants) with a response rate of 78% in this study. This indicates a representative sample of the study population (Xhosa-speaking females ages 14 and 19 years). The findings, therefore, make a valuable contribution to informing health promotion programmes that are aimed at reducing the incidence of HIV infection in this group of the female adolescent population.

The findings are important because the questionnaire used was based on valid and reliable tools that have been used previously with this type of study population. The modifications made to the original tools were informed by well-sized focus groups from the study population. A strong point of the study is that the factor analysis results showed that items loaded strongly onto the five factors used in the analysis, and there was excellent internal reliability of the scales for each of the constructs as demonstrated by their Cronbach alphas. Added to this, the fact that aspects of the findings are consistent with others' findings in the literature also suggests some degree of reliability and validity. Hence, the study warrants consideration in future health promotion aimed at encouraging condom use among the female adolescent participants and similar female adolescent populations elsewhere with the same socio-cultural and economic backgrounds.

## Conclusion

In conclusion, this study suggests that the TPB can help with understanding some vital psychosocial requirements of the intention to use a condom. This applies, as the findings have shown, to a need to understand the psychosocial determinants of intention to use condoms beyond the TPB variables. In light of this, the present study has identified HIV/AIDS information as a moderator of the effects of the TPB constructs on the intention to use condoms. The inclusion of HIV/AIDS information in the TPB model therefore offers a potentially effective approach for scholars and practitioners who would like to develop health promotion or intervention programmes to scale up the intention to use condoms, which in turn, would reduce the incidence of HIV among female adolescents.

## References

- Ajzen, I. (1991). The Theory of Planned Behaviour. *Organizational Behaviour and Human Decision Processes*, 50, 179-211.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, NJ: Prentice-Hall.
- Ajzen, I. (2006). *Constructing a TPB questionnaire: Conceptual and methodological considerations*. <http://www.unix.oit.umass.edur/ajzen/tpb.html>. Accessed 3 February 2016.
- Albarracin, D., Kumkale, G.T., & Johnson, B.T. (2004). Influences of social power and normative support on condom use decisions: A research synthesis. *AIDS CARE*, 16, 700-723.
- Armitage, J.A., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40, 471-499.
- Armitage, C. J., & Christian, J. (2003). From attitudes to behaviours: Basic and applied research on the theory of planned behaviour. *Current Psychology: Developmental, Learning, Personality, Social*, 22, 187-195.
- Asare, M. (2015). Using the theory of planned behaviour to determine the condom use behaviour among college students. *American Journal Health Studies*, 30, 43-50.
- Barbato, C. A., Graham, E. E., & Perse, E. M. (2003). Communicating in the family: An examination of the relationship of family communication climate and interpersonal communication motives. *Journal of Family Communication*, 3, 123-148.
- Baiden, J., & Rajulton, R. (2011). Factors influencing condom use among women in Ghana: An HIV/AIDS perspective, *SAHARA-J: Journal of Social Aspects of HIV/AIDS*, 8, 46-54.
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Bertrand, J.T., Makani, B., Hassig, S.E., Niwembo, K.L., Djunghu, B., Muanda, M., & Chirhamolekwa, C. (1991). AIDS-related knowledge, sexual behaviour and condom use among men and women in Kinshasa, Zaire. *American Journal of Public Health*, 81, 53- 58.
- Bhana, D., & Pattman, R. (2009). Researching South African youth, gender and sexuality within the context of HIV/AIDS. *Development*, 52, 68-74.
- Boer, H. & Mashamba, M.T. (2007) Gender power imbalance and differential psychosocial correlates of intended condom use among male and female adolescents from Venda, South Africa. *British Journal of Health Psychology*, 12, 51-63.
- Bogale, G.W., Boer, H., & Seydel, E.R. (2010). Condom use among low-literate, rural females in Ethiopia: The role of vulnerability to HIV infection, condom attitude, and self-efficacy. *AIDS Care*, 22, 851-857.

- Bosompra, K. (2001). Determinants of condom use intentions of university students in Ghana: An application of the theory of reasoned action. *Social Science and Medicine*, 52, 1057-1069.
- Bryan, A., Kagee, A., & Broaddus, M.R. (2006). Condom use among South African adolescents: Developing and testing theoretical models of intentions and behaviour. *AIDS Behaviour*, 10, 387-397.
- Campbell, C., & MacPhail, C. (2002). Peer education, gender and the development of critical consciousness: Participatory HIV prevention by South African youth. *Social Science and Medicine*, 55, 331-345.
- Carey, M. P., & Schroder, K. E. E. (2002). Development and psychometric evaluation of the brief HIV knowledge questionnaire (HIV-KQ-18). *AIDS Education and Prevention*, 14, 174-184.
- Coggan, C., Disley, B., Patterson, P., & Norton, R. (1997). Risk-taking behaviours in a sample of New Zealand adolescents. *Australian and New Zealand Journal of Public Health*, 21, 455-461.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd Ed.). Hillsdale: Lawrence Erlbaum.
- Cooke, R. J., & Sheeran, P. (2004). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology*, 22, 264-280.
- Crosby, R., Milhausen, R., Yarber, W. L., Sanders, S. A., & Graham, C. A. (2008). Condom 'turn offs' among adults: An exploratory study. *International Journal of STD and AIDS*, 19, 590-594.
- Davis, K.C., Kajumulo, K.F., Norris, J., Schraufnagel, T.J., Gilmore, A.K., & George, W.H. (2014). A qualitative examination of men's condom use attitudes and resistance: 'It's just part of the game'. *Archives of Sexual Behaviour*, 43, 631-643.
- Eaton, L., Flisher, A.J., & Aaro, L.E. (2003). Unsafe sexual behaviour in South African youth. *Social Science and Medicine*, 56, 149-165.
- Fishbein, M. (2008). A reasoned action approach to health promotion. *Medical Decision Making*, 28, 834-844.
- Fishbein, M., & Yzer, M.C. (2003). Using theory to design effective health behaviour interventions. *Communication Theory*, 13, 164-183.
- Fisher, J.D., & Fisher, W.A. (1992). Changing AIDS-risk behaviour. *Psychological Bulletin*, 111, 455-474.
- Fisher, J. D., Fisher, W. A., Williams, S. S., Malloy, T. E. (1994). Empirical tests of an information behavioural skills model of AIDS preventive behaviour with gay men and heterosexual university students. *Health Psychology*, 3, 238-250.
- Fisher, J. D., Fisher, W. A., & Shuper, P. A. (2009). The information-motivation-behavioural skills model of HIV preventive behaviour. In R. DiClemente, R. Crosby, & M. Kegler (Eds.), *Emerging theories in health promotion practice and research model of HIV preventive behaviour* (2nd ed., pp. 22-63). San Francisco, CA: Jossey Bass Publishers.
- Gallant, M., & Maticka-Tyndale, E. (2004). School-based HIV prevention programmes for African youth. *Social Science and Medicine*, 58, 1337-1351.
- Gavin, L., Mackay, A.P., Brown, K., Harrier, S., Ventura, S.J., Kann, L., Ryan, G. (2009). Sexual and reproductive health of persons aged 10-24 years—United States, 2002-2007. *Morbidity and Mortality Weekly Report Surveillance Summaries*, 58,1-58. <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5806a1.htm>. Accessed 1 June 2011.
- Gebhardt, W.A., Kuyper, L., & Greunsvan, G. (2003). Need for intimacy in relationships and motives for sex as determinants of adolescent condom use. *Journal of Adolescent Health*, 33, 154-164.
- Gredig, D., Nideroest, S., & Parpan-Blaser, A. (2006). HIV-protection through condom use: Testing the theory of planned behaviour in a community sample of heterosexual men in a high-income country. *Psychology and Health*, 21, 541-555.
- Haslett, B. B., & Samter, W. (1997). *Children communicating: The first 5 years*. Mahwah, NJ: Lawrence Erlbaum Associates.



- Hardeman, A.P., Pierro, A., & Mannetti, L. (1997). Determinants of intentions to practise safe sex among 16-25-year-olds. *Journal of Community and Applied Social Psychology*, 7, 345-360.
- Hart, T., & Heimberg, R. (2005). Social anxiety as a risk factor for unprotected intercourse among gay and bisexual male youth. *AIDS and Behaviour*, 9, 505-512.
- Hartell, C. G. (2005). HIV/AIDS in South Africa: A review of sexual behaviour among adolescents, University of Pretoria. [http://www.findarticles.com/p/articles/mi\\_m2248/is\\_157\\_40/ai\\_n13774352](http://www.findarticles.com/p/articles/mi_m2248/is_157_40/ai_n13774352). Accessed 3 April 2010
- Howell, D.C. (2002). *Statistical methods for psychology* (5th ed.). Belmont CA: Duxbury.
- Human Sciences Research Council (HSRC). (2012). South African national prevalence, incidence, and behaviour survey, 2012. <http://www.hsrc.ac.za/en/research-outputs/view/6871>. Accessed 10 February 2016.
- Hunter, M. (2005). Cultural politics and masculinities: Multiple partners in historical perspective in KwaZulu-Natal. *Culture, Health and Sexuality*, 7, 389-403.
- Jemmott, J.B., Jemmott, L.S., Fong, G.T., & McCaffree, K. (1999). Reducing HIV risk-associated sexual behaviour among African American adolescents: Testing the generality of intervention effects. *American Journal of Community Psychology*, 27, 161-187.
- Jemmott, J.B., Heeren, G.A., Ngwane, Z., Hewitt, N., Jemmott, L.S., Shell, R., & O'Leary, A.O. (2007). Theory of planned behaviour predictors of intention to use condoms among Xhosa adolescents in South Africa. *AIDS Care*, 19, 677-684.
- Johnson, L., Kincaid, L., Laurence, S., Chikwava, F., Delate, R., & Mahlasela, L. (2010). Second national HIV communication survey 2009: Findings from Eastern Cape Province, Pretoria: JHHESA.
- Kalichman, S. C., Carey, M. P., & Johnson, B. T. (1996). Prevention of sexually transmitted HIV infection: Meta-analytic review and critique of the theory-based intervention outcome literature. *Annals of Behavioural Medicine*, 18, 6-15.
- Kalichman, S.C., Simbayi, L.C., Cain, D., Jooste, S., Skinner, D., & Cherry, C. (2006). Generalising a model of health behaviour change and AIDS stigma for use with sexually transmitted infection clinic patients in Cape Town, South Africa. *AIDS Care*, 18, 178-82.
- Kelly, K., & Parker, W. (2000). Communities of practice: Contextual mediators of youth response to HIV/AIDS. Beyond Awareness Campaign Report. Pretoria: Department of Health.
- Klepp, K-I., Ndeki, S., Leshabari, M. T., Hannan, P. J., & Lyimo, B. A. (1997). AIDS education in Tanzania: Promoting risk reduction among primary school children. *American Journal of Public Health*, 87, 1931-1936.
- LaBrie, J. W., Pedersen, E. R., Thompson, A. D., & Earleywine, M. (2008). A brief decisional balance intervention increases motivation and behaviour regarding condom use in high-risk heterosexual college men. *Archives of Sexual Behaviour*, 37, 330-339.
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for *t*-tests and ANOVAs. *Frontiers in Psychology*, 4, 1-12.
- Lesch, E., & Brembridge, C. (2006). Safe sex and constructions of young male sexuality in one semi-rural Western Cape community. *South African Review of Sociology*, 37, 128-142.
- Lugoe, W., & Rise, J. (1999). Predicting intended condom use among Tanzanian students using the theory of planned behaviour. *Journal of Health Psychology*, 4, 497-506.
- MacPhail, C., & Campbell, C. (2001). 'I think condoms are good but, aai, I hate those things': Condom use among adolescents and young people in a Southern African township. *Social Science and Medicine*, 52, 1613-1627.
- Madu, S. N., & Peltzer, K. (2003). The factor structure of condom attitudes among black South African university students. *Social Behaviour and Personality*, 31, 265-274.

- McAuliffe, T.L., Difranceisco, W., & Reed, B.R. (2007). Effects of a question format and collection made on the accuracy of retrospective surveys of health risk behaviour: A comparison with daily sexual activity diaries. *Health Psychology, 26*, 60-67.
- Molla, A., Strøm, A. N., & Brehane, Y. (2007). Applicability of the theory of planned behaviour to intended and self-reported condom use in a rural Ethiopian population. *AIDS Care, 19*, 425-431.
- Moore, S., & Rosenthal, D. (1993). *Sexuality in adolescence*. New York: Routledge.
- Mpofu, N., & Salawu, A. (2014). HIV/AIDS in South Africa: A reflection on the experiences of female High School Students in Amathole District in the Eastern Cape. *Journal of Social Development in Africa, 29*, 7-32.
- National Treasury. (2003). Budget review. Pretoria: National Treasury.
- Ndebele, M., Kasese-Hara, M., & Greyling, M. (2012). Application of the information, motivation and behavioural skills model for targeting HIV risk behaviour amongst adolescent learners in South Africa. *SAHARA-J: Journal of Social Aspects of HIV/AIDS, 9*, 37-47.
- Noar, S. M., Morokoff, P. J., & Redding, C. A. (2001). An examination of transtheoretical predictors of condom use in late-adolescent heterosexual men. *Journal of Applied Biobehavioural Research, 6*, 1-26.
- Norris, A.E., & Ford, K. (1991). AIDS risk behaviours of minority youth living in Detroit. *American Journal of Preventive Medicine, 7*, 416-421.
- Nunnally, J.C., & Bernstein, I. H. (1994). *Psychometric theory*. (3<sup>rd</sup> ed). New York: McGraw Hill.
- O'Leary, A., Goodhart, F., Jemmott, L.S., & Boccher-Lattimore, D. (1992). Predictors of safer sex on the college campus: A social cognitive theory analysis. *Journal of American College Health, 40*, 254-64.
- Perrewe, P.L., & Ganster, D.C. 1989. The impact of job demand and behavioural control on experienced job stress. *Journal of Organizational Behaviour, 10*, 213-229.
- Pettifor, A.E., MacPhail, C., Bertozzi, S., & Rees, H.V. (2007). Challenge of evaluating a national HIV prevention programme: The case of LoveLife, South Africa. *Sexually Transmitted Infections, 83*, 170-174.
- Prentice, D. A., & Miller, D. T. (1992). When small effects are impressive. *Psychological Bulletin, 112*, 160-164.
- Reece, M., Herbenick, D., Schick, V., Sanders, S.A., Dodge, B., & Fortenberry, J.D. (2010). Condom use rates in a national probability sample of males and females ages 14 to 19 in the United States. *The Journal of Sexual Medicine, 7*, 266-276.
- Reinecke, J., Schmidt, P., & Ajzen, I. (1996). Application of the theory of planned behaviour to adolescents' condom use: A panel study. *Journal of Applied Social Psychology, 26*, 749-772.
- Richard, R., & van der Pligt, J. (1991). Factors affecting condom use among adolescents. *Journal of Community and Applied Social Psychology, 1*, 105-116.
- Shernoff, M. (2005). Condomless sex: Considerations for psychotherapy with individual gay men and male couples having unsafe sex. *Journal of Gay and Lesbian Psychotherapy, 9*, 149-169.
- Shisana, O., Rehle, T., Simbayi, L.C., Parker, W., Zuma, K., Bhana, A., Pillay, V. (2005). *South African national HIV prevalence, incidence, behaviour and communication survey*. Cape Town: HSRC Press.
- Shisana, O., Rehle, T., Simabayi, L.C., Zuma, K., Jooste, S., Pillay-van-Wyk, V., ... the SABSSM III Implementation Team. (2009). *South African national HIV prevalence, incidence, behaviour and communication survey 2008: A turning tide among teenagers?* Cape Town: HSRC Press.
- Shisana, O., Rehle, T., Simbayi, L.C., Zuma, K., Jooste, S., Zungu, N., ... Onoya, D. (2014). *South African National HIV Prevalence, Incidence and Behaviour Survey, 2012*. Cape Town, HSRC Press.
- Shuey, D. A., Babishangire, B. B., Omiat, S., & Bangarukayo, H. (1999). Increased sexual abstinence among in-school adolescents as a result of school health education in Soroti District, Uganda. *Health Education Research, 14*, 411-419.

- Singh, S. (2003). Study of the effect of information, motivation and behavioural skills (IMB) intervention in changing AIDS risk behaviour in female university students. *AIDS Care*, 15, 71-70.
- Smith, L. A. (2003). Partner influence on non-condom use: Gender and ethnic differences. *Journal of Sex Research*, 40, 346-350.
- Thompson, B. (2007). Effect sizes, confidence intervals, and confidence intervals for effect sizes. *Psychology in the Schools*, 44, 423-432.
- UNAIDS Gap Report (2014).  
[http://www.unaids.org/sites/default/files/media\\_asset/UNAIDS\\_Gap\\_report\\_en.pdf](http://www.unaids.org/sites/default/files/media_asset/UNAIDS_Gap_report_en.pdf). Accessed 4 June 2015.
- Vas, J. (2003). The impact of HIV/AIDS.  
<https://www.gtac.gov.za/Research%20Repository/The%20Impact%20of%20HIV%20and%20AIDS.pdf>. 30 June 2016.
- Waldron, V. R., Kloeber, D., Goman, C., Piemonte, N., & Danaher, J. (2014). How parents communicate right and wrong: A study of memorable moral messages recalled by emerging adults. *Journal of Family Communication*, 14, 374-397.
- Williamson, L.M., Buston, K., & Sweeting, H. (2009). Young women and limits to the normalisation of condom use: A qualitative study. *AIDS Care*, 21, 561-566.
- Wilson, D., Zenda, A., McMaster, J., & Lavelle, S. (1992). Factors predicting Zimbabwean students' intentions to use condoms. *Psychology and Health*, 7, 99-114.
- Yzer, M. (2012). The Integrative model of behaviour prediction as a tool for designing health messages. In H. Cho (Ed.), *Health communication message design: Theory and practice* (pp. 21-40). London: Sage Publications.