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How does being a student in a tertiary educational institution influence condom use in the Western Cape?

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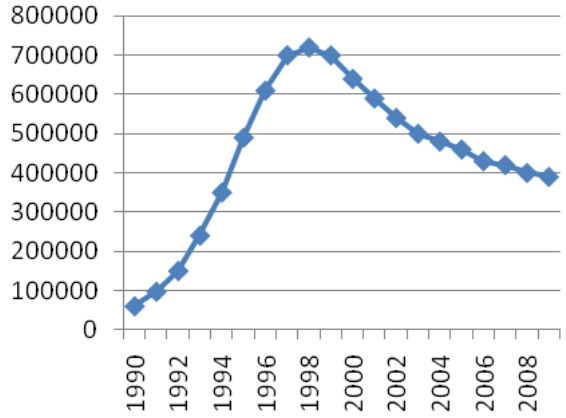
Abstract

This paper explores whether being a student in a tertiary educational institution influences condom use. The data set used to conduct this analysis is wave 3 of the Cape Area Panel Survey, conducted on 4,750 young adults in the Cape Town Metropolitan area. The sample was restricted to only include respondents between (and including) the age of 17 and 26 who were sexually active. Condom use at last sex is the dependent variable in a series of logistic models. Being a student at a tertiary educational institution increases the odds of using a condom, however the odds of condom use decrease slightly with every variable we add relating to knowledge of HIV and proxies for cognitive capacity. When all of the confounding factors contributing to the effect of being a student are controlled for we find that students are 1.5 times more likely to use a condom than non-students. African women are the driving force of this result as the 'student' variable becomes insignificant for males and non-Africans when the sample is restricted by age and gender.

Introduction

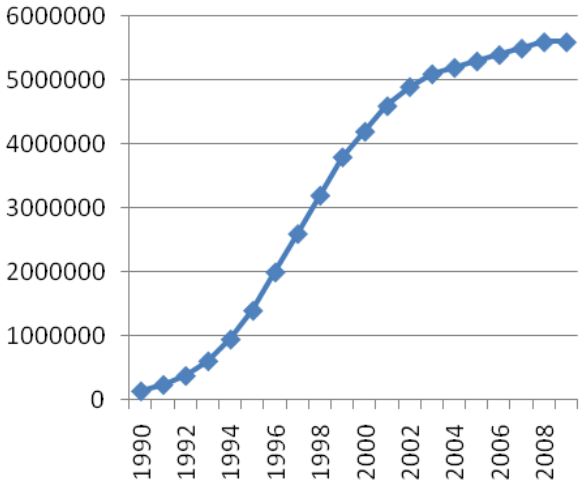
According to the 2010 UNAIDS Global Report (2010: 28), South Africa has the largest HIV epidemic in the world, with an estimated 5.6 million people living with HIV in 2009. This however does not mean that South Africa is losing the battle against HIV/AIDS. Between 2001 and 2009, the incidence of HIV infection declined by more than 25% in 22 Sub-Saharan Africa countries with South Africa being one of these countries (UNAIDS, 2010: 8). This decline in HIV incidence is reflected in HIV modelling by UNIAIDS. Figure 1, shows that every year since about 1998 the number of new HIV infections in South Africa has decreased. Figure 2 shows that this has been accompanied by a stabilisation of HIV prevalence rates.

Figure 1: Annual new HIV infections for all age groups in South Africa



Source: Data from UNAIDS (UNAIDS Estimates, 2010)

Figure 2: People living with HIV in South Africa



Source: Data from UNAIDS (UNAIDS Estimates, 2010)

Recent trends amongst young people suggest that this trend is likely to continue. Annual HIV incidence amongst 18-year olds decreased from 1.8% in 2005 to 0.8% in 2008, and the HIV incidence amongst females aged 15 to 24 decreased from 5.5% in 2005 to 2.2% in 2008 (UNAIDS, 2010: 28).

One possible contributing factor to the decrease in new infections could be an increase in safe sexual practices. According to data from the Human Science Research Council (Shisana, et al., 2009: 46), condom use, amongst South Africans between the ages of 15 and 49, increased from 31% in 2002 to 64.8% in 2008.[1] Condoms are one of the most popular choices of contraceptive as they offer protection against both pregnancy and disease, they are available free of charge, and they are distributed in many public buildings. South Africa's progress report for 2010 to UNAIDS (RSA 2010: 14) states that approximately 400 million condoms are distributed annually throughout the country.

According to a South African National HIV Survey, 8.7% of people between the ages of 15 and 24 were living with HIV/AIDS in 2008 (Shisana, et al., 2009: 34). Since the majority of university students' fall within this age bracket, one might expect university students to exhibit similar statistics. This is not so, according to research by HESA (2008: xxiv): students across the country have a prevalence rate of 3.4%; less than half the national rate for the same age group. This suggests that university students are at a substantially lower risk of contracting HIV than non-students of the same age.

Is this because university students are more likely than other people of similar age to use condoms? Or is it that people at university happen to have lower HIV infection rates, perhaps due to factors such as their family backgrounds, cognitive capacity an knowledge of HIV, and that when at university, they engage in similarly unsafe sexual practices, but are less at risk in practice because their fellow students are less likely to be infected? Qualitative research amongst white university students points to a student culture of sexual experimentation, multiple partnering and sexual risk taking that is undistinguishable from the rest of the population (Marcus, 2002). If this is actually the case, then we would expect to find no difference in condom use between university students and other young adults.

This paper explores whether simply being a student in a tertiary educational institution makes it more or less likely that a young adult will use a condom at last sex. There are many potentially confounding factors contributing to the effect of being a student at a tertiary institution on condom use: people attending university may have advantages relating to cognitive capacity; their home

[1] These statistics are based on the last sexual encounter for people aged 15 to 49.

backgrounds may be more supportive; their knowledge of HIV is almost certainly better; and they may well be entering into sexual relationships where gender relations are more equal. In order to isolate the effect of simply being at a tertiary institution, we attempt to control for these other potential determinants of condom use. The following section discusses the variables to be included in the regression model of condom use at last sex.

Potential determinants of condom use

Gender

According to ASSA2008 projections for 2011, South African women aged 15 to 24 have a prevalence rate of 12.85%, while men in the same age range have a prevalence rate of 1.93% (ASSA, 2008). These statistics indicate that in 2011 women have a prevalence rate that is approximately six times greater than men. This high prevalence rate is partially due to the female biological make up, but there are other factors that arguably contribute towards this increased risk for women. Some analysts point to women's inferior social status' in Southern Africa and their financial dependence on men, specifically in the poorer households (Human Science Research Council, 2002), (Grieser, 2001), (Mitton, 2000). These factors are seen as constraining females' sexual decision making ability, especially in contexts tainted by coercion and violence (HIV In-Site, 2001), (WHO/UNAIDS, 2000).

Table 1: ASSA projections of HIV prevalence (%) by race and gender for 2011

	Male	**Female**	**Total**
African	2.27	15.05	8.68
Coloured	0.22	1.61	0.92
White	0.02	0.34	0.17
Total	1.93	12.85	7.39

Source: Data from ASSA2008 model (ASSA, 2008)

Race

HIV prevalence is very different across population groups in South Africa, with Africans bearing the brunt of the epidemic (see Table 1). This, along with other possible cultural factors, is likely to affect sexual relationships and condom use. According to Grebe and Nattrass (2011: 9) Africans are approximately 4 times

more likely to use a condom than any other population group in the Western Cape. They argue that this probably reflects the higher background prevalence of HIV amongst Africans; something that would encourage Africans to use a condom more than other racial groups (Grebe & Nattrass, 2011: 11). Similarly, the qualitative research on white students suggests that background prevalence is taken into account, and in this case leads white students to believe they are safe having sex with other white students (Marcus, 2002).

Age

There are different hypotheses regarding how age affects the decision to use a condom. One possibility is that with age comes a heightened sense of responsibility. If so, then all other things equal, the decision to practice safe sex should be more likely amongst older people. Another argument may be that as age increases so does the seriousness of the relationships one enter into, and this may have the effect of decreasing condom use since more serious relationships involve higher levels of trust. An interesting argument presented by Peltzer (2000: 51), in a paper titled "Factors Affecting Condom Use among South African University Students", suggested that at young ages people are less embarrassed to propose the idea of condom use to their partner and less likely to be offended when using a condom is proposed.

Socio-economic status

A model for condom use developed by Grebe and Nattrass (2011) indicates a positive relationship between condom use and household income. Further research into this matter indicates that this relationship is far more pertinent for African males than it is for African females (Grebe & Nattrass, 2011: 9). Grebe and Nattrass go on to explain that the wealthier the African male, the greater the prospects are of attracting multiple sexual partners, whether it be through 'transactional sex', sex work or multiple concurrent partners (Grebe & Nattrass, 2011: 11). Bezabih, Mannberg and Visser (2010) investigate the relationship between expected future income and sexual risk taking, their findings indicate that current household income has a negative relationship with the sexual risk taking however; their results relating to the effect of expected future income are relatively inconclusive (Bezabih, Mannberg, & Visser, 2010: 27). A paper written by Dinkelman, Lam and Leibbrandt (2007) investigates the effects of household and community income on the risky sexual behaviour of young adults in the Western Cape using CAPS. The findings of this paper indicate relatively little impact on the risky sexual behaviour of the young adults, suggesting that

per capita income is not a determinant of condom use amongst young adults (Dinkelman, Lam, & Leibbrandt, 2007: 55). Due to the inconclusive nature of the results, this paper will control for total household income in the model of condom use as a measure of socio-economic status.

Years of schooling

Table 2: Tertiary education breakdown using CAPS 2005

Proportion of tertiary educated young adults in the Western Cape	**%**	**Institutions through which tertiary education was attained**	**%**
Received any tertiary education	15	University of Cape Town	12
Has not Received any tertiary education	85	University of the Western Cape	8
		Stellenbosch University	3
		Cape Peninsula University of Technology	20
		UNISA	3
		Independent Colleges	54

Table 2 illustrates that only 15% of the young adults in Cape Town have had some form of tertiary education, with 54% attaining their tertiary education through independent colleges. Education is frequently referred to as the 'Social Vaccine' (Baker, Collins , & Leon, 2008), (Peters, Baker, Dieckmann, Leon, & Collins, 2010) as it is associated with generally better health. A possible reason for this may be that education teaches people to think for themselves, giving them greater power to make decisions concerning their lifestyle and health (Peters, Baker, Dieckmann, Leon, & Collins, 2010). It is also possible that more years of education is associated with a greater understanding of HIV, and the need to protect oneself actively against it. Research conducted before 1996 found that there was very little correlation between levels of education and HIV prevalence in Sub-Saharan Africa (Hargreaves, et al., 2008: 410) which suggests that it was unlikely for there to be a relationship between education and condom use either. However, since the mid-1990s further research has shown that HIV prevalence is typically lower amongst the higher educated than amongst the lower educated groups. A possible reason for this may be that as more and more reliable information has been gathered about HIV; schools have integrated it into their curriculums (Hargreaves, et al., 2008); (Baker, Collins , & Leon, 2008). If it is true that schooling exposes people to HIV education, then it should follow that the greater the number of years one spends in school, the more likely one is to use a condom. We thus include years of schooling as an explanatory variable.

Level of matric pass

It is also plausible to suppose that those who think more carefully about risk, and have greater cognitive capacity in general, are more likely to use a condom. In order to proxy for cognitive capacity, we include a further school-related variable: a dummy variable for whether the respondent passed matric with an exemption (zero for all others). As university students, by definition, have matric exemptions, including this variable helps us control for cognitive capacity which would otherwise be confounding the 'being a student' effect.

Knowledge of HIV

According to the UNAIDS Global Report (2010: 68), less than half of 15 to 24 year olds living in South Africa can correctly answer five basic questions about HIV and its transmissions. This lack of knowledge about HIV has caused South Africa to consistently fall short of the global targets for comprehensive knowledge set in 2001 (UNAIDS, 2010: 68). This may affect condom use, however the cross national evidence on this is mixed (Lammers, van Wijnbergen, & Willebrands, 2011).

Duration of a relationship

There is evidence that condom use within relationships decreases over time and eventually ceases altogether (Burgard, Kusunoki, & McGraw, 2008: 5). This has been linked to enhanced trust and related perception that they are no longer at risk of infection. We thus include a variable for length of sexual relationship in our model of condom use.

Older sexual partner (number of years)

Research has shown that young people, in particular young women, who have older partners, are far less likely to use a contraceptive than people who have partners of similar age. This behaviour may be caused by an uneven power distribution within the relationship, with the older partner possessing more power over decisions about their sexual encounters (Burgard, Kusunoki, & McGraw, 2008). We thus include a variable constructed as the difference in ages between the sexual partners, where a respondent with an older partner records a positive number of years and a respondent with a younger partner records a negative number of years.

Concurrent sexual partners

Trend analysis indicates that there has been a general decrease in the percentage of people, living in Sub-Saharan Africa who have multiple sexual partners; however, South Africa is an exception to this trend (UNAIDS, 2010: 68). The persistence of concurrent relationships in South Africa is a difficult problem to solve since the acceptability of concurrent partners differs depending on one's cultural and spiritual background. A series of focus groups conducted in Khayelitsha, a large township situated outside of Cape Town, indicated that concurrent partnerships were common in their community, and while they are not discussed publically, they are accepted as a fait accompli (Mah & Maughan-Brown, 2009). This study found that the two main reasons for concurrent sexual partners amongst Khayelitsha residence are 'material or financial gain' and 'sexual frustration or inadequacy' (Mah & Maughan-Brown, 2009: 8). When asked about the link between concurrent partnerships and HIV most respondents acknowledged that having concurrent partners increased the risk of contracting HIV/AIDS, however, this knowledge does not seem to discourage the presence of concurrent partnerships (Mah & Maughan-Brown, 2009). In many concurrent partnerships the respondent will have two categories of partners, a main partner and side partners. It has been found that respondents use condoms with their side partners far more consistently than with their main partner (Lansky, Thomas, & Earp, 1998: 95). An explanation for this may be that the frequency of condom use may decrease as the duration of a relationship increases (Lansky, Thomas , & Earp, 1998); (Burgard, Kusunoki, & McGraw, 2008: 5). As we expect people to use condoms more in concurrent relationships and less in monogamous relationships, we control for relationship type in our model.

Know someone who died of HIV

Knowing someone who has died of HIV is expected to encourage people to realise the risk and severity of the disease, if this were true it should act as a form of motivation for condom use in high-risk sexual encounters (Adetunji & Meekers, 2001). We thus include a dummy variable indicating whether the respondent knows someone who died of HIV.

Alcohol consumption

The amount of influence that alcohol has over condom use is a highly contested issue, with research producing vastly inconsistent results. One thought process is that alcohol reduces one's decision-making capability, and when taken in

conjunction with sexual activity, could increase the probability of risky sexual behaviour. In simple terms, consuming alcohol before a sexual encounter could decrease the likelihood of using a condom (Leigh, 2002); (Abbey, Parkhill, Buck, & Saenz, 2007). An alternate argument is that alcohol use is most common in sexual encounters with casual partners, and since it is more common for respondents to use condoms with casual partners, results may show that alcohol increases that probability of condom use. This may not be due to the respondents decision making capabilities, but because they are more likely to have casual sex under the influence of alcohol, and more likely to use a condom with casual sexual partners than with partners in an established relationship (Leigh, 2002: 481); (Burgard, Kusunoki, & McGraw, 2008: 5); (Lansky, Thomas, & Earp, 1988: 95). It is commonly perceived that alcohol abuse is especially bad amongst university students; this perception is confirmed by two separate studies conducted on students at the University of Cape Town and the University of Stellenbosch. Both these studies report that the majority of the sampled students fall into the 'heavy drinkers' category (Pithey & Morojele, 2002: 13), (Pluddemann, Theron, & Steel, 1999: 13). To take into account the possible effect of alcohol consumption, we include a variable indicating whether the respondent has had an alcoholic drink in the past month.

Talking to parents about HIV

Studies have shown that good mother-child and father-child relationships have a positive effect on condom use, with the effect being greater on daughters than on sons (Wilson & Koo, 2010). Discussing HIV with one's parents is related to an increased knowledge of HIV and thus has the further influence of the child becoming sexually active later in their lives and being less likely to enter into casual sexual relationships (Miller, Levin, Whitaker, & Xu, 1998);(Hutchinson, 2002). Most Research has been conducted on adolescents; hence the inclusion of parental relationship variables in the models that follow will assess the effects of these relationships on the behaviour of young adults. It is likely that as the respondents get older their parents will have less influence over their decisions, however, if this good relationship was present throughout ones adolescence the effects is likely to last through to adulthood. Therefore, we would expect that a good relationship between a young adult and their parents, especially their mother, should have a positive effect on condom use. An unexpected result discovered in some exploratory regression was a negative relationship between talking to ones father about HIV and condom use. Upon closer inspection of the data, it was discovered that 41% of respondents that report 'Often' talking to their mother about HIV reported 'Never' talking to their fathers about HIV, while only 1% of respondents who reported 'Never' speaking to their mothers

about HIV reported 'Often' talking to their fathers about HIV. This leads us to believe that if respondents are going to speak to their parents about HIV it is most probable that they will speak to their mothers. This belief is confirmed in a paper by Willson and Koo (2010: 8) where they found that mothers generally talk more than fathers to both sons and daughters about sexual topics. To take into account the possible effect of a mother-child relationship, we include a variable representing a 4-point Likert Scale that indicates how often the respondent talks to their mother about HIV. The response 'never' is at the bottom of the scale and 'Often' at the top of the scale.

Method & Measures

The data for this paper comes from the third wave (2005) of the Cape Area Panel Study (CAPS). The third wave of CAPS conducted surveys on 4,750 young adults in the Cape Town Metropolitan area. In addition to the young adults' survey, there were also household and parental or guardian surveys completed for each young adult. This paper has included information from both the young adults and the household questionnaires (Cape Area Panel Study, 2006).

The young adults' questionnaire for wave 3 includes detailed questions about the respondents' sexual history. This made wave 3 an appropriate dataset to use when trying to model condom use.

Table 3: Demographic breakdown of CAPS 2005 restricted sample

	Male		**Female**		**Total**	
	N	**% (row)**	**N**	**% (row)**	**N**	**% (row)**
African	564	48.83	591	51.17	1155	50.00
Coloured	490	49.35	503	50.65	993	42.99
White	74	45.68	88	54.32	162	7.01
Total	1128	48.83	1182	51.17	2310	100.00

The young adults sample consisted of African, Coloured and White respondents ranging in age from 16 to 26. The sample was restricted to include only those who were sexually active[2] and in the same age range as university students. Table 3 breaks down the sample by race and gender.

The results in this paper are generated by a set of logistic regressions with the binary dependent variable 1= 'Condom used during last sexual encounter'.

- Gender: Binary variable, 1='Respondent is Male'

[2] 'Sexually active' is defined as having experienced full penetrative sex.

- Race: Binary variables, 1=' Respondent is African', 1='Respondent is Coloured'
- Age in years
- Student at a tertiary institution that required a matric exemption: Binary variable, 1='Respondent is a Student'. This variable is based on the questions that specifically state the requirement of a matric exemption. Therefore, if the respondent reported having studied in a tertiary institution that requires a matric exemption, and reported studying in 2005 they were placed in the 'student' sample
- Matric Pass: Binary variable, 1 = 'Passed matric with exemption'
- Years of schooling: This variable may take on a value from 0 to 12 which represents each year of schooling between grade 1 and grade 12/matric. The value zero represents 'no schooling'. 0= Respondent has no schooling; 1=Respondent attended school up to and including Grade 1; … ; 12=Respondent attended school up to and including Grade 12[3].
- Knowledge of HIV: Respondents were asked 'Can a person do anything to protect him/herself from getting HIV/AIDS?' if their answer was 'yes' they were then asked 'How can people protect themselves from getting HIV/AIDS?'. Respondents were expected to list all possible prevention methods and every correct prevention method named was awarded a 1. The responses made by each respondent were then summed so that the respondents with higher scores were deemed "more knowledgeable" about HIV and those with lower scores were deemed "less knowledgeable" about HIV.
- Total monthly household income: Logged
- Drank alcohol in the past month: Binary variable, 1='Respondent has consumed alcohol in the past month'
- Know a person who has died of HIV: Binary Variable, 1='Respondent knows someone who has died of HIV'.
- Age difference between the last sexual partner and the respondent: Respondents were asked how many years older or younger their partner was. A negative value indicated that the partner was younger and a positive value indicated that their partner was older.
- Duration of the respondents' last sexual relationship: Observed in months.
- Type of relationship:
    - Definitely a monogamous relationship: Binary Variable, 1='Respondents relationship with the most recent partner was definitely monogamous'

[3] Attending school in grade 12 does not imply that the respondent passed or even wrote the matric examinations

- Definitely not a monogamous relationship: Binary Variable, 1='Respondents relationship with the most recent partner was definitely not monogamous'

Firstly, the respondents were asked to report whether or not their most recent partner[4], had other sexual partners during the relationship. Secondly the respondents were asked if they had other sexual partners during the relationship with their most recent part. Every respondent who reported having concurrent partners, or whose partner had concurrent partners, or both were defined as 'definitely not in a monogamous relationship'. Only respondent who reported monogamy on both their own behalf, as well as on their most recent partner's behalf, were defined as 'definitely being in a monogamous relationship'.

- Talk to Mother about HIV: Respondents were asked 'How often in the past 12 months has your mother spoken to you about HIV?' The possible responses were a 4-point Likert Scale where 1='Never' and 4='Often'.

The regressions in table 6 have been constructed in such a way to explore the determinants of condom use when controlling for other factors affecting condom use as discussed earlier.

Table 7 explores the race and gender differences that may exist in the determinants of condom use.

Table 4: % Condom use by group in CAPS 2005

	% Condom use
Men	67.43
Women	52.6
African	70.75
Coloured	44.77
White	66.76

Table 5: % Condom use by race and gender in CAPS 2005

	Men	**Women**
African	77.03	65.90
Coloured	57.05	32.86
White	69.44	64.37

Table 4 illustrates that, according to the CAPS wave 3 data, men report using a condom at last sex more than women. The table also indicates that Africans

[4] The most recent partner is the same partner they were reporting condom use with

report using a condom more than both Whites and Coloureds, and Coloureds report the least amount of condom use.

Table 5 illustrates that, across races, men always report more condom use than women, and across gender, African report more condom use than Whites, and Whites report more condom use than Coloured.

All coefficients are reported as odds ratios and a 90% confidence interval was used such that a variable is considered statistically significant if $p<0.1$.

Results

Table 6 presents an exploration of results in which we attempt to uncover the effects of being a student at a tertiary educational institution, while controlling for other factors that may have an effect on condom use. By controlling for variables such as cognitive capacity, knowledge of HIV, and relationship type we hope to isolate immeasurable aspects of a student's lifestyle or milieu that may have an effect on condom use. Every regression controls for variables that have been documented to have effects on condom use, namely length of a relationship, type of relationship, social-demographic variables and relationship with ones parents.

Regression (6.1) is a simple regression run, using the student variable without controlling for years of education, knowledge of HIV or level of matric pass. The results of this regression show that students are more than 2 times more likely to use a condom than non-students within the relevant age range.

Regression (6.2) acknowledges that the student variable may be capturing the effects of the respondents' education level and cognitive capacity and these variables may be contributing to the positive relationship between students and condom use shown in regression (6.1). In order to extract these influences we control for the number of years of schooling that a respondent has received. This variable has a positive relationship with condom use indicating that, controlling for the other variables in the model, respondents with higher levels of schooling have greater odds of using a condom. Controlling for years of education has slightly reduced the odds of a student using a condom from more than 2 to approximately 1.90.

Table 6: Logistic regressions used to model condom use

Dependent variable: Condom use during last sexual encounter	(6.1) OR (se) P Full Sample	(6.2) OR (se) P Full Sample	(6.3) OR (se) P Full Sample	(6.4) OR (se) P Full Sample	(6.5) OR (se) P Full Sample
Male	**1.6571** **(0.2280)** **0.000*** **	**1.7633** **(0.2465)** **0.000*** **	**1.7630** **(0.2471)** **0.000*** **	**1.8943** **(0.2967)** **0.000*** **	**1.8467** **(0.2983)** **0.000*** **
African	1.5039 (0.3928) 0.118	**1.7557** **(0.4637)** **0.033** **	**2.0053** **(0.5561)** **0.012** **	**2.4254** **(0.7412)** **0.004*** **	**2.5736** **(0.8217)** **0.003*** **
Coloured	**0.4445** **(0.1099)** **0.001*** **	**0.5248** **(0.1311)** **0.010** **	**0.5761** **(0.1470)** **0.031** *	0.6918 (0.1929) 0.186	0.7209 (0.2061) 0.252
Age	**0.9134** **(0.0235)** **0.000*** **	**0.8954** **(0.0265)** **0.000*** **	**0.8951** **(0.0236)** **0.000*** **	**0.8862** **(0.0266)** **0.000*** **	**0.8849** **(0.0267)** **0.000*** **
Total monthly household income (log)	0.9962 (0.0229) 0.872	0.9947 (0.0230) 0.820	0.9965 (0.0231) 0.880	0.9896 (0.0257) 0.688	0.9895 (0.0257) 0.684
Student in a institution that required a matric exemption	**2.3087** **(0.5014)** **0.000*** **	**1.8990** **(0.4222)** **0.004*** **	**1.8419** **(0.4106)** **0.006*** **	**1.5847** **(0.4054)** **0.072** *	**1.5768** **(0.4037)** **0.075** *
Years of school completed		**1.2035** **(0.0494)** **0.000*** **	**1.1976** **(0.0495)** **0.000*** **	**1.1691** **(0.0626)** **0.004*** **	**1.1720** **(0.0630)** **0.003*** **
Knowledge of HIV index			1.0862 (0.0566) 0.112	1.0830 (0.0662) 0.192	1.0814 (0.0662) 0.201
Passed Matric				1.3351 (0.2869) 0.179	1.3418 (0.2885) 0.172
Duration of the relationship (months)	**0.9871** **(0.0024)** **0.000*** **	**0.9878** **(0.0025)** **0.000*** **	**0.9878** **(0.0025)** **0.000*** **	**0.9876** **(0.0029)** **0.000*** **	**0.9876** **(0.0029)** **0.000*** **
# Years partners is older than respondent	0.9725 (0.0179) 0.130	0.9763 (0.0183) 0.201	0.9742 (0.0183) 0.165	0.9742 (0.0204) 0.232	0.9753 (0.0205) 0.232
Partner was definitely monogamous	0.8516 (0.1330) 0.304	0.8604 (0.1353) 0.339	0.8616 (0.1359) 0.345	0.9927 (0.1744) 0.967	0.9995 (0.1759) 0.998
Partner was definitely not monogamous	0.9517 (0.1676) 0.779	0.9580 (0.1696) 0.809	0.9642 (0.1718) 0.838	1.0536 (0.2082) 0.792	1.0580 (0.2091) 0.776
Knows a person who has died of HIV	1.0177 (0.1356) 0.895	0.9949 (0.1336) 0.970	0.9918 (0.1335) 0.952	0.9946 (0.1475) 0.971	0.9905 (0.1471) 0.949
Drank alcohol in the past month					1.0981 (0.1608) 0.523
How often do you talk to your mother about HIV? (Often, sometimes, rarely, never)	**1.1730** **(0.0617)** **0.002*** **	**1.1701** **(0.0619)** **0.003*** **	**1.1642** **(0.0619)** **0.004*** **	**1.1884** **(0.0693)** **0.003*** **	**1.1880** **(0.0693)** **0.003*** **
Observations Pseudo R^2	1478 0.1233	1478 0.1338	1470 0.1345	1224 0.1434	1224 0.1437
*p<0.10, **p<0.05, ***p<0.01					

Table 7: Logistics regressions used to model condom use by race and gender

Dependent variable: Condom use during last sexual encounter	(7.1) OR (se) P Full Sample	(7.2) OR (se) P Male Sample	(7.3) OR (se) P Female Sample	(7.4) OR (se) P African Sample	(7.5) OR (se) P Non-African Sample
Male	**1.8478** **(0.2984)** **0.000*****			1.3885 (0.3350) 0.174	**2.1403** **(0.4805)** **0.001*****
African	**2.5915** **(0.8310)** **0.003*****	**2.4373** **(1.1425)** **0.057***	**2.6414** **(1.2084)** **0.034****		
Coloured	0.7251 (0.2079) 0.262	1.0010 (0.4350) 0.998	**0.4668** **(0.1880)** **0.058***		
Age	**0.8842** **(0.0270)** **0.000*****	**0.9184** **(0.0407)** **0.055****	**0.5810** **(0.0363)** **0.000*****	**0.8740** **(0.0368)** **0.001*****	**0.9088** **(0.0406)** **0.032****
Total monthly household income (log)	0.9891 (0.0257) 0.674	1.0011 (0.0385) 0.977	0.9660 (0.0358) 0.351	1.0272 (0.0472) 0.558	0.9841 (0.0317) 0.618
Student in a institution that required a matric exemption	**1.5530** **(0.4137)** **0.098***	0.5526 (0.2324) 0.158	**3.3113** **(0.1252)** **0.000*****	**2.0944** **(0.9508)** **0.099***	1.4140 (0.4472) 0.273
Years of school completed	**1.1781** **(0.0625)** **0.002*****	**1.2007** **(0.0945)** **0.020****	**1.1420** **(0.0873)** **0.082***	**1.2322** **(0.0868)** **0.003*****	1.0704 (0.0914) 0.426
Knowledge of HIV index	1.0800 (0.0662) 0.209	1.0607 (0.0994) 0.529	1.0623 (0.0929) 0.489	1.0264 (0.1406) 0.849	**1.1190** **(0.0763)** **0.099***
Passed Matric	1.1596 (0.1385) 0.215	1.5683 (0.5659) 0.212	1.3167 (0.3720) 0.330	1.1607 (0.3511) 0.622	**1.7727** **(0.5644)** **0.072***
Duration of the relationship (months)	**0.9875** **(0.0028)** **0.000*****	**0.9867** **(0.0043)** **0.002*****	**0.9901** **(0.0041)** **0.017****	0.9959 (0.0038) 0.282	**0.9739** **(0.0051)** **0.000*****
# Years partners is older than respondent	0.9754 (0.0204) 0.235	**1.0948** **(0.0459)** **0.031****	**0.9220** **(0.0255)** **0.003*****	**0.9408** **(0.0286)** **0.045****	0.9951 (0.0295) 0.868
Partner was definitely monogamous	0.9987 (0.1757) 0.994	1.0670 (0.2990) 0.810	1.0021 (0.2366) 0.993	1.0324 (0.2416) 0.892	1.0088 (0.2804) 0.975
Partner was definitely not monogamous	1.0533 (0.2081) 0.793	0.9553 (0.2777) 0.355	0.8325 (0.1695) 0.368	1.0054 (0.1944) 0.978	0.9269 (0.2221) 0.751
Knows a person who has died of HIV	0.9889 (0.1468) 0.940	1.2471 (0.2184) 0.915	1.1885 (0.2551) 0.421	0.9901 (0.2182) 0.964	1.1701 (0.2277) 0.420
Drank alcohol in the past month	1.0964 (0.1605) 0.529	1.0230 (0.2184) 0.915	1.1885 (0.2551) 0.421	0.9901 (0.2182) 0.964	1.1701 (0.2277) 0.420
How often do you talk to your mother about HIV? (Often, sometimes, rarely, never)	**1.1879** **(0.0693)** **0.00-*****	**1.2507** **(0.1138)** **0.013***	1.1055 (0.0888) 0.212	1.1262 (0.0925) 0.148	**1.2016** **(0.1037)** **0.33****
Observations Pseudo R^2	1224 0.1435	550 0.1015	674 0.1937	640 0.0789	584 0.1579
*p<0.10, **p<0.05, ***p<0.01					

Regression (6.3) controls specifically for knowledge of HIV. People can learn about HIV from educational institutions and elsewhere. In order to separate the effect of knowledge of HIV from simply being a student in a tertiary educational institution, we control for this variable specifically. Controlling for both years of schooling and the respondents knowledge of HIV, further reduces the student odds of using a condom to 1.84. It is clear that controlling for years of schooling causes a greater reduction in odds than controlling for knowledge of HIV, but it is also clear that there are still aspects of a student's life that significantly contribute to the greater odds of condom use.

Regression (6.4) controls specifically for another proxy for cognitive capacity, the level of matric pass. When controlling for this the odds of using a condom by virtue of simply being a student, decrease to 1.58.

According to the CAPS wave 3 data, 54% of students compared to only 41% of non-students in the same age range report consuming alcohol in the past month. Regression (6.5) controls for alcohol consumption. The results show that alcohol consumption has a positive coefficient, but is statistically insignificant. Controlling for alcohol consumption only slightly decreases the odds of a student using a condom.

Looking across all 5 regressions we can see that the variable representing males has a consistently positive and significant relationship with condom use. The odds ratios for males tend to oscillate around 1.78, ranging from 1.66 to 1.89, implying that males are approximately 1.78 times more likely to report having used a condom at last sex than females.

The African variable is insignificant in regression (6.1), but becomes statistically significant when the number of years of school completed is controlled for. This variable shows a consistently positive relationship with condom use at last sex. This variable exhibits odds ratios that range from 1.76 to 2.57. The Coloured variable has a negative and significant relationship with condom use at last sex, in regressions (6.1), (6.2) and (6.3) with odds ratios ranging from 0.44 to 0.58, however that Coloured variable becomes insignificant when we control for the level of matric pass. An interpretation of these race variables would state that, controlling for other variables, African respondents are approximately 2 times more likely to use a condom than White respondents and Coloured respondents are approximately half as likely to use a condom as White respondents.

According to all of the regressions in table 6 being an older respondent significantly decreases ones probability of condom use.

The years of schooling variable is included from regression (6.2) to (6.5). The positive relationship between this variable and condom use indicates that, controlling for other variables in the model; respondents that have completed more years of schooling are more likely to use a condom.

All of the variables representing trust, except the duration of a relationship, are consistently insignificant. The effect of knowing someone who has died of HIV shows some inconsistent results across the 5 regressions. The results are initially positive, becoming negative when controlling for the number of years of schooling. This being said, all negative and positive values are insignificant and their odds ratios approximate to 1, indicating very little relationship.

The relationship that a respondent has with his/her mother has a positive effect on condom use and is consistently significant across all regressions. An interpretation of this result is, controlling for other variables in the model, as communication about HIV increases between the respondent and their mother, the probability of condom use increases.[5]

Regression (7.1) is identical to regression (6.5) but we take the model a step further in table 7 by restricting the sample to specific population groups. Regressions (7.2) and (7.3) restrict the sample for males and females, while regressions (7.4) and (7.5) restrict for Africans and non-African.

Many variables remained consistent across the full, male and female samples, thus we will only discuss the variables that show significant differences.

According to the results in regression (7.2) and (7.3), female students are, controlling for other variables in the model, approximately 3.31 times more likely to use a condom than female non-students, while being a male student is insignificant. This indicates that the positive effect of being a student illustrated in the full sample is driven by women.

Interestingly, in the male sample, the 'coloured' variable is insignificant, while in the female sample it is significant. Thus, again, the relationship illustrated in the full sample for the coloured variable is driven by the female sample.

The age difference between a respondent and their partner is insignificant in the full sample regression, but it is significant in both the male and female sample regressions. The male and female samples depict opposite coefficient signs in

[5] An alternative interpretation is that those respondents who are comfortable reporting condom use in an interview are also likely to be more comfortable talking about HIV with their parents.

that for males, older partners result in greater odds of condom use, while for females, older partners result in lower probabilities of condom use.

The positive relationship between how often one talks to their mother about HIV, and condom use is driven by males. This is illustrated by the positive and significant relationship in the male sample, and the insignificant relationship in the female sample.

Many variables remained consistent across the full, African and non-African samples, thus we will only discuss the variables that show significant differences.

According to the results in regressions (7.4) and (7.5) being a student is only significant and positive in the African sample, indicating that the positive relationship illustrated in the full sample is driven by Africans. The results suggest those African students are approximately 2.09 times more likely to use a condom than African non-students.

Non-African males seem to drive the relationship between gender and condom use illustrated in the full sample regressions. Non-African males are approximately 2.14 times more likely to use a condom than non-African females, while African males show an insignificant relationship.

The level of matric pass is consistently insignificant, except when we restrict the sample to non-Africans. The results illustrate that non-Africans who pass matric with exemption are more likely to use a condom than non-Africans who do not pass matric with exemption. Years of schooling plays an insignificant role in determining condom use amongst the non-African sample. The opposite is true for the African sample in that years of schooling plays a significant role in determining condom use and the level of matric pass takes on an insignificant role.

The relationship between the length of a relationship and condom use has been consistently significant in all full sample regressions as well as across gender. This variable retains its significant and negative relationship in the non-African sample but becomes insignificant in the African sample. This implies that this relationship is driven by the non-African sample.

The insignificant relationship between an older sexual partner and condom use seems to be driven by the non-African sample since this relationship is negative and significant in the African sample. This implies that Africans are less likely

to use a condom if their partner is older than them. We have seen that this may have different effect for men and women.

The results indicate that the more often non-Africans discuss HIV with their mother the more likely they are to use a condom; this relationship is insignificant amongst the African sample, implying that the significant and positive relationship for the full sample is driven by non-African males.

Discussion

The models of condom use presented in this paper explore the different factors that may contribute to safer sexual practice, paying special attention to the role of being a student in a tertiary institution. There are a number of concerning factors present in the model that were unavoidable as a result of the survey design and the types of questions asked in the CAPS wave 3 questionnaire. One of the major concerns is that the models are only based the last sexual encounter rather than over a series of encounters. Another concern is that the last sexual encounter being modelled may have occurred a long time prior to the survey for certain respondents, causing less precise results due to recall bias. In addition to this, the questions in the survey about condom use are always fairly contentious, and uncomfortable to answer. This may result in a form of measurement error known as desirability bias, where respondents answer questions according to what they believe the interviewer wants to hear.

It is clear from the results in both regression tables that being a student in a tertiary institution significantly increase ones odds of using a condom. In other words, students in a tertiary institution are less risk loving than young adults, in the same age range, that are not students. Therefore, the hypothesis suggested in qualitative research that university students engage in particularly risky sexual practices (Marcus, 2002) is thus not born out in the data. They engage in sexual experimentation like other young adults, but they are more likely to do so with a condom.

Being a student is associated with higher levels of education, cognitive capacity and knowledge of HIV, which would all contribute to a greater prevalence of condom use; but even when controlling for these factors, using albeit imperfect proxies for them, being a student has a significantly positive relationship with condom use. This indicates that there may be other factors encompassed by the ‘student lifestyle’ or general milieu that discourage risky sexual behaviour. It may be that the availability of condoms in university bathrooms contributes to

this higher rate of condom use. It is also likely that university students are exposed to particularly good HIV awareness interventions.

The 4 largest universities in the Western Cape, namely, The University of Cape Town, The University of Stellenbosch, The University of the Western Cape, and The Cape Peninsula University of Technology, have all drafted publicly accessible HIV/AIDS policies. In each of these policies, it is explicitly written that, HIV/AIDS will be incorporated into the set curriculum as a method of furthering HIV education (HAICU, 2010). These policies make HIV education unavoidable for all students, specifically those who do not pay attention to public campaigns. It therefore makes sense that students are exposed to exponentially higher levels of HIV information than young adults not registered at a tertiary institution. However, it is interesting that even after controlling for knowledge of HIV, being at a university encourages condom use. It could be that the promotion of HIV awareness at universities is more effective at changing behaviour than other interventions which simply give people knowledge about HIV.

It is clear in table 7 that there are significant gender differences in the relationship between being a student and condom use. Being a student seems to be completely insignificant for males while it is significant at a 1% level for female. This result suggests that being a student plays an important role in shaping condom use for women, but not men. This may indicate that being a student helps empower women with regard to the decision to use a condom, specifically amongst African women. This result is possibly the most interesting finding in the paper as it puts forward the notion that men maintain similar mindsets in spite of their level of education, while women experience a significant shift in their mindsets and a movement away from cultural moulds.
Research into how the length of a relationship would affect condom use indicates that as the length of a relationship increased, the less likely condom use would become. Our results are in accordance with this research, with the exception of the African sample. For some reason the length of a relationship plays no role in determining whether a condom will be used or not amongst the African sample.

The difference in age between the partner and the respondent is insignificant in all the table 6 regressions, but interestingly, this variable becomes significant for males and females in table 7. The results for males indicate that the older the partner is the more likely they are to use a condom, while the opposite is true for females. This result suggests that the older a woman's partner, the less likely she is to use a condom. Possible explanations for this may be that women have greater levels of trust in older partners, or that older partners are more

disempowering of women, both resulting in decreased condom use. Men may have less ability to disempower their partner if she is older than him, thus men become more likely to use a condom if their partner is older than them.[6]

The race and gender differences are extreme when we analyse how often a respondent talks to their mother about HIV. Throughout the full sample regressions this variable is significant at a 1% level, but when restricting the samples by gender or race the results indicate a different story. How often respondents talk to their mother about HIV is only significant amongst males and non-Africans. These results are difficult to interpret since research indicates that mothers tend to speak to their daughters about sex more often than their sons (Wilson & Koo, 2010: 8).

Conclusion

This paper set out to explore whether simply being a student at a tertiary institution affects condom use. We recognise that there are many confounding factors relating to this effect, so in order to isolate the effect of 'simply' being a student at a tertiary institution we control for these other potential determinants of condom use. The results indicate that being a student has a significantly positive effect on condom use. In the regression tables we explore the change in the effect of being a student by adding variables for knowledge of HIV and proxies for cognitive capacity. We discover that as we included these variables in the regression the odds of a student using a condom decrease, but still remained significantly positive. When all of these other variables have been controlled for, students are approximately 1.5 times more likely to use a condom than non-students.

When we restrict the regression by gender and race the results tell a different story. This positive effect of condom use is not consistent across race and gender as it is only significant in the female and African samples. This leads to the conclusion that the positive effect associated with being a student, seen in the full sample regressions, is largely driven by the African female sample. It is difficult to identify a single reason justifying the behaviour exuded by African women since it could be due to a multitude of factors. One factor may be that African women in universities are able to enter into more egalitarian relationships, allowing them to take a more prominent stance in the decision to use a condom. The attainment of a tertiary education often opens the doors to financial stability and may thus allow African women to escape the need to be

[6] The agreement relating to the 'age difference' variable assumes heterosexual relationships.

financially and socially dependent on their male counterparts. Tertiary institutions play host to a rich and diverse array of cultures, encouraging students to question their beliefs and making it possible for cross culture influence to take place. Cross culture influences may act as a way of changing the African women's mindset about how she views herself and may instil the notion that women need not be subservient to men. Another possible reason behind the results above may be that the partners African women meet at universities are more easily convinced to use a condom as they encounter the same information that females are subjected to in a university environment.

It is important to remember that the decision to use a condom is a joint one, making it necessary to look at all parties involved in order to accurately analyse the reasons behind the outcome of this decision. This also means that there are many confounding factors affecting condom use, making it nearly impossible to isolate any one specific influence.

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