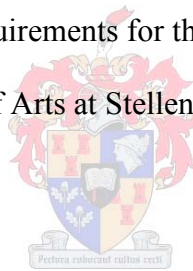


**An investigation of risky sexual behaviours, basic HIV knowledge and intention to use
condoms among a sample of men who have sex with men in a student community**

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Thesis presented in fulfilment of the requirements for the degree of Masters of Arts (Psychology)
in the Faculty of Arts at Stellenbosch University



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March 2012

DECLARATION

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ABSTRACT

The primary objective of the study was to determine the level of self-reported sexual risk behaviour of student men who have sex with men at a South African higher educational institution. The secondary objective was to determine the level of Human Immunodeficiency Virus (HIV) knowledge among student men who have sex with men, and lastly to determine the extent to which the theory of planned behaviour is applicable in explaining intentions to use condoms.

A sample of fifty student men who have sex with men were recruited to take part in an online baseline and follow-up survey, three months apart. Many of the student men who have sex with men reported sexual behaviour, which may place them at risk of contracting HIV. More than fifty percent (56%) had used alcohol or drugs during sexual intercourse in the past. Six percent (6.1%) reported having been forced to have sexual intercourse against their will. While 8% had experienced abuse and violence on campus, 22% had experienced abuse only and another 6% reported having experienced some form of violence due to their sexual preference. Most participants (70%) reported having used condoms almost always or always when engaging in penetrative sexual behaviours, but 30% had used condoms inconsistently or not at all in the past. The sample of student MSM scored high on a questionnaire of basic HIV knowledge, with a mean score of 14.57 (80.94%).

The present study questions the applicability of the theory of planned behaviour in understanding and predicting intention to use condoms among a sample of student men who have sex with men attending a South African higher education institution. Only two of the major theoretical variables, namely attitude and perceived group norms, could significantly predict intention to use condoms. Attitudes regarding condom use were found to have an inverse

relationship with intention to use condoms. The results from the hierarchical multiple regression analyses revealed that the linear combination of the theory of planned behaviour variables could significantly account for 68% of the variance in intention to use condoms when the predictors were considered together. Interventions that seek to lessen HIV risk behaviour among student men who have sex with men should endeavour to incorporate elements which should aim to augment perceived subjective norms regarding condom use. The findings advocate for additional research to be undertaken on the applicability of the theory of planned behaviour in informing health communication and sexual health interventions that aim to reduce HIV transmission risk among student men who have sex with men at higher educational institutions.

OPSOMMING

Die primêre doel van die studie was om die vlak van self-gerapporteerde seksuele risiko gedrag van studentemans wat seks beoefen met mans (MSM) by 'n Suid-Afrikaanse hoër onderwysinstelling te bepaal. Die sekondêre doel was om die vlak van kennis oor die Menslike Immuniteitsgebreksvirus (MIV) onder studente MSM te bepaal, en laastens om die mate waarin die teorie van beplande gedrag toepaslik is om die voorneme om kondoom gebruik te verduidelik.

'n Steekproef van vyftig studente MSM was gewerf om aan 'n aanlyn basislynopname en opvolgopname deel te neem. Talle van die studente MSM het seksuele gedrag gerapporteer wat die mans blootstel aan die risiko om MIV op te doen. Meer as vyftig persent (56%) het in die verlede alkohol of dwelms gebruik tydens seksuele omgang. Ses persent (6,1%) het gerapporteer dat hulle al gedwing is om seksuele omgang teen hul wil te hê. Terwyl agt persent mishandeling en geweld op kampus ervaar het, het 22% slegs misbruik ervaar en nog 6% het een of ander vorm van geweld ervaar as gevolg van hul seksuele voorkeur. Die meeste deelnemers (70%) het gerapporteer dat hulle tydens penetratiewe seks byna altyd kondome gebruik, maar 30% het óf glad nie, óf ongereeld in die verlede kondome gebruik. Die studente MSM wat aan die steekproef deelgeneem het, het hoë tellings behaal in 'n vraelys oor basiese MIV-feite, met 'n gemiddelde telling van 14.57 (80.94%).

Die huidige studie bevraagteken die toepasbaarheid van die teorie van beplande gedrag om die voorneme om kondome te gebruik onder 'n steekproef van studente MSM aan 'n Suid-Afrikaanse hoër onderwysinstelling te verstaan en te voorspel. Slegs twee van die belangrikste teoretiese veranderlikes, naamlik houding en subjektiewe groepnorme, kon beduidend die voorneme voorspel om kondome te gebruik. Houding oor kondoom gebruik het 'n omgekeerde

verwantskap met die voorneme om kondome te gebruik voorspel. Die resultate van die hiërargiese meervoudige regressie-ontleding het aangedui dat, wanneer die voorspellers saam oorweeg word, die lineêre kombinasie van die teorie van beplande gedrag veranderlikes betekenisvol tot 68% van die variansie in die voorneme om kondome te gebruik kan verklaar. Ingrypings wat daarop gemik is om MIV-risiko gedrag onder studente MSM te verminder, behoort elemente in te sluit wat streef daarna om waarneembare subjektiewe norme rakende kondoomgebruik aan te vul. Die bevindinge wys dat addisionele navorsing oor die gebruik van die teorie van beplande gedrag in gesondheidskommunikasie en seksuele gesondheid intervensies wat daarop gemik is om die risiko van MIV-oordrag tussen studente MSM by inrigtings vir hoër onderwys te verminder nodig is.

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DEDICATION

This piece of work is dedicated to complex simplicity, the exhilaration of life, love, Radiohead, dreams, difference and to the goodness in all of us.

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GLOSSARY

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-retroviral therapy
ATT	Attitudes
B-SBHQ	Baseline sexual behaviour history questionnaire
FET	Further education and training
F-SBHQ	Follow-up sexual behaviour history questionnaire
HBM	Health belief model
HEAIDS	Higher Education HIV/AIDS Programme
HEI	Higher education institution
HIV	Human Immunodeficiency Virus
HIV-KQ-18	18 item HIV Knowledge Questionnaire
HLC	Health locus of control
IDU	Injecting drug use
KAPB	Knowledge, attitude, behaviour and prevalence
MARP	Most at risk population
MCP	Multiple concurrent partners
MSM	Men who have sex with men
MSMGF	Global Forum on men who have sex with men and HIV
OIHC	Office for Institutional HIV Co-ordination
PBC	Perceived behavioural control
PGN	Perceived group norms
PMT	Protection motivation theory

SCM	Social cognition model
SCT	Social cognitive theory
SPSS	IBM Statistical Package for the Social Sciences
STI	Sexually transmitted infections
SU	Stellenbosch University
TPB	Theory of planned behaviour
TRA	Theory of reasoned action
T-SBQ	Theory of planned behaviour sexual behaviour questionnaire
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organisation

Chapter 1

Introduction and motivation for the study

This chapter introduces the aims and objectives of the study followed by a discussion of the impact HIV/AIDS has had globally, in Africa, in the higher education context in South Africa, and explores the risks men who have sex with men face with regard to HIV.

Aims of the study

This thesis is a quantitative study which explores the extent of risky sexual behaviours, with a focus on condom use, and basic knowledge about the Human Immunodeficiency Virus (HIV) among male university students who have sex with other males. I also aimed to explore the predictors of intention to use condoms according to the theory of planned behaviour (TPB). The attitudes toward condom use, the subjective norms regarding condom use and the perceived behavioural control the individuals have over these behaviours were also explored.

Specific objectives

The specific objectives of the study were:

- to determine the level of self-reported sexual risk behaviour of student men who have sex with men (MSM) at Stellenbosch University (SU);
- to determine the basic knowledge of HIV among student MSM at SU;
- to determine the extent to which the theory of planned behaviour is applicable in explaining intention to use condoms; and
- to determine the extent to which the theory of planned behaviour is applicable in explaining actual condom use behaviour.

Outline of the global impact of HIV/AIDS

The HIV and Acquired Immune Deficiency Syndrome (AIDS) epidemic affected around 33 million people in 2009 and is one of the most severe retro-viral diseases in recorded history (UNAIDS, 2009). HIV prevalence is estimated to be 0.8% among the global population (Kilmarx, 2009) and has affected millions of people since its appearance in 1983. According to UNAIDS (2009) the impact of HIV has reached levels larger than ever expected. More than 20 million people have died of AIDS-related diseases. The greatest incidence levels and mortality rates have been among people living in developing and resource-limited countries since its initial spread in the developed world (Beyrer, 2007; CDC, 2007; Mayer, Mimiaga, & Safren, 2010).

Early epidemiological studies suggest that “the epidemic in the developed world was partially potentiated by sex among MSM, as well as injecting drug use (IDU), but to a lesser extent by heterosexual intercourse” (Mayer et al., 2010, p.205; Van Dyk, 2008). In contrast, epidemiological research from the early 1990’s revealed that HIV was predominantly spread through heterosexual transmission, combined with associated peri-natal transmission (Karim & Karim, 2008; Van Dyk, 2008).

The current pandemic is characterized by individual-level risks that are powerfully impacted by diverse risk environments (Beyrer, 2007). The circumstance within which HIV is acquired and transmitted is facilitated by social, structural and population-level risks (Beyrer, 2007). However, incidence rates have reached an area of stability in many countries, with significant declines in others (Kilmarx, 2009; UNAIDS, 2009). The number of people in developing countries receiving antiretroviral treatment (ART) from 2002 to 2007 increased from 300 000 to 3 million (WHO, 2004). This accounts for 31% of those who needed ART (UNAIDS, 2009). HIV continues to affect more young people than any other group. Those in the 15 to 24 year age-group represent 45% of worldwide infections (UNAIDS, 2009).

An emerging epidemic among MSM in developing countries, injecting drug use epidemics across Eastern Europe and central Asia, and the ongoing swell of infections in Southern Africa (Beyrer, 2007) are examples of regions where the incidence of HIV is accelerating. These most at risk populations (MARPs) represent areas where more needs to be done about the spread of HIV at the individual level, regarding policy, as well as the structures within which these function.

The HIV epidemic in sub-Saharan Africa

Of the estimated 33 million people living with HIV, 65% are from sub-Saharan Africa and 75% of global AIDS-related deaths are from this region, even though this region only represents approximately 10% of the global population (UNAIDS, 2009). The HIV epidemic has a relentless impact on households, the health sector, the education sector, the workplace and enterprises, life expectancy and economic development. HIV prevalence tends to affect urban dwellers more than their rural counterparts (UNAIDS, 2009). South Africa still has the largest population living with HIV in the world (UNAIDS, 2009) and is experiencing a maturing generalized HIV epidemic.

In 2008 the distribution and access to antiretroviral treatment in the region covered about 44% of those who needed ART (Kilmarx, 2009, UNAIDS, 2009), which represented a major increase in comparison with 2002. Accordingly the rate of infections slowly declined. The number of new infections, in 2008, was approximately 25% lower than it was at the peak of the epidemic (UNAIDS, 2009). The average survival rate of untreated people living with HIV in sub-Saharan Africa is similar to those in high-income countries.

The contextual heterogeneity of the epidemic is evident as it varies greatly among countries and within countries of this region. Most of the transmission occurs during heterosexual sex in the general population and a substantial proportion of HIV transmission

occurs among stable sero-discordant couples (two sexual partners in a stable relationship of which one partner is living with HIV and the other is not; Van Dyk, 2008), and evidence suggests that concurrent sexual partnerships may be playing a large role in new HIV infections (Pisani, 2008; UNAIDS, 2009). HIV transmission also occurs among people who have sex with sex workers, although it contributes to a relatively small proportion of incidence (Kilmarx, 2009).

Since 2006 data have suggested that a hidden, neglected and highly prevalent and concentrated HIV epidemic among men who have sex with men in developing countries is at hand (Baral, Sifakis, Cleghorn, & Beyrer, 2007; Elford & Hart, 2003; Kilmarx, 2009; Mayer et al., 2010, UNAIDS, 2008; Van Griensven, 2007). There has been an increase in research about MSM recently (2007 to 2011), however, minimal funding has been provided for interventions with this most at risk population (UNAIDS, 2009).

Three successive South African household surveys found similar HIV prevalence levels of 11.4% in 2002, 10.8% in 2005 and 10.9% in 2008 (Shisana et al., 2009) among the general population aged two years and older. This prevalence represents more than four million South Africans currently living with HIV. There is evidence that HIV incidence is declining in certain cohorts. Specifically, declines in HIV incidence among young women (Rehle et al., 2010) and among the 15–20 year-olds (Shisana et al., 2009) were observed in the 2008 survey. This was, in part, attributed to the effects of expanded uptake of anti-retroviral treatment and substantial increases in condom use among young individuals (Rehle et al., 2010; Shisana et al., 2009).

HIV at higher education institutions in South Africa

Young people between 15 and 24 years of age represent one half of all new HIV infections worldwide (UNAIDS, 2009) and engage in sexual risk behaviours. These behaviours include: inconsistent condom use, using alcohol or drugs during sexual encounters, and having multiple sexual partners (Macdonald et al., 1990; Peltzer, 2000). Higher education institutions

(HEIs), in South Africa, are in the position to effectively respond to the HIV epidemic since they have great human and intellectual capital which can enhance the national HIV response. Higher education institutions are able to train the intellectual, scientific and technical leaders of the future, where failing to do so may give the HIV epidemic the opportunity to undermine the core functions of HEIs and make many students vulnerable to HIV transmission.

In contrast to initial findings, other data have suggested that there was a lower HIV risk among the most educated (Hargreaves, 2008). There is, however, a paucity of knowledge about the HIV epidemic in the higher education sector. The first ever study on HIV prevalence and knowledge, attitude, behaviour and practice (KABP) was commissioned among 22 HEIs in South Africa from 2008 to 2009. Findings from this study revealed that HIV prevalence was substantially lower than among the general population in South Africa (HEAIDS, 2010).

According to HEAIDS (2010): “While the distribution of HIV follows national patterns in terms of sex, race, age group and education, the HIV prevalence is lower in the higher education population within all these demographic categories (p. xviii).” Academic staff had the lowest overall HIV prevalence (1.5%), followed by students (3.4%), administrative staff (4.4%) and the highest level was among service staff (12.2%; HEAIDS, 2010). MSM have higher HIV prevalence (4.1%) in comparison with their heterosexual counterparts (1.7%) and female students were found to be three times more likely than male students to be living with HIV (HEAIDS, 2010).

Higher education institutions within the Western Cape Province had the lowest HIV prevalence among students (1.1%), while the highest prevalence among students was found in the Eastern Cape Province (6.4%). HIV knowledge was high among all students. The impact HIV could potentially have among university students could cause severe ramifications for South

Africa's human resources infrastructure, and hence, the economic outlook since graduates from HEIs are the future leaders and decision makers (UNAIDS, 2008).

MSM: Global, African and South African contexts

The term men who have sex with men is used to include all who engage in male-male sexual behaviour. MSM includes gay men, bisexual men, men who do not identify as gay or bisexual, male sex workers, transgendered people and a range of culture and country specific populations of MSM (MSMGF, 2008). MSM describes male-male sexual practices within a behavioural category, but is not intended to group together a diverse population across the social spectrum with various ways of thinking about and experiencing their sexuality (Beyrer et al., 2010).

Michel Sidibé, Executive Director of UNAIDS stated:

The failure to respond effectively has allowed HIV to reach crisis levels in many communities of men who have sex with men and transgender people. Efforts to reverse this crisis must be evidence informed, grounded in human rights and underpinned by the decriminalization of homosexuality... we must work together to end homophobia and ensure the barriers that stop access to HIV services are removed. (UNAIDS, 2010, p. 1)

It is well documented that MSM face a significantly higher risk of HIV infection than the general population in most regions of the world and that agencies have largely failed to address HIV infection among MSM (Baral et al., 2007; CDC, 2007; Elford & Hart, 2003; Smith, Tapsoba, Peshu, Sanders & Jaffe, 2009; Van Griensven, 2007; Van Kesteren, Hospers, Van Empelen, Van Breukelen & Kok, 2007). Studies indicated a rise in global rates of high-risk sexual behaviour among MSM (Elford & Hart, 2003), in low and middle income countries (Baral et al., 2007), and of the global South (developing countries in the Southern hemisphere;

UNAIDS, 2008). A meta-analytic study found odds ratios of HIV prevalence among MSM to be 3.8 times more in Africa, 33.3 in the Americas and 18.7 in Asia (Beyrer et al., 2010; Kilmarx, 2009, p. 241). HIV prevalence was found to be 3.8 more likely among MSM in Africa, 33.3 times more likely among MSM in the Americas and 18.7 times more likely among MSM in Asia than the general population (Beyrer et al., 2010; Kilmarx, 2009, p. 241).

A cause for concern is the potential impact the concentrated HIV epidemic among MSM may have on the generalized HIV epidemic globally. The crossover between these two epidemics has been associated with MSM often being in sexual relationships with women (Lane, McIntyre, & Morin, 2004).

People who practice unprotected anal sex are at greater risk of contracting HIV due to the comparatively more rigid physiology of the anal canal compared to the vaginal canal, a much thinner cell layer in the anal canal, and hence, the heightened potential for anal tearing which leads to easier transmission of HIV (Van Dyk, 2008). More than the increased physiological risk to HIV exposure which MSM face (unprotected anal intercourse and lack of condom use), as well as the epidemic crossover effect, there are also various contextual factors to consider in the MSM population globally and in South Africa. Some of these contextual factors are hetero-dominant social norms, homophobia, homo-prejudice, a hostile social environment, and the “othering” of bisexual men by straight as well as gay men (including non-gay identified MSM). The vulnerability of MSM is not simply due to physiological predisposition to HIV but the result of a set of interrelated human rights violations, stigma and social inequalities that increase HIV risk. Prejudice, stigma and discrimination may lead to consequences in the areas of mental health, social support, behavioural outcomes, and in health care system access (see Figure 1). This form of double stigma can drive MSM away from prevention efforts and inhibit early interventions (MSMGF, 2008). Research by Comstock (1991) suggested that gay and lesbian university

students are victimized at a higher rate than other students. Victimization was reported to be four times higher for gay and lesbian students than for the general student population (Comstock, 1991).

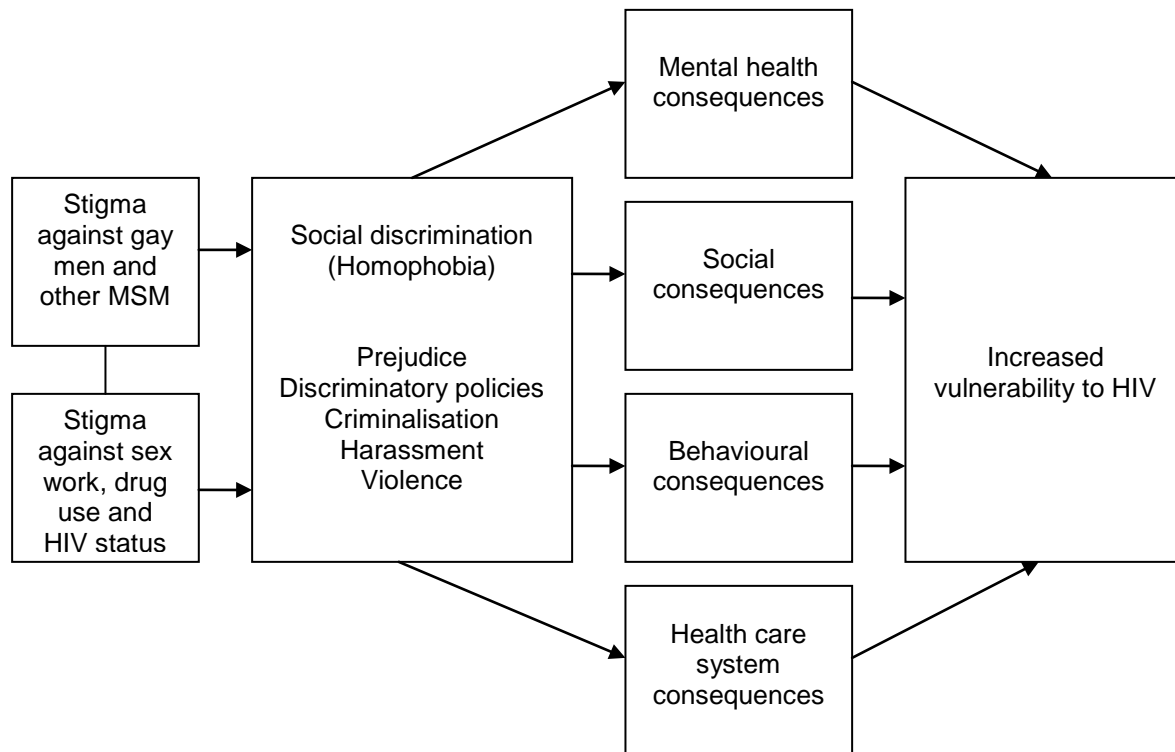


Figure 1. Linkages between homophobia and HIV risk (MSMGF, 2008)

Motivation for the study

There is a paucity of knowledge on data which can easily inform HIV prevention and policy development initiatives in Western Cape higher education institutions. Current data of sexual risk and HIV knowledge among higher education institution student men who have sex with men are inadequate. MSM face high levels of exposure to HIV. Baral et al. (2007) found exceptionally high HIV prevalence estimates among MSM in various low and middle income countries. There is no accurate data available of HIV prevalence rates among MSM in the

general population in South Africa, not to mention substantial sexual risk data among the university MSM population.

The primary objective of the study was to determine the level of self-reported sexual risk behaviour of student men who have sex with men at Stellenbosch University. The secondary objective was to determine the knowledge of HIV among student MSM at Stellenbosch University, and then to determine the extent to which the theory of planned behaviour is applicable in explaining intention to use condoms. The following research questions were developed:

- What is the extent of risky sexual behaviour among student men who have sex with men?
- What is the extent of student men who have sex with men's basic HIV knowledge?
- Which determinants of intention more accurately explain condom use behaviour?

The following chapter reviews the literature on men who have sex with men in the global context, in sub-Saharan Africa and sexual behaviours of MSM among university students. The chapter concludes with a discussion of various theories that may be used to predict condom use and why the theory of planned behaviour was used in this study.

Chapter 2

Chapter two reviews the literature on men who have sex with men MSM in the global context, followed by MSM in sub-Saharan Africa context and the sexual behaviours of MSM among university students. A discussion follows of various theories that may be used to predict health behaviours and why the theory of planned behaviour was used in this study.

Literature review on men who have sex with men

Not all men who have sex with men think about their behaviours as explicitly sexual. Limiting this population into a simple and contained way may be counter-productive as it can impose a sexual definition onto acts which may be understood in different ways by these men (WHO, 2004). Not only do men who have sex with men represent a wide array of behaviours, worldviews and ways of engaging with their sexuality, the influence of constructs such as gender-role expectations play an important part in sexual objectivity. A limited understanding of MSM may be insensitive to their understanding of themselves (WHO, 2004) and may in turn exacerbate entrenched social discrimination and access to HIV services.

Homophobia is a form of social discrimination, which can be defined as: “Mean, unfair, or unequal treatment intended to marginalize or subordinate individuals or communities based on their real or perceived affiliation with socially constructed stigmatized attributes” (Ayala, Beck, Lauer, Reynolds, & Sundararaj, 2010, p. 2). According to the literature, people who experience discrimination often have poor mental health outcomes. Stress research showed that expectations of, and actual events of discrimination, each independently and collectively contribute to sub-optimal mental health (Meyer, 1995). MSM and other sexual minorities in the United States, who lived in states which had discriminatory laws against same-sex couples, were found to show signs of hopelessness, chronic worry and hyper vigilance (MSMGF, 2008). A study among gay, bisexual and transgender high school learners revealed elevated signs of self-harm, suicidal

ideation, excessive substance abuse and risky sexual behaviours (Mcdermott, Roen, & Scourfield, 2008).

Many societies place a high social premium on constructs of the traditional heterosexual family where the expectations of marriage, and producing children, place great pressure on the lives of MSM (Adimora, Schoenbach, & Doherty, 2007). It is often when these MSM have surrendered to heterosexual marriage that they maintain sexual relationships with men in secret, resulting in multiple opportunities for HIV transmission (Adimora et al., 2007). In the following section, I discuss the relationship between MSM risk contexts and its contribution to the HIV epidemic in the global context.

MSM in the global context

There have been key improvements in the health and well-being of men who have sex with men living with HIV in high income countries of the Northern hemisphere (Hart & Elford, 2010) since the start of the epidemic. This is not the case in most parts of the world. There are currently nearly 80 countries which criminalize same-sex behaviours between consenting adults (MSMGF, 2008). Additionally, there has been a recent surge in renewed interest in the criminalization of same-sex behaviours. Examples include Uganda where recent attempts to expand existing legislation to increase punishment for such behaviour have been gathering momentum (New York Times, 2011).

Due to demographic and cultural differences, it is necessary to design HIV prevention interventions to the specific context and culture within which men have sex with other men. The appreciation of differences in behaviour among MSM will assist in the development of successful HIV prevention interventions (CDC, 2007). Alternative HIV prevention behaviours have emerged among MSM, including sero-sorting of sexual partners and strategic positioning (Hart &

Elford, 2010). Sero-sorting refers to a HIV prevention practice whereby some MSM limit unprotected anal intercourse to partners of the same HIV status as their own (CDC, 2007).

Men who have sex with men continue to have high and accelerating levels of HIV worldwide. HIV incidence rates were more than 44 times that of other men and 63% of new HIV infections in the United States of America were among MSM (Beyrer, 2007; MSMGF, 2008). A study in the United Kingdom estimated that MSM contribute one-third of new HIV infections every year (National AIDS Trust, as cited in MSMGF, 2008).

During 2005 and 2006 a systematic review of risk for HIV infection in low and middle income countries revealed the emergence of a new concentrated HIV epidemic among MSM in developing countries. Baral et al. (2007) found exceptionally high HIV prevalence estimates among MSM in various low and middle income countries. Thailand had an HIV prevalence rate of 24.6% among MSM. In Columbia it was 19.4%, in Uruguay 18.9% and Honduras had an HIV prevalence rate of 13.0% (Baral et al., 2007).

The literature consulted identified specific risk factors which increase MSMs possible exposure to HIV. The major risks have psychological, social and behavioural components which include: having anal sex without a condom, high partner turnover, the presence of sexually transmitted infections (STI), unknown HIV sero-status, complacency about risk, MSM who are HIV positive, the internet, social discrimination, the presence of female sexual partners and substance abuse (CDC, 2007; Kalichman et al., 1994; Lane et al., 2009; Pisani, 2008; Straub, 2002; Van Griensven, 2007). Studies have found that MSM who use the internet to find sex partners have an increased risk of exposure to HIV (Benotsch, Kalichman, & Cage, 2001). When MSM also have female sexual partners in their sexual network, a crossover of HIV transmission may occur (Baral et al., 2007; Lane et al., 2009; Van Griensven, 2007). MSM in low and middle income countries indicated that about half used a condom the last time they had anal sex with

another man and less than one third had been for an HIV test in the preceding twelve months (Baral et al., 2007).

It was found that “some individuals engage in risky sexual behaviour because the risk makes the behaviour more exciting and pleasurable” (Straub, 2002, p. 489). Additionally, a survey among HIV negative gay and bisexual men found that the subjective reinforcement value of unprotected anal intercourse predicted condom use more strongly than the person’s perceived vulnerability to infection (Kelley & Kalichman, cited in Straub, 2002). Straub noted that issues such as sexual fantasies and the trust of one’s partner may also be factors in determining sexual behaviours. It is often not the type, but the number of risk factors experienced that is the most important determinant of perception of vulnerability to HIV infection (Shobo, 2007). In the following section, the relationship between sub-Saharan MSM risk contexts and its contribution to the spread of HIV is explored.

MSM in sub-Saharan Africa

Civil society organizations and some governments have made remarkable progress towards equality for all people, but violence and discrimination targeting men who have sex with men persist (MSMGF, 2008). There has been a surge in research activity and international advocacy targeting MSM populations (Smith et al., 2009). Social homophobia is legitimized in numerous African countries which leads to fear of victimisation and discrimination against MSM populations. In turn, MSM make unsafe sexual behaviour decisions in an effort to live their sexual lives covertly. Inequitable health practices in many African countries (even in South Africa, where same-sex relationships are protected by the South African Constitution) often marginalize MSM. This was evidenced by 35 of 52 African countries being unable to report any UNGASS indicator data on MSM to the United Nations (UN), in 2007 (UNGASS, 2007). This

means it is often difficult, especially for “closeted” individuals and non-gay identified MSM, to obtain necessary health care services. In addition, access to prevention initiatives is often limited.

Hostile social environments, high levels of stigma and national regulations have been complicit in making this category of behaviour even more risky and unseen (Berger, 2004). Recent developments, where some African leaders have stepped up discriminatory rhetoric against same-sex behaviour, are alarming. Such discourse of entrenched social homophobia and individual-level risks serve to further drive men who have sex with men away from access to health and HIV services. Social hostility towards MSM may unintentionally increase if African political commitment is not present to facilitate the understanding of the burden of HIV among MSM and its contribution to national epidemics (Smith et al., 2009). However, when respectful and sensitive approaches were employed to reach these MSM would make use of available health services (Van Griensven, 2007).

In the generalized epidemics of sub-Saharan Africa, men who have sex with men were found to be nearly four times more likely to be infected with HIV than the general population (Beyrer et al., 2010). Van Griensven (2007) noted that the size of the MSM population and the percentage of men practicing male-to-male sex in African countries were not well established. There are data available about African MSM populations from Malawi, Botswana, Namibia, Nigeria, South Africa (Burrell, Baral, Beyrer, Wood, & Bekker, 2009), and Kenya (Sanders et al., 2007). Two smaller South African studies in Gauteng (Lane, McIntyre, & Morin, 2006) and Cape Town (Baral et al., 2007), also provided data about MSM populations. Baral et al. (2007) found HIV prevalence among MSM in many African countries to be higher than within the general population. South Africa had an HIV prevalence rate of 15.3% among MSM, in Zambia it was 32.9%, Kenya had a rate of 15.6% and Malawi had an HIV prevalence rate of 21.4% among MSM. High rates of HIV prevalence were also found in cities in Senegal (21.5%) and Sudan

(9.3%). These are especially significant since the estimated adult HIV prevalence rates in these countries were 0.9% and 1.6% respectively (Van Griensven, 2007).

Based on the tentative assumption that 3% of adult males engage in male-to-male sex, high HIV prevalence rates among MSM may contribute between 10% and 20% to HIV prevalence in the general population (Van Griensven, 2007). These studies found high-risk behaviour to be prevalent amongst MSM populations and suggested that additional behavioural research is needed. Africa was found to be the most markedly understudied region (Baral et al., 2007; Smith et al., 2009). These studies on MSM in Africa also indicated the need for targeted risk reduction and HIV prevention strategies.

Despite these significant HIV prevalence findings, studies found that less than 5% of those men have access to HIV-related health care (MSMGF, 2008). Additionally, most African countries did not include MSM measures in their national HIV infection surveillance (Beyrer, 2007). There are also very limited data about HIV incidence rates among MSM in Africa, as revealed in a study among MSM sex workers in Mombasa, Kenya. The study found HIV incidence to be 20.4 per lifetime for both receptive and insertive anal sex (Sanders et al., 2007). Engaging these hidden MSM populations is often very difficult (Smith et al., 2009).

Smaller studies in African countries found that bisexuality is common among African MSM, with more than two thirds of MSM reporting sex with both men and women (Smith et al., 2009; Van Griensven, 2007). Lane et al. (2006) suggested that the most highly sexually active MSM may avoid testing for HIV.

It is clear that the findings mentioned previously have major implications in the context of an adult HIV prevalence rate of 10.9% in South Africa (Shisana et al., 2009). Only recently has attention been given to the surge in HIV risk behaviours among MSM in South Africa and research indicated a high prevalence (Shisana et al., 2009). Data indicating HIV prevalence rates

among MSM ranged from 12.6% to 47.2% among diverse sub-populations (Burrell et al., 2009; Lane et al., 2009; Rispel et al., 2009). South African national household surveys, conducted in 2002 and 2005, did not explore specific risk factors or HIV prevalence within South African MSM populations (Shisana & Simbayi, 2002) but have incorporated measures on MSM since 2008 (Shisana et al., 2009).

In a recent study of where MSM go for health services in Pretoria, South Africa, it was found that only 56.5% of MSM regularly accessed health services at public health centres (Tun et al., 2010; Vu, Tun, Sheehy, & Nel, 2010). Of these MSM surveyed, two thirds have been for a recent HIV test. More than half (53.0%), however, did not disclose to their health service provider that they had sex with men (Tun et al., 2010). Additionally, the findings showed that 17.7% of the sample reported having an STI in the preceding year. Internalised homophobia was common among those with lower education levels. These MSM had a bisexual sexual orientation and high levels of HIV misinformation (Tun et al., 2010). These high levels of internalised homophobia among heterosexually or bisexually identified MSM indicate the need to develop alternative HIV prevention strategies to those normally applied to assist gay identified men. Following the discussions on the global and sub-Saharan impact MSM risks have had in relation to the HIV epidemic, the subsequent section discusses sexual risk behaviours among university student MSM in various parts of the world.

Sexual risk behaviour among university student MSM

Various studies have explored sexual risk behaviour among men who have sex with men who are young (Bolding, Davis, Hart, Sherr, & Elford, 2007; Dudley, Rostosky, Korfhage, & Zimmerman, 2004; MacKellar, Valleroy, Karon, Lemp, & Janssen, 1996; Salomon et al., 2009; Warren et al., 2008), attending high school (Berten & Van Rossem, 2009; Faulkner & Cranston, 1998), attending college (Brown & Venable, 2007; Eisenberg, 2001; Lindley, Nicholson, Kerby,

& Lu, 2003; So, Wong, & DeLeon, 2005; Tung, Ding, & Farmer, 2008) and, to a lesser extent, those MSM who are university students (Cong et al., 2008). As mentioned before (see page 11), findings suggest that risky sexual behaviour is placing many of these MSM at greater risk of contracting HIV. Factors which place young MSM at greater risk are: unprotected anal intercourse, high partner turnover, the presence of sexually transmitted infections, unknown HIV status, complacency about risk, MSM who are HIV positive, the role of the internet, social discrimination, the presence of female sexual partners, alcohol use before sex and the use of drugs for recreational purposes (Benotsch et al., 2001; Brown & Vanable, 2007; Eisenberg, 2001; Lindley et al., 2003; So et al., 2005).

Research has indicated that there is often a culture of secrecy in Africa, where the division between heterosexuality and same-sex behaviour is often less clear than in the West (Murray & Roscoe, 1998). Murray and Roscoe (1998) suggested that social expectations in Africa do not require an individual to suppress same-sex desires or behaviour but that these desires should not surpass or displace procreation. It is important to better understand the scope of male same-sex behaviours among student MSM in an African context, and if these social expectations about same-sex behaviours may predispose student MSM to sexual risk taking in the era of high rates of HIV. In the next section the limited data regarding university student MSM in South Africa are presented.

University student MSM in South Africa

According to Sandfort, Nel, Rich, Reddy, and Yi (2008) research on the structural, cultural, interpersonal and individual factors that mediate sexual risk behaviour among South African men who have sex with men was scarce. Additionally, Elford and Hart (2003) noted that we need to be attentive to the shifting risk environment in which men have sex with other men, as

well as being sensitive to the nature of sexual relationships and networks among higher education institution students in South Africa.

According to recent studies, school and student MSM populations worldwide reported multiple recent sexual partners, that consistent condom use remained low, and these school and student MSM were more likely to be older than their opposite-sex counterparts (Brooks, Lee, Newman, & Leibowitz, 2008; Eisenberg, 2001; Pisani, 2008). Interestingly, some studies found that off-campus residents had lower odds of consistent condom use (Eisenberg, 2001). This may have unique implications for health promotion interventions at higher education institutions.

Available research does not, however, reflect data which can easily be extrapolated to inform HIV prevention and policy development initiatives in Western Cape higher education institutions. Current data of sexual risk and HIV knowledge among higher education institution student MSM are inadequate. As mentioned before, there is no accurate data available of HIV prevalence rates among MSM in the general population in South Africa, not to mention substantial sexual risk data among the university MSM population. Studies have found that the prevalence of male same-sex behaviours occurs between 0.9% and 13.4% among MSM aged 15 to 49 (Sandfort, 1998).

A thorough literature review about MSM at tertiary institutions in the Western Cape yielded a paucity of knowledge about this potentially at-risk group and their actual sexual risk behaviours. The first national Knowledge, Attitude, Behaviour and Prevalence (KAPB) study among higher education institutions found that student MSM HIV prevalence (4.1%) was more than twice the HIV prevalence of heterosexual men and that 6% of male students reported same-sex practices (HEAIDS, 2010). Importantly, the study lacked more detailed measures regarding MSM behaviour, HIV knowledge, attitudes regarding sex and social homophobia at higher education institutions. HEAIDS (2010) recommended that higher education institution

management and other institutional structures should be proactive to ensure that the rights of MSM are protected.

Monica Du Toit, Manager of the Office for Institutional HIV Coordination (OIHC) at Stellenbosch University, claimed that prevention initiatives at South African tertiary institutions were commonly informed by data on the generalized epidemic and anecdotal evidence (personal communication, January 30, 2008). Lucina Reddy, the Project Officer and Peer Programme Coordinator at the University of Cape Town, was of the opinion that there was inadequate context specific data to inform specific interventions for MSM student groups within the various tertiary institutions in the Western Cape (personal communication, March 28, 2008).

There is a strong lesbian, gay and bisexual (LGB) movement at most tertiary institutions in the Western Cape, as evidenced by student organisations and support groups at most campuses. There are the LesBiGay Society at Stellenbosch University, the Rainbow Society at the University of Cape Town and the Loud Enough Society at the University of the Western Cape. Although a number of students were open and/or public about their sexual orientation, numerous students were still living “in the closet” due to fear of victimization and discrimination (Graziano, 2005; Van Griensven, 2007). The greater Cape Town metropolitan area does, however, offer services and support to LGB, transgender and intersexed individuals further afield, like to students at Stellenbosch University. These non-governmental organisations include the Triangle Project, Health4Men and the Desmond Tutu HIV Centre.

A literature review also indicated that health promotion programs with an opposite-sex audience in mind may be misdirected, awkward, inappropriate and even harmful for male students who engage in same-sex sexual behaviours (Eisenberg, 2001). Studies have also indicated that being HIV positive was not considered a death sentence or it reflected an

inadequacy in safer-sex promotion intervention for university students (Bouldrey, cited in Eisenberg, 2001).

From the evidence presented on the risks MSM face globally, in sub-Saharan Africa, at global institutions of higher learning, and in South African higher education institutions, it is clear that this most at risk population needs to be better understood, from an evidence-based perspective, with a view to informing health interventions that reduce HIV transmission. In the following section, various theories that aim to predict condom use among university student MSM are presented.

Theories to predict condom use among university student MSM

Overview of social cognition models in predicting health behaviour. Individuals make decisions to improve their own health and well-being by adopting particular health-enhancing behaviours (e.g. consistent condom use) and avoiding other health-compromising behaviours (e.g. injecting intravenous drugs; Conner & Norman, 2005). Identifying factors which underline such health behaviours have become a focus of research in psychology and other health-related fields since the mid-1980's (Albarracin, Johnson, & Fishbein, 2001; Conner & Norman, 2005; Heeren, Jemmott III, Mandeya, & Tyler, 2007). According to Fishbein (2002) there was growing recognition that behavioural science theory and research had played an important role in protecting and maintaining public health. Behavioural interventions to reduce the risk of HIV transmission were effective. These evidence-based interventions should be disseminated widely in the higher education sector (HEAIDS news, 2008).

Factors intrinsic and extrinsic to individuals were identified as playing a mediating role in individuals choosing to enact certain health-protective behaviours. Intrinsic factors included socio-demographic factors, cognitions, personality and social support, while extrinsic factors included those which were incentive structures and legal restrictions (Conner & Norman, 2005).

Intrinsic factors, and in particular cognitive factors, were found to be the most important proximal determinants of behaviour. Models of how these cognitive factors influence social behaviours are known as social cognition models (SCM; Conner & Norman, 2005).

According to Conner and Norman (2005) the success in predicting behaviour through social cognitive determinants through SCMs are important since they were seen to mediate the effects of other determinants (e.g. social class) and were more open to change than other factors (e.g. personality). Interventions are therefore deemed effective when the manipulation of cognitive factors is proven to be successful in determining health behaviours. For example, risk awareness and knowledge about HIV are essential factors for individuals who make informed choices regarding their sexual health. Identifying cognitive factors which predict health behaviour can inform implementers and policy makers to design appropriate and context specific interventions which address the prevalence of such behaviours and, in turn, effect improvement in individuals' sexual health. It is clear that there remains a need to use SCMs to predict risky sexual behaviour with different populations since there have been inconsistent findings based on ethnic identity, age of participants and gender (Bogart, Heather, & Pinkerton, 2000). Different social cognition models are often used to understand health-related behaviour and some of these are described below.

Health belief model.

The health belief model (HBM) uses variables of perception of disease threat and the evaluation of behaviours which work against this threat. Within the HBM threat perceptions are understood to be informed by an individual's perceived susceptibility to the disease, and secondly, by the perceived severity of the consequences of the disease (Conner & Norman, 2005). This means an individual will consider the perceived benefits and barriers of the health-related behaviour and then choose among the available alternatives. Individuals who perceive

themselves as being susceptible to a disease, and consider it to be serious, and those to whom the benefits of adopting the health-related behaviour outweigh the costs, are more likely to adopt that new health behaviour (Conner & Norman, 2005).

Protection motivation theory.

Protection motivation theory (PMT) suggests that certain adaptive and maladaptive responses to a health threat are informed by two appraisal processes. Firstly, threat appraisal consists of the severity of a health threat, and perceptions of susceptibility to a health threat. The second process consists of the assessment of available behavioural alternatives which may reduce the threat. This is called coping appraisal (Conner & Norman, 2005). Coping appraisal is based on response efficacy and self-efficacy. The former relates to an individual's expectation that by carrying out a behaviour one is able to remove the threat. The latter is the belief in one's own capacity to successfully adopt the behaviour.

Behaviour is understood to be a function of intentions. Together, threat and coping appraisals result in the intention to perform or not to perform a health behaviour. Protection motivation plays an important interceding role in these two cognitive assessments. Protection motivation arouses, directs or sustains activity to protect the self from danger and is seen as the intention to perform or to avoid protective health behaviour (Conner & Norman, 2005).

Social cognitive theory.

Social cognitive theory (SCT) assumes that human motivation and action are based upon anticipated outcome expectancies. Outcome expectancies are understood as people's beliefs about the possible consequences of their actions. The major outcome expectancies are situation-outcome, action-outcome and perceived self-efficacy (Luszczynska & Schwarzer, 2005).

According to Conner and Norman (2005): "Situation-outcome expectancies represent beliefs about which consequences will occur without interfering personal action" (p. 10). Action-

outcome is the expectancy that a certain behaviour will or will not lead to a given outcome. Finally, self-efficacy expectancy represents the belief that certain behaviours are within an individual's control (Conner & Norman, 2005).

Clear causal pathways among these expectancies are important in SCT. Action-outcome expectancies impact upon behaviour by way of their influence upon goals and upon self-efficacy expectancies. While situation-outcome expectancies function as distal determinants of behaviour and direct behaviour through their impact on action-outcome expectancies. These two expectancies lead to intentions to perform certain behaviours. Self-efficacy expectancies are seen to have a direct impact upon behaviour and an indirect impact through their influence upon intentions (Conner & Norman, 2005).

Health locus of control.

According to Conner and Norman (2005) the principle of social learning theory shows that the chance of a behaviour happening in a given situation is a shared function of an individual's expectancy that the behaviour will lead to a particular reinforcement and the degree to which the reinforcement is valued. It was from this tenet that the health locus of control (HLC) construct was developed as a generalised expectancy, making a distinction between those with an internal and those with an external locus of control. Whether a person has an internal or an external locus of control are determined from a series of statements on a Likert-type scale. The statements are scored and summed to determine whether the individual has internal or external health beliefs. Individuals who score above the median are seen as health-externals, while individuals who score below the median are seen as health-internals (Conner & Norman, 2005).

Individuals with an internal locus of control are understood to believe that events are directly related to their actions. While individuals with an external locus of control are

understood to believe that events are unrelated to their actions and thus determined by factors beyond volitional control (Conner & Norman, 2005).

The theory of reasoned action.

Fishbein and Ajzen's (1975) theory of reasoned action (TRA) draws heavily from cognitive and behaviour theory and is based upon those behaviours which are seen to be under volitional control. These volitional behaviours are best predicted by intentions. The formation of an intention to adopt behaviour is understood through the process of how an unobservable attitude leads to an observable behaviour (Conner & Sparks, 2005). The TRA assumes that individuals who intend to enact a given behaviour will be likely to do so (see Figure 2).

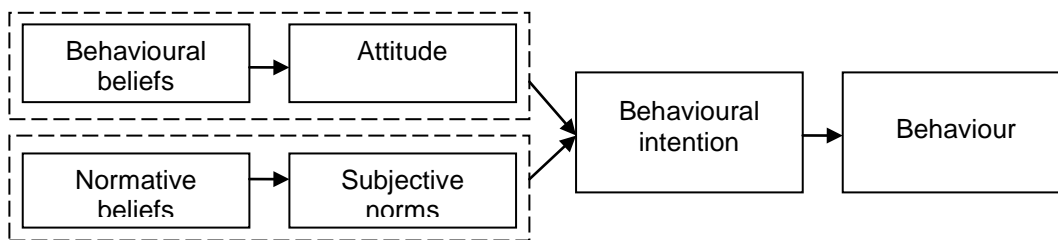


Figure 2. Model of the theory of reasoned action (adapted from Fishbein & Ajzen, 1975)

Behavioural intentions are regarded as a linear summation function of attitude towards the behaviour being predicted and the subjective norm about the behaviour (Kashima, Gallois, & McCamish, 1993). The subjective norm is based upon a person's perception that important others think they should or should not perform a given behaviour (Ajzen & Fishbein, 2005). The determinants of the subjective norm are mediated by the perceived social pressure from others to perform the desired behaviour (Kashima et al., 1993). Ajzen (1988) defined attitude as the sum of an individual's beliefs about any given behaviour weighted by the evaluation of these beliefs. Determinants of attitude are viewed as the sum of the product of behavioural beliefs and the evaluation of the outcomes (Kashima et al., 1993). This can be expressed as:

$$BI = (AB)w_1 + (SN)w_2$$

where BI is behavioural intention, AB is a person's attitude toward performing the behaviour, SN is a person's subjective norm related to performing the behaviour, and w_1 and w_2 are regression weights (Ajzen, 1988).

In a meta-analysis of the applicability of the TRA, Sheppard, Hartwick and Warshaw (1988), found that the model "has strong predictive utility, even when utilized to investigate situations and activities that do not fall within the boundary conditions originally specified for the model (p. 338)". Sheppard et al. (1988), however, cautioned that it did not mean "further modifications and refinements are unnecessary, especially when the model is extended to goal and choice domains (p. 338)".

Furthermore, Sheppard et al. (1988) suggested that more than half of the research using the theory of reasoned action investigated behaviours for which the model had not originally been intended. This was due to three major limitations when researchers applied the TRA. These limitations include the distinction between goal and behavioural intention, having choice among alternatives, and understanding estimates rather than intentions (Sheppard et al., 1988). Another limitation of the TRA is that it excludes spontaneous, impulsive and habitual behaviours which may not be voluntary or does not involve conscious decision-making by the individual (Langer, 1989).

Selection of the theory of planned behaviour.

Ajzen (1988) extended the theory of reasoned action to develop the theory of planned behaviour in order to include behaviours not under volitional control. This was done by incorporating explicit considerations of perceptions of control over performance of the behaviour as an additional predictor of behaviour (see Figure 3). Since then, much research on predicting and explaining health-related intentions and behaviours has been based upon theory of reasoned

action and TPB models (Albarracín et al., 2001; Bryan, Kagee, & Broaddus, 2006; Conner & Norman, 2005; Fincham, Kagee, & Moosa, 2008; Giocos, Kagee, & Swartz, 2008). Both models are regarded as purposeful processing models which hypothesize that individuals' attitudes are formed after careful consideration of available information (Conner & Sparks, 2005).

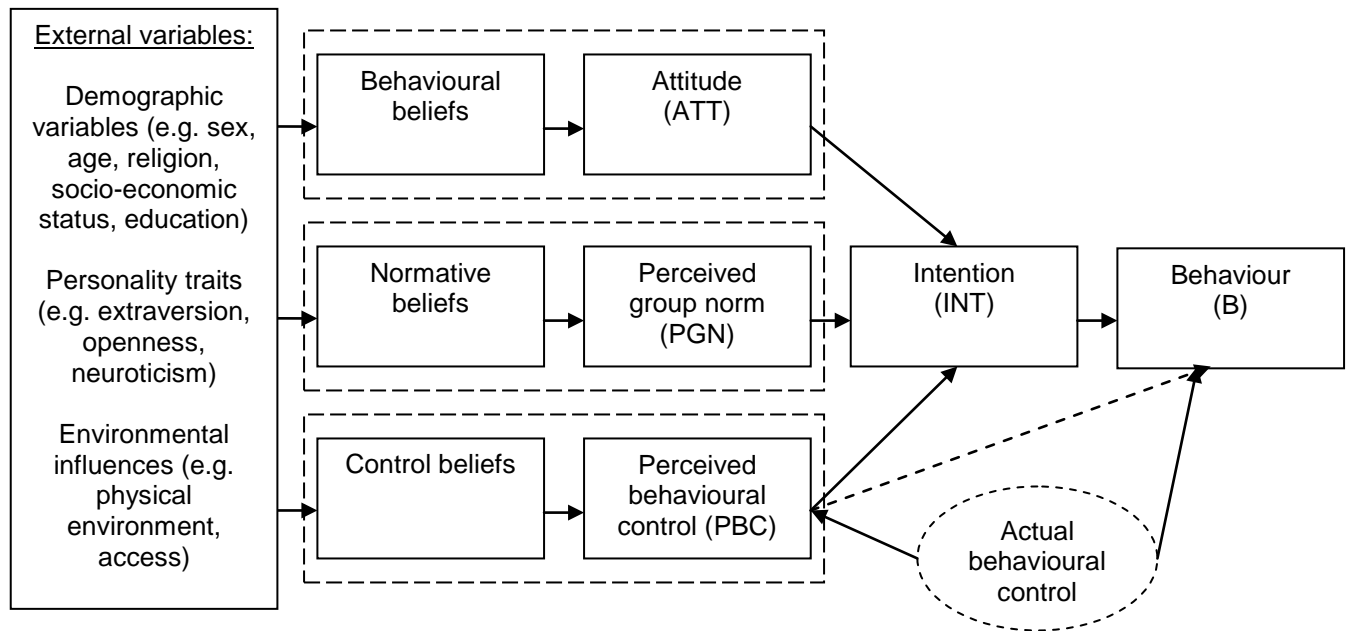


Figure 3. Model of the theory of planned behaviour (adapted from Conner & Norman, 2005)

Ajzen (1988) introduced perceived behavioural control (PBC) as an important construct which can be used to expand the applicability of this model beyond easily performed tasks and volitional behaviours. PBC can account for complex goals and behaviours which are dependent on the performance of a complex sequence of substantially important health behaviours (e.g. safer sex practices; Conner & Sparks, 2005). According to Ajzen (1988) intentions reflect primarily an individual's willingness to perform a given behaviour, while perceived control is likely to take into account some of the realistic constraints that might exist.

The central aspects of the TPB are that intentions causally determine behaviour and those intentions in turn are caused by the combined influences of attitudes (ATT) toward the behaviour,

perceived group norms (PGN) and PBC (McCaul, Sandgren, O'Neill, & Hinsz, 1993) as represented in Figure 3. The TPB depicts behaviour as a linear regression function of behavioural intention and perceived behavioural control. This can be expressed as:

$$B = w_1BI + w_2PBC$$

where B is behaviour, BI is behavioural intention, and w_1 and w_2 are regression weights (Conner & Sparks, 2005). PBC is used as a proxy for actual behavioural control. Ajzen (1988) notes that: “[to] the extent that perceptions of behavioural control correspond reasonably well to actual control, they should provide useful information over and above expressed intentions” (p. 133). A review of studies revealed the interaction between intentions and PBC to be significant in almost 50% of reported tests (Armitage & Conner, 2001).

Fishbein and Ajzen (1975) and Ajzen (1988) also identified the principle of compatibility which states that any attitude with subsequent behaviour has an element of action, target and context and takes place at a specified time. For example, in the context of understanding health behaviours a gay individual who is concerned about remaining HIV negative uses (action) a condom (target) during anal intercourse (context) with every future sexual partner (time). It is when attitudes and behaviours are measured at the same degree of specificity that correspondence will be the greatest (Ajzen & Fishbein, 2005). It is the repeated use of condoms (a single behaviour) across contexts and times that researchers and implementers need to predict. Therefore specific attitudes will predict specific behaviours and wide-ranging attitudes will predict wide-ranging behaviours (Conner & Sparks, 2005).

The theory of planned behaviour has received considerable empirical support in predicting health decision making, including HIV prevention behaviours, and specifically the manner in which intentions mediate between psychosocial factors and health among a variety of populations based on gender, ethnicity, age and sexual orientations (O'Boyle, Henly, & Larson,

2001; Rhodes & Courneya, cited in Kagee & Van Der Merwe, 2006). In most studies using the TPB, applications have been successful since the theory has been able to account for a considerable variation in intentions and actions across behaviours (Conner & Sparks, 2005). Hagger, Chatzisarantis, and Biddle (2002) found more than 70 applications of the TPB with regard to physical activity, although there had been considerable gaps in time between measurement and subsequent behaviour (Conner & Sparks, 2005). There has, however, been significant variation in the findings of different studies. The majority of studies done in sub-Saharan Africa have focussed more on the descriptive analysis of sexual risk behaviours and the pervasiveness of attitudes and beliefs (Heeren et al., 2007) rather than the drawing from well established models such as the TPB (Harrison, Smit, & Meyer, 2000). Studies have found that the TPB provides a good model for predicting condom use (Albarracin et al., 2001) and has been used among undergraduates in American and South African contexts (Heeren et al., 2007).

Critique of the theory of planned behaviour

The variance explained by the addition of the TPB variable of perceived behavioural control was shown to be inconsistent or very small in several studies (Sutton, McVey, & Glanz, 1999). The TPB was developed to include behaviours where actual and perceived control may be low. Where behavioural control is high, the TPB equates closely to the theory of reasoned action (Sutton et al., 1999). An over reliance on the use of injunctive measures of normative pressure within the TPB has been found when there was weak correlation between subjective norms and intention (Norman, Clark, & Walker, 2005). Studies where measures of descriptive norms regarding important others were included found that these descriptive norms had an independent influence on intentions (Norman et al., 2005).

More essential critiques of the role perceived group norms play in the TPB have focused on the greater alignment with social psychological models of group influence (Norman et al.,

2005). Norman et al. (2005) propose the inclusion of the processes of categorisation and self-enhancement in terms of group membership. Also, the theory of planned behaviour has not been able to predict the initiation or maintenance of health-seeking behaviours over time since the TPB is a model of intention formation rather than one which explains the translation of intention into behavioural outcomes (Sheeran, Conner, & Norman, 2001).

Work by Grevé (2001) contests whether intentions are the immediate prior cause of behaviour. Sheeran et al. (2001) counters this by arguing that: “behaviour rather than action is the dependent variable in TPB studies unlike ‘action’, the concept of ‘behaviour’ does not presuppose intention is the cause” (p. 45).

In a conceptual analysis by Ogden (2003), the author notes that the TPB, like all social cognition models are only models. Ogden (2003) found that “...these models do not enable hypotheses because their constructs are unspecific; they therefore cannot be tested (p. 424)”. Social cognition models cannot be tested given that they are concerned with analytic realities rather than artificial ones. These truths are defined by Ogden (2003), in the following way: “synthetic truth that can be known through exploration and testing and analytic truth is true by definition (p. 425)”. Ogden (2003) argues also that the conclusions from many studies are “often true by definition rather than by observation (p. 424)”. According to Ogden (2003), applying the theory of planned behaviour may create and change cognitions and behaviour rather than actually describing them. Hence, they do meet the criteria needed for a good theory (Ogden, 2003).

Despite many questions about the use of the TPB in the study of health-seeking behaviour, it is one of the most extensively used models for understanding health and social behaviour (Armitage & Conner, 2001; Conner & Sparks, 2005). TPB variables can usually explain between 40% and 50% of the variance in intention, and between 23% and 34% of the variance in behaviour (Sutton, 1998).

Conclusion

Investigating data regarding the extent of sexual risk behaviours and knowledge about HIV among the target group, and applying the theory of planned behaviour, which has been widely used to predict HIV preventative behaviours, can explain risky sexual behaviour (such as unprotected anal intercourse and inconsistent condom use) among student men who have sex with men within Western Cape higher education institutions.

Furthermore, the findings can potentially inform policy and current HIV prevention initiatives at Stellenbosch University and other higher education institutions in South Africa. The Office for Institutional HIV Co-ordination, at Stellenbosch University, which is responsible for coordinating HIV prevention programmes, have indicated that the results of such an investigation could be used to directly inform institutional HIV policy and interventions. The model may provide a way to achieve safer sexual behaviour decision making among student men who have sex with men through interventions which are evidence-based and grounded within empirically supported theoretical models.

Not only will the results add to the limited body of behavioural science theory and research on men who have sex with men at higher education institutions in an African context, but also suggest valuable practical solutions for current behavioural HIV-related interventions with MSM. By gathering data about sexual risk behaviour among MSM it may indicate whether this particular subgroup of students might benefit from health behaviour interventions tailored to their context specific, psychological, social and cognitive needs (Eisenberg, 2001).

In chapter three, the methodology of the study is presented. It includes a discussion on research design, data collection instruments and the procedures used in the study.

Chapter 3

Methodology of the study

The methodology of the study is presented. This chapter goes on to elaborate on the research design, the various data collection instruments and the procedures used in the study.

Research design

The research was done in two phases (baseline and follow-up). The first phase of this quantitative study was cross-sectional. This phase was done via a self-administered online survey (see Figure 4). Convenience sampling was used to recruit participants.

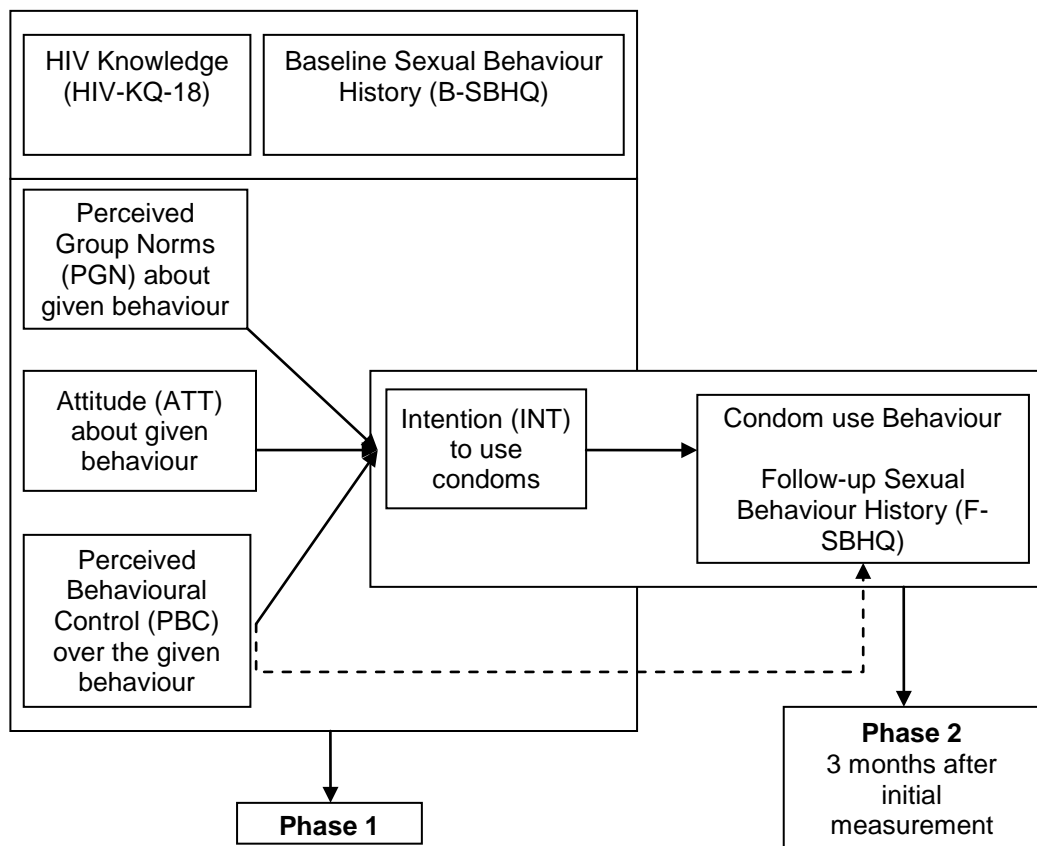


Figure 4. Two phase data collection schematic with TPB, HIV knowledge and sexual behaviour history questionnaires

During the second phase another self-administered online survey was completed with the same sample three months after phase one (see Figure 4). This served as a prospective survey about actual behaviour which occurred subsequent to the initial measurement. The aim was to explore the determinants of intention to use condoms and to then compare these determinants to actual behaviour which occurred in the subsequent three month period. Due to the smaller than expected number of participants who took part at phase two of data collection, the determinants of actual behaviour (condom use), based on the theory of planned behaviour, could not be statistically determined.

Participants

Participants were recruited based upon being self-identified as a gay man, a bisexual man or a man who does not identify as gay or bisexual but have had male-male sexual experiences in their lifetime. A sample consisting of fifty males who were registered undergraduate or postgraduate students at Stellenbosch University in the Western Cape was recruited. Only 37 of these students took part in the follow-up online survey. The recruitment period was four months and yielded only fifty willing candidates. The participants represent the age group of 18 to 26 year-olds.

Data collection instruments and constructs

A battery of instruments was completed by participants on two occasions, three months apart. All questionnaires were administered in English only, and participants were asked to state whether they were in complete command of English as the language of this study. Each page of the online questionnaire had an opt-out button for participants if they chose to end participation in the survey. Items for each measure were grouped together on one online page. Here follows a description of the data collection instruments and constructs used in this study:

Biographical information questionnaire. Basic biographical information was asked for in the first phase of the study. This included perceived household income, ethnicity, academic background, age, language, employment status, residence and sexual orientation (see Appendix C).

HIV knowledge: The HIV Knowledge Questionnaire (HIV-KQ-18) is an adapted 18-item version of an HIV knowledge questionnaire, developed by Carey and Schroder (2002), to measure participants' basic current knowledge about HIV (see Appendix B). Participants read 18 statements about HIV and indicated whether they thought the statements were *true* or *false*, or whether they *don't know*. A single score was obtained by summing the number of items correctly answered, with a maximum possible score of 18. Higher scores indicate greater knowledge.

This version of the HIV-KQ-18 was found to be internally consistent, stable, and sensitive to the change resulting from interventions (Carey & Schroder, 2002). Additionally, Carey and Schroder (2002) found that a psychometric analysis indicated that the HIV-KQ-18 provides strong levels of internal consistency and test-retest stability. The HIV-KQ-18 was found to be internally consistent across samples as indicated by a Cronbach's alpha reliability coefficient ($\alpha = .75-.89$), had a strong test-retest correlation average ($r = .83$), and strong correlations with a much longer, previously validated measure as indicated by Spearman rank coefficient ($r = .93-.97$; Carey & Schroder, 2002).

Sexual behaviour: The Sexual Behaviour History Questionnaire (B-SBHQ) is a self-report questionnaire regarding sexual behaviour during participants' lifetime (see Appendix E). A similar questionnaire was used in a study about teenage sexual behaviour conducted by Kagee, Fincham, and Moosa (2008). To this end the B-SBHQ contained items on age of first sexual intercourse, reported multiple-concurrent sexual partners, consistent condom use, number of

sexual partners, frequency of sexual intercourse, HIV testing rates, previous STIs, current relationship status, alcohol and drug use with sexual intercourse and forced sex (see Appendix E). The measure was scored on a nominal scale presented to the participants in the online survey for each item. Participants could select the most appropriate answer or type in a number to respond to the given item.

To measure the relationship between self-reported behavioural intentions and actual behaviour to perform safer sex behaviour (actual condom use) a second self-report was administered. The follow-up Sexual Behaviour History Questionnaire (F-SBHQ) regarding actual sexual behaviour was completed three months subsequent to the initial B-SBHQ (see Appendix F). The F-SBHQ included items on biological sex of sexual partners, reported multiple-concurrent sexual partners, consistent condom use, number of sexual partners, frequency of sexual intercourse, HIV testing rates, current relationship status, and alcohol-and-drug use with sexual intercourse. The measure was also scored on a nominal scale presented to the participants in the online survey for each item. Participants could select the most appropriate answer or type in a number to respond to the given item.

Theory of planned behaviour theoretical variables: A Theory of Planned Behaviour Sexual Behaviour Questionnaire (T-SBQ) included measures of intention to consistently use condoms in the following three months. The determinants of intention were attitude, perceived group norms and perceived behavioural control. These measures on intention were measured with Likert-type scale responses (ranging from *strongly disagree* to *strongly agree*; see Appendix D). The measure was scored on an ordinal scale with a minimum value of one and a maximum value of five. Values for each item were summed to give a total score for the measure. This questionnaire was adapted from a study conducted by Kagee et al. (2008). The T-SBQ questionnaire was

modified to be relevant to a sample of young student MSM. Cronbach's alpha reliability coefficient of the adapted questionnaire is reported in the results section.

Intention: Intentions to use condoms at baseline data gathering were measured using a semantic Likert-type scale (with five Likert scale responses ranging from *very true* to *very untrue*). For example: "If I have sex during the next three months, I'm planning to use condoms every time". The measure was scored on an ordinal scale with a minimum value of one and a maximum value of five, where higher scores indicated more positive intentions about using condoms. The T-SBQ measured the determinants of intention to use condoms with the following constructs:

Attitudes.

Attitudes toward condom use, carrying condoms, buying condoms and talking to sexual partners about condom use was assessed by means of several differential semantic Likert-type scales (with four Likert scale responses ranging from *very bad* to *very good*). For example: "If I have sex during the next three months, using condoms every time would be...". The measure was scored on an ordinal scale with a minimum value of one and a maximum value of four, where higher scores indicated more positive attitudes about condom use. Values for each item were summed to give a total score for the measure.

Perceived group norms.

To measure perceived group norms, participants indicated on another semantic Likert-type scale (with five responses ranging from *very true* to *very untrue*) whether people who are important to them thought they should practise condom use, carry condoms, buy condoms and talk to sexual partners about using condoms. For example: "Friends that I respect think I should use condoms every time, if I have sex, during the next three months". The measure was scored on an ordinal scale with a minimum value of one and a maximum value of five, where higher

scores indicated more positive perceived group norms regarding condom use. Values for each item were summed to give a total score for the measure.

Perceived behavioural control.

To measure perceived behavioural control participants were asked to indicate, on a Likert-type semantic scale (with five responses ranging from *very hard to do* to *very easy to do*), their estimates that attempts on their part will be successful should they try to use condoms. For example: “If you have sex in the following three months, how hard or easy would it be for you to make sure you and your partners use a condom every time?”. The measure was scored on an ordinal scale with a minimum value of one and a maximum value of five, where higher scores indicated more positive perceived behavioural control over condom use. Values for each item were summed to give a total score for the measure.

Procedure

Ethical clearance was obtained through the Stellenbosch University Division for Research Development, sub-committee B. Permission to conduct the research was obtained from the SU office for Institutional Research and Planning. After I obtained the necessary ethical clearance and permission, I placed advertisements about the study in the following campus media outlets: MyMaties.com website, WebCT campus announcements, Peer2Peer Educator distribution list, Office for Institutional HIV Co-ordination website and Die Matie student newspaper. I invited interested students to contact me by e-mail. Recruitment was done over a period of four months.

Those students who requested additional information about the study and who qualified based upon the selection criteria (self-identified men who have sex with men) were sent an online link to complete the survey. The online survey was hosted within the SU survey tool portal (www.surveys.sun.ac.za). The students were asked to give informed consent or to decline

consent. Students who chose not to participate were thanked for their time via an automated e-mail response and participants could opt-out of the surveys at any given time.

Those who consented completed the two online surveys in a single session per survey. Upon completion of both surveys, participants were given directions of where to collect their incentive for participation. The incentive was a R100 gift voucher for each participant who completed the baseline and follow-up surveys.

Data analysis

The IBM Statistical Package for the Social Sciences (SPSS) version 19 was used to do all statistical procedures with the confidence level set at 0.05. Before any inferential statistics were performed, an integrity check of data capturing was performed. Reverse scoring was performed on relevant variables. The frequencies (*f*), means (*M*), standard deviations (*SD*), and ranges were calculated for the various predictor variables (attitudes, perceived group norms and perceived behavioural control). Thereafter, the assumptions of parametric statistics were assessed. Univariate normality of the criterion variable (intentions to use condoms) was assessed using Kolomogorov-Smirnov test of normality. Intercorrelations between attitudes, perceived group norms, perceived behavioural control, and intentions to use condoms were summarized in a correlation matrix.

One of the aims of the study was to determine the extent to which constructs of the theory of planned behaviour is applicable in explaining intention to use condoms. To this end I conducted a regression analysis using the variables attitudes, perceived group norms and perceived behavioural control as predictors of intentions to use condoms. A linear multiple regression model was constructed (see Figure 5). Attitudes, perceived group norms and perceived behavioural control were entered as predictor variables and regressed on to intentions to use condoms as the criterion variable in order to assess how much variance the theory of

planned behaviour could account for in self-reported condom use. Multiple correlation coefficients (R) and the coefficient of multiple determination (R^2) were calculated. The relative contributions of the combination of predictor variables to the criterion variables were determined.

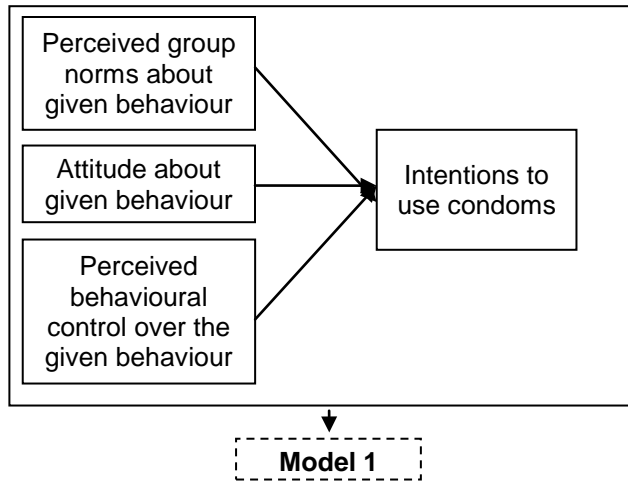


Figure 5. Linear multiple regression model where PGN, ATT, and PBC were predictor variables and regressed onto intentions to use condoms.

To achieve the fourth aim of the study, to determining the extent to which the theory of planned behaviour is applicable in explaining actual condom use behaviour, a second regression model was created to test the relationship between perceived behavioural control, intention to use condoms (the predictor variables) and self-reported condom use (criterion variable) three months after baseline data collection (see Figure 6). However, this second regression model could not be performed due to the small number of participants ($N = 37$; see page 57) that took part in the follow-up measure, and hence there was not enough power to conduct this analysis. Data analysis is presented in chapter four under the results of the research section.

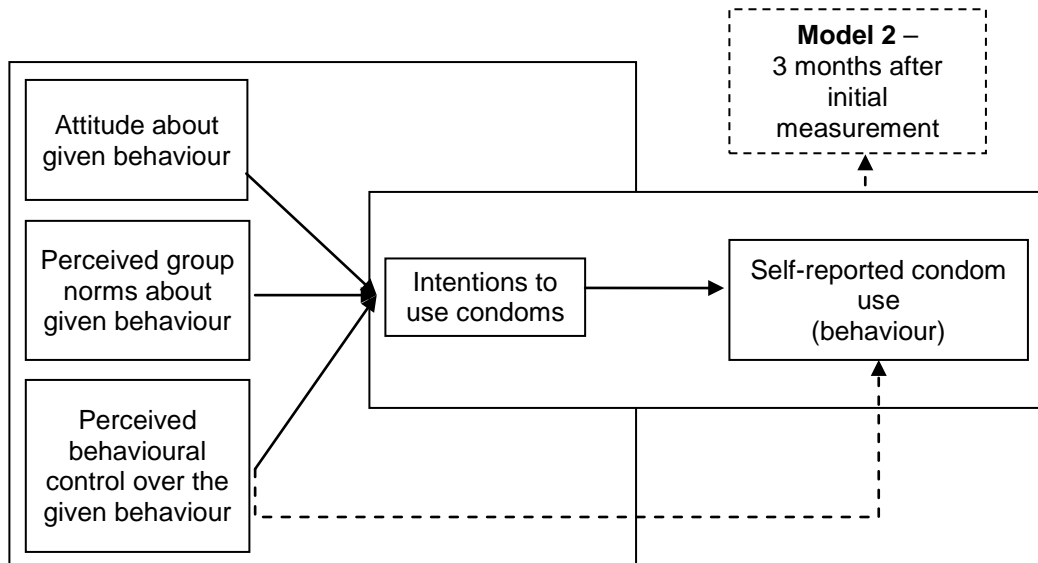


Figure 6. Linear multiple regression model where INT as predictor variable was regressed onto actual use condom use.

In the following chapter the results of the research are presented. It includes the demographics of the sample, the results regarding HIV knowledge, the sexual behaviour of the sample at baseline and at follow-up. The chapter concludes with the results of the regression analysis of the theory of planned behaviour model where intention to use condoms was measured.

Chapter 4

Results of the research

The results of the research are presented which include the demographics of the sample, the results regarding HIV knowledge, the sexual behaviour of the sample at baseline and at follow-up, and finally, the chapter concludes with the results of the regression analysis of the theory of planned behaviour model where intention to use condoms was measured.

Demographic characteristics of the sample

The baseline sample of 50 student men who have sex with men comprised 34 White South Africans (68%), 14 Coloured South Africans (28%), one Black South African (2%) and one Indian South African (2%). More than half of the sample (56%) was between 21 and 23 years old and 40% were between 18 and 20. Thirty eight percent of the sample was in their second academic year and 28% were in their third academic year at university. Only one (2%) of the participants indicated that he had children.

Three-quarters (76%) of the student men who have sex with men reported living in Stellenbosch town, while thirty-six (72%) participants reported not residing in a Stellenbosch University residence. The majority of the student MSM were full-time students and only 16% reported that they were also employed. Almost half (48%) of the participants described their combined household income as being more than R100 000 per annum and 20% reporting a combined household income as being between R 75 001 and R100 000.

Two-thirds of the participants (66%) self-identified as being gay, nine participants (18%) reported being bisexual, seven (14%) self-identified as being not gay or bisexual but had had sex with men, and one participant (2%) identified himself as fitting into some level of heterosexuality. These results are summarised in Table 1.

Table 1

Demographic Characteristics of the Sample

	N	(%)
Age		
18 to 20	20	40
21 to 23	28	56
24 to 26	2	4
Gender		
Male	50	100
Race		
White	34	68
Coloured	14	28
Black	1	2
Indian	1	2
Academic year		
1 st	9	18
2 nd	19	38
3 rd	14	28
4 th	4	8
5 th	2	4
6 th or more	2	4
Residential location		
In Stellenbosch	38	76
Out of Stellenbosch	12	24
Living situation		
SU residence	14	28
Not SU residence	36	72

Table 1 (*continued*)

	N	(%)
Annual household income		
Under R10 000	2	4
R10 000 to R20 00	4	9
R20 001 to R30 000	2	4
R30 001 to R50 000	4	9
R50 001 to R 75 000	3	7
R75 001 to R100 000	9	20
More than R100 000	22	48
Employment status		
Employed	8	16
Unemployed	42	84
Children		
Yes	1	2
No	49	98
Sexual orientation		
Gay	33	66
Bisexual	9	18
Heterosexual	1	2
Not gay or bisexual but have had sex with men	7	14

HIV knowledge among student MSM

On average, the sample of MSM scored high on a questionnaire of HIV knowledge, with an average score of 14.55 from a possible score of 18 (mean = 80.84%; median = 82.35%; *SD* = 8.02). Minimum and maximum scores were between 9.53 (52.94%) and 16.94 (94.12%)

respectively. Only 6% of the sample recorded HIV knowledge scores of less than 12.6 (70%).

These results are summarised in Table 2.

Table 2

HIV Knowledge Scores of the Sample

	n	(%)	Mean (M)	Standard Deviation (SD)
HIV Knowledge score			80.94	8.02
55% to 59%	1	2		
60% to 64%	2	4		
65% to 69%	0	0		
70% to 74%	4	8		
75% to 79%	12	24		
80% to 84%	14	28		
85% to 90%	15	30		
91% to 95%	2	4		

The statement: “Using Vaseline or baby oil with condoms lowers the chance of getting HIV” was answered incorrectly by 20% of the sample. Three other statements indicated some lack in basic HIV knowledge. “Taking a test for HIV one week after having sex will tell a person if she or he has HIV” was answered incorrectly by 18%. “All pregnant women infected with HIV will have babies born with AIDS” was answered incorrectly by 18%. Finally, “A person can get HIV from oral sex” was answered incorrectly by 16% of the sample. The HIV knowledge items and correct scores are summarised in Table 3.

Table 3

HIV Knowledge Items and Correct Scores

HIV Knowledge items	n	(%)
Coughing and sneezing DO NOT spread HIV.	45	90
A person can get HIV by sharing a glass of water with someone who has HIV.	49	98
Pulling out the penis before a man climaxes ('cums') keeps a man from getting HIV during sex.	48	96
A woman can get HIV if she has anal sex with a man.	47	94
Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV.	48	96
All pregnant women infected with HIV will have babies born with AIDS.	41	82
People who have been infected with HIV quickly show serious signs of being infected.	49	98
There is a vaccine that can stop adults from getting HIV.	43	86
People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.	46	92
A woman cannot get HIV if she has sex during her period.	48	96
There is a female condom that can help decrease a woman's chance of getting HIV.	47	94
A natural skin condom works better against HIV than does a latex condom.	50	100
A person will NOT get HIV if she or he is taking antibiotics.	47	94
Having sex with more than one partner can increase a person's chance of being infected with HIV.	49	98
Taking a test for HIV one week after having sex will tell a person if she or he has HIV.	41	82
A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.	49	98
A person can get HIV from oral sex.	42	84
Using Vaseline or baby oil with condoms lowers the chance of getting HIV.	40	80

Sexual behaviour among student MSM at baseline

The mean age of first intercourse was 16 years (median = 17 years; $SD = 4.92$), with more than one in five of the student men who have sex with men (20%) reporting that they first had sex at or before the age of 12. All of the men reported at least one penetrative sexual encounter with a partner prior to taking part in the survey, with 77.7% reporting two or more partners in the past. More specifically, the participants reported a mean of 8.13 sexual partners (median 5.5; $SD = 6.79$). More than half (58%) of the student MSM reported no multiple concurrent sexual partners (MCP) in the past. However, seven participants (14%) reported having MCP “sometimes” or “often”. These results are summarised in Table 4.

Two-thirds (66%) of the student MSM were in some form of a sexual relationship. Regarding the frequency of engaging in sexual intercourse 44% of the student MSM reported having sexual intercourse a few times a year, 16% had sexual intercourse once a month, and 38% reported having sexual intercourse between once a week and five times a week.

Four percent of the MSM reported having made one or more female sexual partner pregnant. Forty-four percent reported either not at all or almost never using alcohol or drugs during sexual intercourse, which in turn meant that 56% had used alcohol or drugs during sexual intercourse in the past. Six percent (6.1%) reported having been forced to have sexual intercourse against their will. While 8% have experienced abuse and violence on campus due to their sexual preference, 22% have experienced abuse only and another 6% reported having experienced some form of violence. A chi-square test on the relationship between gay-identifying participants and participants who have experienced some form of violence or abuse on campus produced significant results $\chi^2(1, 42) = 7.98, p < .01$.

Most participants (70%) reported having used condoms almost always or always when engaging in penetrative sexual activities prior to the beginning of the study, but 30% reported using condoms inconsistently or not at all in the past.

The prevalence of sexually transmitted infections (other than HIV) was reported as 6% among the sample of student MSM. Most of the participants (80%) had been tested for HIV in their lifetime, and of those who had been tested for HIV, 4.4% reported that they were HIV positive. In the twelve months prior to baseline data collection, 70% of the sample was tested for HIV.

Many of the student MSM reported also having female sexual partners in the past. Thirty six percent (36%) reported male and female sexual partners, while another six percent (6%) reported sexual preference for female partners.

Table 4

Sexual Behaviour Characteristics of the Sample at Baseline (N = 50)

	N	(%)	Mean (M)
Age of first penetrative sex			16.0
0 to 2 years	4	8	
10 to 12 years	1	2	
12 to 14 years	3	6	
14 to 16 years	12	24	
16 to 18 years	17	34	
18 to 20 years	11	22	
20 to 22 years	2	4	
Number of all sexual partners			8.13
0 to 5	25	50	
5 to 10	12	24	
10 to 15	8	16	
15 to 20	1	2	
20 to 25	3	6	
25 to 30	1	2	

Table 4 (*continued*)

	n	(%)	Mean (M)
Multiple-concurrent sexual partners			
Never	29	58	
Seldom	14	28	
Sometimes	6	12	
Often	1	2	
Relationship status			
In a relationship	17	34	
Not in a relationship	33	66	
Consistent condom use			
Never	1	2	
Almost never	5	10	
Sometimes	9	18	
Almost always	25	50	
Always	10	20	
Alcohol and/or drug use with sexual intercourse			
Never	6	12	
Almost never	16	32	
Sometimes	21	42	
Almost always	6	12	
Always	1	2	

Table 4 (*continued*)

	n	(%)	M
Frequency of sex			
I don't	1	2	
A few times a year	22	44	
Once a month	8	16	
Once a week	7	14	
2 to 3 times a week	7	14	
4 to 5 times a week	5	10	
Ever had an HIV test			
Yes	40	80	
No	10	20	
Tested for HIV in previous 12 months			
Yes	35	70	
No	15	30	
HIV-status subsequent to most recent HIV test			
HIV-positive	2	4.40	
HIV-negative	39	86.70	
Don't know	4	8.90	
Abuse and/or violence experienced on campus due to sexual preference			
Neither	32	64	
Abuse and violence	4	8	
Abuse	11	22	
Violence	3	6	

Table 4 (continued)

	n	(%)	M
Forced sex against will			
Yes	3	6.10	
No	46	93.90	
Impregnated a sexual partner			
Yes	2	4	
No	48	96	
Ever had a sexual transmitted infection (not HIV)			
Yes	3	6	
No	47	94	
Sexual preference			
Men	29	58	
Women	3	6	
Either men or women	18	36	

Follow-up sexual behaviour among student MSM

Of the thirty-seven participants that took part in the follow-up sexual behaviour survey, 75.7% had penetrative sex with a partner in the previous three months. The mean number of sexual partners for the three month period was 1.41 (median 1; $SD = 1.30$).

Most participants (78.57%) reported having had sex with a male partner within the past three months. One tenth (10.71%) of the men only had female partners, while another 10.71% had had sex with both male and female partners. More than two thirds (68.92%) of the student MSM reported using condoms almost always or always when engaging in penetrative sexual

activities prior to the completion of the follow-up survey, but one third (32.14%) had used condoms inconsistently or not at all in the three months prior to follow-up data collection.

More than forty percent (44.83%) of the men reported either not at all or almost never using alcohol or drugs during sexual intercourse, which in turn meant that 55.17% had used alcohol or drugs during sexual intercourse in the three month period. Also, in the three month time frame, 57.15% had sexual intercourse a few times to once a month, 10.71% once a week, and 25% reported sexual intercourse between two and five times a week. Multiple concurrent partnerships were reported by six (16.2%) of the sample. Finally, one-fifth (21.6%) had had an HIV test just prior to follow-up data collection. These results are summarised in Table 5.

Table 5

Sexual Behaviour Characteristics of the Sample at Follow-Up (N = 37)

	n	(%)	M
Penetrative sex during previous 3 months			
Yes	28	75.70	
No	9	24.30	
Number of sexual partners in previous 3 months	28		1.41
Biological sex of sexual partners during previous 3 months			
Only with men	22	79	
Only with women	3	11	
With both	3	11	

Table 5 (continued)

	N	(%)	M
Consistent condom use during previous 3 months			
Never	5	17.86	
Almost never	3	10.71	
Sometimes	1	3.57	
Almost always	8	29.63	
Always	11	39.29	
Alcohol use with sexual intercourse during previous 3 months			
Never	6	20.69	
Almost never	7	24.14	
Sometimes	11	37.93	
Almost always	5	17.24	
Frequency of sex during previous 3 months			
A few times	11	39.29	
Once a month	5	17.86	
Once a week	3	10.71	
2 to 3 times a week	5	17.86	
4 to 5 times a week	2	7.14	
Almost every day	2	7.14	
Tested for HIV in previous 3 months			
Yes	8	21.60	
No	29	78.40	

Table 5 (continued)

	N	(%)	M
Multiple-concurrent sexual partners in previous 3 months			
Never	31	83.80	
Seldom	5	13.50	
Often	1	2.70	

Data screening and tests of parametric assumptions at baseline

Univariate normality was assessed by means of the Kolomogorov-Smirnov test of Normality and showed significant results for the predictors of attitudes and perceived group norms. The results were as follows: The predictor variable of perceived behavioural control was non-significant, $D(74) = 0.14$, $p > 0.05$. This indicates that the distribution of the sample was not significantly different from a normal distribution.

The predictors' attitudes and perceived group norms were not normally distributed since $p < 0.05$. The skewed distribution of the predictors (attitude and perceived group norms) could be related to sample size, the nature of the constructs being measured, and possibly the provision of socially desirable responses (Field, 2009). These results are summarised in Table 6. The normal probability plot did not show any outliers which might affect the results. Research by Sawilowsky and Blair (1992) has shown "that under many conditions of nonnormality the usual t and F statistics are robust with respect to Type I error rates" (p. 352). An integrity check of the data for attitudes and perceived group norms was performed but revealed no data capturing errors or non-declared missing values. A normal probability plot of residuals was inspected which indicated that the residuals were normally distributed with no substantial deviations.

Additionally, correlations between predictors were calculated with the Variance Inflation factor (VIF) with all values found to be less than 10. No multicollinearity was indicated. All correlations had a level less than $r < 0.80$ between the predictors (Field, 2009).

Table 6

Normality Tests for Variables

Variables	Kolmogorov-Smirnov statistic	Df	p-value
Attitude towards condom use	.18	74	.00**
Perceived group norms	.19	74	.00**
Perceived behavioural control	.14	74	.20

** $p < .01$

Descriptive statistics of the sample at baseline

Descriptive statistics were calculated for the variables of intention to use condoms, attitudes, perceived group norms and perceived behavioural control. These results are summarised in Table 7.

Table 7

Descriptive Statistics Characterizing Theory of Planned Behaviour at Baseline (N = 50)

	N	Mean (M)	Standard Deviation (SD)	Range
Attitude towards condom use	50	3.62	.49	2.25 – 5.00
Perceived group norms	50	2.82	.28	2.13 - 3.50
Perceived behavioural control	50	3.90	.50	2.50 - 4.63
Intention towards condom use	50	2.84	.59	1.50 - 4.75

Internal consistency of measurement instruments

Cronbach's alpha reliability coefficient revealed that the internal consistency of the measures was as follows: perceived group norms had an acceptable internal consistency of $\alpha = 0.73$, attitudes had a modest internal consistency $\alpha = 0.54$, while perceived behavioural control also had an acceptable internal consistency of $\alpha = 0.59$. These results are summarised in Table 8. Internal consistency for attitudes could not be improved with the removal of any of the attitude items in the questionnaire.

Table 8

Cronbach's Alpha of the Measures

Variable	Cronbach's alpha
Attitudes	.54
Perceived group norms	.73
Perceived behavioural control	.59

Correlation matrix of the predictor variables and the criterion variable

The Spearman's correlation matrix for the predictor variables and the criterion variable is presented in Table 9. The Spearman rank coefficient was used to calculate correlations based on the ranks of each variable, hence the Pearson coefficient was not used (Field, 2009). All three predictor variables were significantly correlated with intention to use condoms. These predictors were attitudes towards condom use ($r = -0.65$), perceived behavioural control ($r = -0.63$), as well as perceived group norms ($r = -0.73$) at $p = 0.1$ level.

Table 9

Correlation Matrix of Intention to use Condoms

	Attitude towards condom use	Perceived group norms	Perceived behavioural control	Intention towards condom use
Attitude towards condom use	-			
Perceived group norms	-.64**	-		
Perceived behavioural control	.56**	-.55**	-	
Intention towards condom use	-.65*	-.73**	-.63**	-

* $p < .05$ ** $p < .01$

Predictors of Intention to Use Condoms at baseline

In the multiple regression analysis (see Table 10), attitudes toward condom use, perceived group norms and perceived behavioural control were entered into the model, together with their standardised regression coefficients and significance levels.

Table 10

Regression Summary for Dependent Variables

	B	Standardized Beta	Std Error of b	t(46)	p-value
N=50					
Attitude	-.79	-.63	.14	-5.65	.00
Perceived group norms	.44	.65	.08	5.81	.00
Perceived behavioural control	-.20	-.21	.10	-1.95	.06

Attitudes to condom use, perceived group norms about condom use, and perceived behavioural control regarding condom use were entered into a hierarchical regression model as predictors according to the TPB, with intentions to use condoms as the criterion variable (Table 11). Table 11 shows the different summary statistics of the regression model at each step of the analysis: R, R square (R^2), changed R square (ΔR^2), standard error, F statistic (F), degrees of freedom (df1 and df2) and the significance of F (p).

Table 11

Summary of Hierarchical Multiple Regression Analysis for Variables Predicting Intention to Use Condoms (N = 50)

Block	R	R ²	ΔR^2	Std error	F	df1	df2	p-value
A	.63	.40	.39	1.15	31.91	1	48	.00
B	.81	.65	.64	.89	43.73	2	47	.00
C	.82	.68	.66	.86	32.14	3	46	.00

Note: A= Predictors: (Constant), Attitudes toward condom use, B= Predictors: (Constant), Attitudes toward condom use, Perceived group norms, C = Predictors: (Constant), Attitudes toward condom use, Perceived group norms, Perceived behavioural control

Attitude was significant in predicting intention to use condoms, $\beta = -0.79$, $t(48) = -5.65$, $p < 0.05$ ($b = -0.63$). In other words the variable was significantly, but inversely, associated with predicting intention to use condoms within the theory of planned behaviour. The confidence interval, $CI(-0.48, 0.68)$, confirms that attitudes are significantly associated with intention to use condoms in the regression model. Higher ranks in attitudes about condom use are associated with lower levels of intention to use condoms (see Table 10).

Secondly, perceived group norms towards intention to use condoms had a coefficient of $\beta = 0.44$, $t(48) = 9.02$, $p < 0.05$ ($b = 0.65$) and was significant in the regression model. The confidence interval, $CI(0.22, 0.53)$, confirms that perceived group norms are significantly associated with intention to use condoms in the regression model. Higher levels of perceived group norms about condom use are associated with higher levels of intention to use condoms (see Table 10).

Lastly, perceived behavioural control towards intention to use condoms had a coefficient of $\beta = -0.20$, $t(48) = -1.95$, $p > 0.05$ ($b = -0.21$) and was not significant in the regression model

(see Table 10). Higher levels of perceived behavioural control about condom use are likely due to a chance relationship with intention to use condoms.

In the first step of the hierarchical multiple regression analysis (see Table 11), attitudes towards intention to use condoms was entered in the first step in block A. The variable could significantly account for 40% ($R^2 = 0.40$) of the variance in intention to use condoms, $F(1, 48) = 31.91, p < 0.05$. In the second step (block B), the linear combination of attitudes and perceived group norms could significantly account for 65% ($R^2 = 0.65$) of the variance in intention to use condoms. There was a 25% increase in explained variance, which was significant, $F(2, 47) = 45.49, p < 0.05$. The third step (block C), the linear combination of attitudes, perceived group norms and perceived behavioural control could significantly account for 68% ($R^2 = 0.68$) of the variance in intention to use condoms, $F(3, 46) = 32.14, p < 0.05$. There was only a three percent increase in explained variance.

Predictors of actual condom use at follow-up

Originally I intended to conduct a second regression analysis to determine the relationship between intention and perceived behavioural control with condom use three months after initial data collection (Figure 5). However, this was not possible due to the small number of respondents ($N = 37$) at follow-up. Thirteen fewer student men who have sex with men (26%) took part in the follow-up survey. Of the 37 who provided data at follow-up, twenty-eight ($N = 28$) reported having had sex in the previous three months and thus could potentially be included in a subsequent analysis. Clearly this sample size was too small.

The results presented in this chapter are discussed in chapter five. In addition, the limitations, implications and recommendations of the study are presented.

Chapter 5

Discussion

The results of the study are discussed this chapter. The content includes a discussion on the sexual behaviour among student men who have sex with men, their HIV knowledge and predicting condom use behaviour. In addition, the limitations, implications and recommendations of the study are presented.

Sexual behaviour among student MSM

The extent of risky sexual behaviour among the sample of student men who have sex with men was consistent with findings from various studies reporting risky sexual behaviour among college and university students (Brown & Vanable, 2007; Eisenberg, 2001; Lindley et al., 2003; So et al., 2005). The sample of student MSM reported a mean of 8.13 sexual partners in their lifetime. More than three-quarters of the student MSM reported multiple sexual partners in their sexual histories, while fourteen percent reported having multiple concurrent partners in their sexual histories. High sexual partner turnover and concurrent sexual relationships have been shown to be behavioural risk factors that place young MSM at greater risk of contracting HIV (Baral et al., 2007; Eisenberg, 2001; Van Griensven, 2007; UNAIDS, 2009).

In a study of MSM in low and middle income countries Baral et al. (2007) showed that about half used a condom the last time they had anal sex with another man. Yet, among South African youth (aged 15 to 24) overall, Shisana et al. (2009) found that more than 80% had used a condom at last penetrative sex. A survey of students at higher education institutions found condom use at last sex to be high among students. Sixty five percent of student males aged 18 to 24 and 60% among those aged 25 and older used a condom at last penetrative sex act (HEAIDS, 2010). In another study school and student MSM populations worldwide reported multiple recent sexual partners and inconsistent condom use (Brooks et al., 2008). These findings are similar to

the findings of the present study. In my sample 70% of the student MSM reported using a condom at last penetrative sex act. Although condom use was high among the student MSM, 30% reported inconsistent or no condom use at all in their previous penetrative sexual encounters. It appears therefore that student MSM on average engage in less condom use, and hence more risky sexual behaviour, than the non-MSM population in South Africa and MSM in low and middle income countries.

Among the student MSM sample 4.4% reported that they have been diagnosed with HIV. This finding is consistent with findings by HEAIDS (2010). Among South African student MSM the HIV prevalence (4.1%) was more than twice the HIV prevalence of male heterosexual students (1.7%; HEAIDS, 2010).

Most of the student MSM (80%) had been tested for HIV in their lifetime. The sample of student MSM had considerably higher rates of past HIV testing than the general student population in South Africa (46%; HEAIDS, 2010) and the general South African MSM population (27.2%; Shisana et al., 2009).

Previous sexually transmitted infections were reported by six percent of the sample. It has been shown that the presence of sexually transmitted infections, other than HIV, may increase the likelihood of HIV infection up to ten times (Sandfort, 2008; Van Dyk, 2008). The presence of a sexually transmitted infection, other than HIV, can create entry points for HIV transmission, and the immune system will respond to such infection by directing a large amount of lymphocytes to the area of infection creating easy attachment opportunities for HIV (Van Dyk, 2008). In focus groups conducted among three groups of MSM and in-depth interviews with nine gay and lesbian students involved in student LBG associations at South African higher education institutions, it was found that they generally circumvent accessing sexually transmitted infection screening or treatment provided by campus health clinics (HEAIDS, 2010). From these

focus groups of gay students it was also reported that MSM may be more concerned about visible sexually transmitted infections and tend to ignore those that are not visibly obvious (HEAIDS, 2010).

The use of alcohol or other drugs before or during sexual intercourse was reported by 56% of the sample. Forty two percent of the student MSM reported using alcohol or drugs some of the time with previous sexual partners, another twelve percent reported substance use before or during sexual intercourse almost all of the time, while two percent used substances all of the time before or during sexual intercourse. The association between substance use and risky sexual behaviour has been linked to an increase in acquiring HIV (Brown & Vanable, 2007; So et al., 2005). In a study by Purcell, Parsons, Halkitis, Mizuno, and Woods (2001), it was shown that MSM who drank more frequently before or during sex engaged in significantly more unprotected anal sex with casual partners than MSM who did not frequently drink. A culture of alcohol consumption at universities may expose student MSM to sexual risk taking behaviour as it lessens the mediating effect inhibition has on casual sexual encounters (Brown & Vanable, 2007). In contrast, a recent survey among students at higher education institutions found that those who drank alcohol were significantly less likely to be living with HIV than those that did not drink (HEAIDS, 2010). Students who reported being drunk in the last month were also less likely to be living with HIV in comparison to those that did not report being drunk (HEAIDS, 2010). These findings seem counterintuitive and have not been explored in further research since the HEAIDS (2010) survey. It may be that some students who already are aware of their HIV positive status choose to avoid alcohol consumption in order to support a healthier lifestyle. In addition, it is unclear whether some students who drink alcohol and engage in sex may be more aware of the disease risks involved in unprotected sex, leading them to adopt safer sex behaviours. The findings mentioned above warrant more exploration in future research among

student men who have sex with men at higher education institutions in South Africa (HEAIDS, 2010).

Ten percent of the sample reported that the age of their first penetrative sexual encounter occurred before the age of twelve. According to HEAIDS (2010), the majority of students (73%) in South African Higher education institutions have had sex before matriculation. In a South African national household survey very few children (aged between 12–14 years) reported having had penetrative sex (1.9% for males and 1.5% for females; Shisana et al., 2005). Subsequently, sexual debut before the age of 15 among young SA males (aged between 15–24 years) declined from 13.1% in the 2002 survey to 11.3% in the 2008 survey (Shisana et al., 2009). South African young people (aged between 15–24 years) have however been shown to have sexual intercourse much earlier when compared to the findings from the 2002 household survey (Shisana et al., 2005). Student MSM from my sample reported on average earlier sexual debut than young non-MSM populations in South Africa. These findings and the findings from the present study are noteworthy since early sexual debut is another risk factor for contracting HIV (Shisana et al., 2009).

A number of the student MSM reported that they were forced to have sex against their will (6.1%). This finding and that of early sexual debut among some student MSM suggest that sexual abuse, which is often violent and causes trauma to the lining of the anal canal, may further increase risk of contracting HIV (Van Dyk, 2008). This is due to the thin layer of skin cells that line the anal canal which can tear more easily and provide an entry point for HIV to enter the bloodstream. Childhood sexual abuse among MSM has been associated with early sexual debut, multiple sexual partners, and low social support (Bartholow et al., 1994; O’Leary, Purcell, Remein, & Gomez, 2003).

Several participants reported that they had had female sexual partners in their sexual past. Thirty six percent reported preference for either male or female partners while six percent reported having a preference for female partners above male partners. In addition, four percent of the MSM reported having impregnated one or more female sexual partners in the past. These data may indicate the possibility of HIV spreading from a concentrated epidemic among student MSM to the generalized heterosexual HIV epidemic (Baral et al., 2007; Pisani, 2008). When closed sexual networks exist among MSM, HIV mostly stays contained among this most at risk population (such as MSM) and develops into a concentrated HIV epidemic. When MSM also have female sexual partners their sexual network opens up and a crossover of HIV transmission may occur. This may, in turn, lead to the spread of HIV to the generalized heterosexual HIV epidemic, such as in South Africa (Baral et al., 2007). Data from other studies support this occurrence (Lane et al., 2006; Van Griensven, 2007).

More than twenty percent of the student MSM reported experiencing some form of abuse due to their sexual preference on campus. A further eight percent experienced abuse and violence, while another six percent reported experiencing violence on campus. Expressions of abuse and violence toward student men who have sex with men by non-MSM students on campus are based in social homophobia. Homophobia is a form of social discrimination, which was defined in chapter two as “mean, unfair, or unequal treatment intended to marginalize or subordinate individuals or communities based on their real or perceived affiliation with socially constructed stigmatized attributes” (Ayala et al., 2010, p. 2). Social homophobia is often tolerated in communities, which leads to fear of victimisation and discrimination among MSM populations (UNGASS, 2007). Social homophobia and discrimination has been shown to be associated with sub-optimal mental health (Meyer, 1995), and may subsequently cause elevated signs of self-harm, suicidal ideation, excessive substance abuse and risky sexual behaviours

among MSM (Mcdermott et al., 2008; Salomon et al., 2009). Many student MSM may make unsafe sexual behaviour decisions in an effort to live their sexual lives covertly which may lead to high risk sexual behaviours. Entrenched social homophobia and individual-level risks serve to further drive MSM away from access to health and HIV services (MSMGF, 2008). It is clear that the potential destructive impact discrimination can cause among student MSM may facilitate increased sexual risk taking behaviours (Mcdermott et al., 2008; Meyer, 1995; MSMGF, 2008), which may in turn increase possible exposure to HIV.

Based on the findings of sexual behaviour among a sample of student men who have sex with men, it is clear these MSM are at risk of contracting HIV. They are one of the most at risk populations in South Africa and worldwide. As mentioned in chapter two, studies indicated a rise in global rates of high-risk sexual behaviour among MSM (Elford & Hart, 2003), in low and middle income countries (Baral et al., 2007), and of the global South (UNAIDS, 2008). A meta-analysis study found odds ratios of HIV prevalence among MSM to be 3.8 in Africa, 33.3 in the Americas and 18.7 in Asia (Beyrer et al., 2010; Kilmarx, 2009). Factors which place young MSM at greater risk include unprotected anal intercourse, high partner turnover, the presence of sexually transmitted infections, unknown HIV status, complacency about risk, MSM who are HIV positive, the role of the internet, social discrimination, the presence of female sexual partners, alcohol use before or during sex, and the use of drugs for recreational purposes (Benotsch et al., 2001; Brown & Venable, 2007; Eisenberg, 2001; Lindley et al., 2003; So et al., 2005). Risky sexual behaviours identified from the findings of the present study indicate the following sexual risk among student MSM: unprotected anal sex, multiple sexual partners, concurrent sexual partners, the presence of STIs, early sexual debut, unknown HIV sero-status, MSM who are HIV positive, social homophobia, the presence of female sexual partners and substance abuse before or during sexual encounters.

HIV knowledge among student MSM

In the current study, basic HIV knowledge was found to be high (mean = 80.94%) among the sample of student MSM and is consistent with findings from previous higher education institution findings in South Africa (HEAIDS, 2010). Questions relating to water-based lubricant use with condoms, the window period in HIV testing, antenatal transmission of HIV, and risk of oral transmission achieved overall insufficient correct responses.

Having sound HIV knowledge allows for appropriate action to be taken with regard to prevention, treatment and care (Shisana et al., 2009). However, in a 2008 national household survey, HIV transmission knowledge levels were shown to be below 50% among all groups in South Africa, with MSM scoring an average of 45% (Shisana et al., 2009). Other studies have also indicated that students who have high levels of basic HIV knowledge do not necessarily enact safer sexual behaviour towards HIV prevention (Hightow et al., 2005).

Predicting intention to use condoms

This study is an extension of literature that explores the applicability and appropriateness of the TPB in understanding the intention to adopt safer sexual practices in order to prevent HIV transmission. The third objective of the study was to determine the extent to which the linear combination of the theory of planned behaviour variables predicted intention to use condoms. The TPB variables are attitudes toward condom use, perceived behavioural control over the behaviour and perceived group norms regarding the behaviour (Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975; McCaul et al., 1993).

The study results indicated unsatisfactory support for the theory of planned behaviour framework in understanding determinants of intention to use condoms among a sample of MSM in a South African student community. In the present study, I found that attitudes regarding condom use were significantly, but inversely, associated with intention to use condoms, while

perceived group norms were significantly associated with intention to use condoms. Perceived behavioural control over condom use was not significantly associated with intention to use condoms. These findings are consistent with results by Sutton et al. (1999) in a study assessing condom use intentions.

The linear combination of these variables explained 68% of the variance in intentions to use condoms when all predictors were included in the model. This finding represents a large effect size for multivariate models in social science research (Cohen, 1988). The combination of attitudes and perceived group norms explained two-thirds (65%) of the variance in intentions to use condoms, while including perceived behavioural control could only account for an additional three percent increase in explained variance of intentions to use condoms. In a study by Sutton (1998), theory of planned behaviour variables were found to explain between 40% and 50% of the variance in intention to perform a given behaviour. In a meta-analytic review, Armitage and Conner (2001) found that attitude, perceived subjective norm and perceived behavioural control accounted for significantly more variance in individuals' desires than intentions or self-predictions.

Perceived group norms was the strongest predictor of condom use intention ($\beta = 0.81$), followed by attitude regarding condom use ($\beta = 0.63$). These findings are consistent with results by Wilson, Zenda, McMaster and Lavelle (1992), Nucifora, Gallois and Kashima (1993), and a meta-analysis of 84 TPB studies conducted by Armitage and Conner (2001). It is important to note that the relative weights of attitudes, perceived group norms and perceived behavioural control may differ depending on the type of behaviour and population being studied (Fishbein & Ajzen, 1975).

There have been mixed findings in the literature regarding the applicability of the theory of planned behaviour variables in predicting health-seeking behaviour (Fincham et al., 2008;

Kagee & Van Der Merwe, 2006) and whether the TBP is applicable in developing country contexts (Campbell, 2003). However, other studies suggest that the TPB may in fact be applied to an array of cultural and development contexts (Fishbein, 2002; Heeren et al., 2007). Kagee and Van Der Merwe (2006) found that social cognitive models, such as the theory of planned behaviour, may be helpful in predicting health behaviour but should be used from a critical and cautious approach. In a conceptual analyses of some problems with social cognition models, such as the theory of planned behaviour, work by Ogden (2003) questions why the results of studies using social cognition models were not consistent with the models as variance in the outcome are often left unexplained. She supports the need to reject the models when the variation in results are too easily explained away. Researchers often explain variation in results based on the: use of wording within measures, the population being studied, the need for additional variables, or the behaviour being considered. Since data are often used to support the models, but not to reject them, the models cannot be tested as a synthetic truth. Ogden (2003), states that: "A good theory should generate synthetic rather than analytic truths to avoid being tautological" (p. 425).

The present study found attitudes regarding condom use to have a contrary predictive relationship with condom use intentions. The variable perceived group norms were found to be successful in predicting condom use intention among student men who have sex with men. As only the perceived group norms construct was found to be as predicted by the TPB, the study findings has added more questions to the applicability of the theory of planned behaviour among MSM in a South African higher education institution context.

The counter intuitive finding about the relationship between attitude and intention to use condoms suggest that student MSM who have positive opinions and values regarding condom use will be less likely to have stronger intentions to actually use condoms. Although, student

MSM who feel that influential others approve of using condoms, and they are able to talk about condom use with these peers are more likely to have stronger intentions to use condoms. The variable perceived behavioural control over condom use in the theory of planned behaviour failed to provide a platform from which to increase condom use intention, since the results indicate a strong possibility that this could be based on a chance relationship. Perceived behavioural control over condom use, a major tenet of the theory of planned behaviour, was not successful in predicting condom use intention. Ajzen (1988) found that in situations where normative influences (e.g. attitudes regarding condom use) are potent, perceived behavioural control may be a weak predictor of intentions. Ajzen (1988), notes that the degree of the relationship between perceived behavioural control and intention may be dependent upon the type of behaviour and the nature of the situation.

The relationship between intention and actual condom use

A second regression analysis model to determine the relationship between condom use intention and actual condom use could not be conducted, due to the small number of respondents at follow-up. Possible reasons for this attrition was the nature of working with an often hard to reach population, the limited timeframe within which recruitment (4 months) and data gathering (3 months) occurred, an insufficient financial incentive to complete the follow-up questionnaire, and participant fatigue associated with the length of time needed to complete the online questionnaires.

The present study was therefore unable to show whether intention to use condoms was a good predictor of future condom use behaviour among the sample. However, other studies did indicate that intention indeed predicts behaviour in other areas (Sutton et al., 1999) and that intentions and self-predictions were good overall predictors of actual behaviour (Armitage & Conner, 2001).

Overall implications of the study

Basic HIV knowledge levels among student men who have sex with men at Stellenbosch University were shown to be high. It is however important to monitor and improve upon basic but critical HIV knowledge levels among higher education institution students and student MSM. Higher levels of HIV knowledge may lead to the adoption of health-seeking behaviours and possibly to the prevention of HIV transmission when considered in conjunction with effective HIV prevention programmes.

Student men who have sex with men in a South African higher education institution engage in sexual behaviours which place them at elevated risk of contracting HIV and other sexually transmitted infections. Understanding sexual risk behaviours among student MSM identified in this study may lead to the development and implementation of evidence-based HIV prevention interventions designed to cater to the sexual health needs of most at risk populations in a South African student community, such as student MSM, and minimize possible routes for HIV and STI transmission.

This study suggested that understanding attitudes about condom use and perceived group norms regarding condom use and perceived behavioural control constructs from the theory of planned behaviour needs to be investigated more rigorously to be useful to contribute to our understanding of condom use intentions and in the synthetic truth of the TPB. Attitudes regarding condom use need further investigation as it was found to have an inverse relationship with intention to use condoms. In addition, the variable of perceived behavioural control was not found to have a significant association with intention to use condoms. The findings may encourage additional research on the applicability of the theory of planned behaviour in a developing country, among most at risk populations to the transmission of HIV, and the higher education institution context within which sexual risk behaviours (such as condom use) take

place. The results imply that the TPB model be used as a pragmatic tool for health communication practitioners, but that they need to recognise and understand the essential flaws in their conceptualisation (Ogden, 2003). Hence, the findings may assist the Office for Institutional HIV Co-ordination in informing policy, and in developing interventions, which are evidence-based and grounded within a theoretical framework to enhance consistent condom use among student MSM at Stellenbosch University and other higher education institutions in South Africa.

Limitations of the study

The first limitation of the current study was that the small sample size prevented an additional multiple hierarchical regression analysis from being conducted on the predictive utility of intention to use condoms in explaining subsequent self-reported condom use. The data obtained from the fifty student men who have sex with men at baseline was adequate to conduct only one hierarchical multiple regression on the theory of planned behaviour variables in predicting intention to use condoms. The small sample size at follow-up, and hence inadequate power, meant that the intended analysis of intention to use condoms in predicting condom use at follow-up could not be performed. The loss of sample size at follow-up may have been due to the nature of researching this hard to reach student population, and the length of time it took many participants to complete the extensive battery of instruments online leading to a higher than expected loss of participants at follow-up.

Secondly, the participants completed online questionnaires. This limited the possible participation of student MSM to those who had access to the intranet of the university at the time of data gathering and had no need for concern about possible privacy and confidentiality issues associated with completing the questionnaire in a public computer area. Even the baseline sample size of fifty needs to be expanded in future research. Recruiting a sizeable enough baseline sample from an often hidden and hard to reach population, such as student MSM, was a

challenge even though four months was devoted to the recruitment of these MSM. Larger scale studies are recommended among other higher education institutions in South Africa. The small size of the baseline sample was probably due to an insufficient financial incentive to participate, and concerns student MSM may have had about their privacy when completing an online questionnaire in public computer areas at the university.

Thirdly, the distribution scores for attitude and perceived group norms were slightly different from a normal distribution (see Table 6). The normal probability plot did not show any outliers that might affect the results and an integrity check of the data for attitudes and perceived group norms was performed but revealed no data capturing errors or non-declared missing values. A possible lack of normality would infringe on a critical assumption for conducting regression analysis. However, a normal probability plot of residuals was inspected which showed that the residuals were normally distributed with no substantial deviations.

Fourthly, the current study was conducted among a self-selected sample of student MSM at only one higher education institution and those who participated only represented a very small number of possible student MSM at the university. Hence, the findings of this study should only be used to reflect data from student MSM at Stellenbosch University. Once again, I recommend that larger scale studies among student MSM at other higher education institutions in South Africa be conducted, possibly with a research funding grant through the Higher Education HIV/AIDS Programme.

The fifth limitation of the present study was that it would have been ideal to also incorporate personality trait, affective reaction, unconscious motive or demographic factors. The study failed to take into account other potentially important variables and only focussed on rational decision making factors (Ogden, 2003). Therefore, future larger scale studies should consider including variables which also explore non-rational decision making factors.

Another limitation of the study was the possibility that using Likert-type scales could have limited a more in-depth understanding of sexual behaviours. This may lead to a one dimensional or limited understanding of sexual behaviour. Also, by using self-report questionnaires, based on social cognition models, may alter the way a person thinks, thus modify subsequent behaviour (Ogden, 2003).

Finally, the Cronbach's alpha reliability coefficient for the attitudes variable had a modest internal consistency of $\alpha = 0.54$. Internal consistency for this variable could not be improved with the removal of any attitude items in the questionnaire. The modest internal consistency of the attitude measure may account for the 40% ($R^2 = 0.40$) variance inconsistency. Internal consistency of the theory of planned behaviour measures in future research should aim to achieve more acceptable levels. For example, average alpha coefficients for perceived behavioural control were found to be about .65 in a meta-analysis conducted by Cheung and Chan (2000) of 90 studies using the theory of planned behaviour.

Despite these limitations, the findings from the current study offer some critical questions about the use of the theory of planned behaviour in predicting condom use behaviour among student MSM in the higher education institution context. The findings give insight into current levels of basic HIV knowledge and show the extent of some risky sexual behaviour among a sample of student men who have sex with men. Expanding research on the use and application of the theory of planned behaviour, improving HIV knowledge levels and tracking sexual behaviour trends may enhance positive health outcomes among student MSM in South Africa.

Recommendations for future research

More research is needed around tracking and understanding sexual risk behaviour trends among populations in high HIV prevalence regions such as South Africa, where a high risk of HIV transmission prevails. Research regarding the links between HIV knowledge, substance use,

the presence of sexually transmitted infections, the role of the internet and sexual behaviour among men who have sex with men is necessary in order to be ahead of the curve in preventing a potential resurgence of HIV that may lead to additional concentrated HIV epidemics in South Africa. Understanding the risks associated with young MSM who seek sex on the internet may play an essential role in higher education institutions where many students have internet access. Higher education institutions should aim to understand the perceived normative pressure to comply with the perceived subjective norms regarding condom use.

Additionally, it may be important to gather data on the sources of factual and accurate HIV knowledge among high risk populations, such as MSM. It is evident that there are some gaps in basic, but essentially important, HIV knowledge among student MSM. These knowledge gaps need to be addressed through education and prevention initiatives at higher education institutions (HEAIDS, 2010). It is important that most at risk populations, such as student MSM, have accurate knowledge about oral transmission of HIV and window period HIV testing issues to protect themselves from HIV infection (Shisana et al., 2009).

There is an opportunity for policy development and health promotion interventions at higher education institutions to address sexual risk and other factors that isolate student men who have sex with men. Higher education institutions should aim to address sexual risk in this most at risk population, as well as attempt to combat discrimination and social homophobia experienced by student MSM. Understanding sexual risk behaviours among student MSM may lead to the development and implementation of evidence-based HIV prevention interventions designed to cater to most at risk populations, such as student MSM, in South Africa. Failing to respond to these vulnerabilities may give the HIV epidemic the opportunity to undermine the core functions of higher education institutions and may lead to additional HIV transmission among student MSM.

I recommend that targeted, sensitive, discreet and confidential HIV testing and STI screening opportunities be provided to at risk students, such as student men who have sex with men, who reported higher HIV rates (4.4%) than the general student male non-MSM population (1.7%; HEAIDS, 2010). To avoid possible stigmatisation, this could be implemented by nursing staff and medical doctors offering STI screening and testing as standard to student men who have sex with men at the campus health centre. Although most of the student MSM had been for an HIV test previously there is scope to attend to the specific sexual health needs of student MSM. Most higher education institutions hold annual mass HIV testing campaigns which should be expanded to specifically cater to student MSM.

Various methodological limitations of the present study must be addressed in similar future research. Specifically, larger sample sizes are needed. Also, standardized TPB instruments need to be used in future, in addition to testing the role of intention in explaining subsequent condom use. Using respondent driven sampling techniques to recruit student MSM may enhance sample size and reach other student MSM who may not have been recruited in the present study. Future studies should consider using additional methods for gathering data other than only making use of online questionnaires.

Using additional variables in research based on the theory of planned behaviour may give greater insight into understanding behaviour change variables. It may be useful to include variables such as perceived stigma, affective influences, measures of controllability and perceived self-efficacy in future studies. The utilisation of the theory of planned behaviour in predicting safer sex behaviours among student MSM warrants further exploration.

Since perceived behavioural control is the overarching construct of its two lower level components (self-efficacy and controllability) a decision was made to aggregate all perceived behavioural control items, as proposed by Ajzen (1998). Results indicate that it may be useful to

include perceived behavioural control measures which include these items that assess perceived behavioural controls' lower-level components separately in future theory of planned behaviour studies.

An over reliance on the use of injunctive measure components of perceived group norms within the TPB has been found when there was weak correlation between subjective norm and intention (Norman et al., 2005). Hence, future studies may want to include more measures on descriptive norms.

It could also be valuable to do longitudinal studies with student MSM over a longer period of time (for example a one year follow-up design), while employing a mixed methods approach. Adding qualitative components to such research may give researchers a greater depth of understanding the often complex patterns of sexual behaviours among student MSM. I therefore recommend that future studies of this kind include qualitative research components, such as semi-structured interviews and focus group discussions, to add depth to the quantitative findings.

Finally, it is recommended that research on most at risk populations (such as student men who have sex with men) in the higher education sector be expanded to include higher education institutions in other provinces in South Africa and to other countries in Africa. There is also a paucity of knowledge regarding students attending institutions of further education and training (FET) in South Africa. This often neglected population should be included in similar future research.

Conclusion

In conclusion, the study found high levels of basic HIV knowledge among the sample, with scope to augment HIV knowledge related to: the importance of using water-based lubricant with male condoms, the implications the window period has for HIV antibody testing, antenatal

transmission of HIV and the potential levels of risk involved in the transmission of HIV through unprotected oral sex.

The study supports other findings which identify potential conduits for HIV transmission among student men who have sex with men through risky sexual behaviours. Risky sexual behaviours identified in the current study include: unprotected anal sex, multiple sexual partners, concurrent sexual partners, the presence of sexually transmitted infections, early sexual debut, unknown HIV sero-status, complacency about risk, men who have sex with men who are HIV positive, social discrimination, the presence of female sexual partners and substance abuse before or during sexual encounters.

In addition, the findings question the utilisation of the theory of planned behaviour in understanding and predicting condom use among a sample of student MSM attending a South African higher education institution. Only the variables of attitude and perceived group norms could significantly explain intention to use condoms. Specifically, perceived group norms could strongly account for variance in condom use intention, while attitudes regarding condom use were found to have an opposite association with intention to use condoms. Results indicate that the theory of planned behaviour model be used as a pragmatic tool for health communication practitioners.

The findings advocate for the greater understanding and investigation of attitudes, perceived group norms and perceived behavioural control within health communication and sexual health interventions that aim to reduce HIV transmission among student MSM through improved levels of consistent condom use. While a need to further investigate the findings regarding the inversely significant relationship between attitudes about condom use with intention to use condoms, the predictive utility of the perceived behavioural control construct, and researching the relationship between intention and actual condom use was identified.

The limited data about student men who have sex with men in the higher education institution sector is of concern and should be addressed through appropriate research. Higher education institutions should guard against complacency in their future HIV response. Interventions for those most at risk, such as student men who have sex with men, must be designed and services must be provided (HEAIDS, 2010). The results of this research, specifically regarding HIV knowledge and sexual risk behaviour among student MSM, needs to be taken up and integrated into the current HIV policy framework and HIV prevention interventions at Stellenbosch University, by the Office for Institutional HIV Co-ordination, with a view to achieve its shared vision of creating an enabling environment free from new HIV infections.

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Appendix A

STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

Testing the theory of planned behaviour (TPB) in predicting sexual risk behaviour among a sample of men who have sex with men (MSM) in a student community.

You are asked to participate in a research study conducted by Jaco G. Brink (B.A. Honours in Psychology) and Prof. Ashraf Kagee (PhD MPH), from the Department of Psychology at Stellenbosch University. You were selected as a possible participant in this study because you are self-identified as a gay man, a bisexual man, a man who does not identify as gay or bisexual but have had male-male sexual experiences.

1. PURPOSE OF THE STUDY

The overall purpose of the research will be to collect data on the extent of risky sexual behaviours and knowledge about HIV among male university students who have sex with other males. The data will be used to test the theory of planned behaviour (TPB) in predicting sexual risk behaviour. It is hoped that this research will inform policy and current HIV prevention initiatives at tertiary institutions in the Western Cape.

2. PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is entirely voluntary and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the Committee for Human Research at Stellenbosch University and will be conducted according to the ethical guidelines and principles of the International Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

The study will be conducted at the Stellenbosch University. A total of 50 students will be recruited into the study from the University student population. If you volunteer to participate in this study, we will ask you to participate in

two online surveys (three months apart) and answer questions about your sexual behaviour. Each online survey will last no longer than an hour.

Why have you been invited to participate?

You have been invited to participate because you self-identify as a gay man, a bisexual man, a man who does not identify as gay or bisexual but have had male-male sexual experiences.

What will your responsibilities be?

You will be asked to participate in two online surveys (three months apart) to answer questions about your sexual behaviour.

3. POTENTIAL RISKS AND DISCOMFORTS

There are no foreseeable risks and you may stop your participation at any time. In the event that you become emotionally distressed during the online survey you can request information about where to seek psychological and support services. The preferred psychological and support service is the Centre for Student Counselling and Development at Stellenbosch University (contact Hestia Kotze at 021 808 4994).

What will happen in the unlikely event of some form injury occurring as a direct result of your taking part in this research study?

There are no foreseen circumstances in which injuries might occur. If any injuries do occur, they will be addressed in terms of University policy.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

As a participant it is not intended that you will benefit directly from this research. However, it is possible that by discussing issues related to your sexual behaviour, these issues may become clearer for you and will influence your sexual health positively.

Your participation will help the researchers gain an understanding of sexual behaviour among men who have sex with men (MSM). Insights into MSM sexual behaviour will inform psychological and health intervention services to students at Stellenbosch University with a view to improving overall sexual health.

5. PAYMENT FOR PARTICIPATION

No, you will not be paid to take part in the study. There will be no costs involved for you, if you do take part. You will receive a grocery voucher of R100 on completion of the second online survey as a token of thanks for your time.

6. CONFIDENTIALITY

Any information obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by ensuring that the online data of your survey submission cannot be linked to you. All records of the survey data will be kept in a locked cabinet at Stellenbosch University. Only the researcher and supervisor working on the study will have access to the data.

If the data are published, you will not be identified by name. You have the right to review or edit the survey data if you so wish. The data will be erased after a period of 5 years following publication of the data.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

Principal Investigator

Jaco G. Brink

Africa Centre for HIV Management

Industrial Psychology Building

Room 3005

021 808 2865

jgbrink@sun.ac.za; or

Supervisor

Prof. Ashraf Kagee

Department of Psychology

Wilcocks Building

021 808 3442

skagee@sun.ac.za.

9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Maryke Hunter-Husselmann (021 808 4623, mh3@sun.ac.za) at the Unit for Research Development.

The information above was described to _____ by [*name of relevant person*] in [*English*] and [*I am/the subject is/the participant is*] in command of this language.

[*I hereby consent voluntarily to participate in this study/I hereby consent that the subject/participant may participate in this study*] I have been sent a link to a copy of this form.

Name of Subject/Participant

Signature of Subject

Date

Appendix B

HIV Knowledge Questionnaire (HIV-KQ-18)

For each statement, please select “True” (T), “False” (F), or “I don’t know”. If you do not know, please do not guess; instead, please select “I don’t know.”

1. Coughing and sneezing DO NOT spread HIV.
2. A person can get HIV by sharing a glass of water with someone who has HIV.
3. Pulling out the penis before a man climaxes (‘cums’) keeps a man from getting HIV during sex.
4. A woman can get HIV if she has anal sex with a man.
5. Showering, or washing one’s genitals/private parts, after sex keeps a person from getting HIV.
6. All pregnant women infected with HIV will have babies born with AIDS.
7. People who have been infected with HIV quickly show serious signs of being infected.
8. There is a vaccine that can stop adults from getting HIV.
9. People are likely to get HIV by deep kissing, putting their tongue in their partner’s mouth, if their partner has HIV.
10. A woman cannot get HIV if she has sex during her period.
11. There is a female condom that can help decrease a woman’s chance of getting HIV.
12. A natural skin condom works better against HIV than does a latex condom.
13. A person will NOT get HIV if she or he is taking antibiotics.
14. Having sex with more than one partner can increase a person’s chance of being infected with HIV.
15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV.
16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.
17. A person can get HIV from oral sex.
18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV.

Answer Key

1. TRUE
2. FALSE
3. FALSE

4. TRUE
5. FALSE
6. FALSE
7. FALSE
8. FALSE
9. FALSE
10. FALSE
11. TRUE
12. FALSE
13. FALSE
14. TRUE
15. FALSE
16. FALSE
17. TRUE
18. FALSE

Appendix C

Biographical information questionnaire (BIQ)

Please select your answer to each question below.

1. What is your age?

under 18 18-20 21-23 24-26

2. Which best describes you?

Black White Indian Coloured Other

3. Are you currently employed? YES NO

4. Do you have any children? YES NO

5. What year are you academically? (select one)

less than1 1 2 3 4 5 6 7 7+

6. Do you live in Stellenbosch? YES NO

If YES, do you live in a Stellenbosch University residence? YES NO

7. How many people with HIV/AIDS have you known?

None 1-2 3-5 6-10 11+

8. Which best describes you:

Gay

Bisexual

Heterosexual

Not gay or bisexual but have had sex with men

9. What do you think your household income of the adults who live in your home is per year?

Check one:

___ Under R10,000

___ R10,000 to R20,000

___ R20,001 to R30,000

___ R30,001 to R50,000

___ R50,001 to R75,000

___ R75,000 to R100,000

___ Over R100,000

___ Don't know

Appendix D

TPB Sexual Behaviour Questionnaire (T-SBQ)

The next questions ask about your attitudes regarding sexual activity. Please answer all of these questions, even if you've never had sex before. If you have never had sex, please imagine how you would feel and do the best you can to answer each question. There is no right or wrong answers. We are only interested in your opinion. Please tell us how much you agree with each of the following statements by selecting one answer to each question.

1. I don't mind planning for sex.

Disagree a lot Kind of disagree Kind of agree Agree a lot

2. I believe my sexuality is a part of my personality.

Disagree a lot Kind of disagree Kind of agree Agree a lot

3. I feel guilty about having sex.

Disagree a lot Kind of disagree Kind of agree Agree a lot

4. I feel sex is a natural part of my life.

Disagree a lot Kind of disagree Kind of agree Agree a lot

5. I don't like talking to my partner about our sex life.

Disagree a lot Kind of disagree Kind of agree Agree a lot

6. I believe I can decide when in the relationship we will have sex.

Disagree a lot Kind of disagree Kind of agree Agree a lot

7. I believe I could make decisions about what goes on when I have sex.

Disagree a lot Kind of disagree Kind of agree Agree a lot

8. If I'm not in a sexual mood, I believe I can tell my partner I don't want to have sex.

Disagree a lot Kind of disagree Kind of agree Agree a lot

9. I don't feel I would be in control of myself in a sexual situation.

Disagree a lot Kind of disagree Kind of agree Agree a lot

Please tell us your thoughts about not having sexual intercourse at all until you're older (by sexual intercourse, we mean putting the penis in the vagina or rectum). Please select the appropriate answer.

1. For me, not having sex until I'm older would be:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

2. Friends that I respect think I should not have sex until I'm older:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

3. My sexual partner thinks we should not have sex until we're older:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

4. I'm planning not to have sex until I'm older:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

These questions are about talking to a sexual partner about whether or not you should have sex. Please answer all of these questions, even if do not have a sexual partner. Please imagine how you would feel and do the best you can to answer each question.

5. Talking to my sexual partner about whether or not we should have sex would be:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

6. Friends my age that I respect think I should talk to my sexual partner about whether or not we should have sex:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

7. My sexual partner thinks we should talk about whether or not to have sex:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

8. I'm planning to talk to my sexual partner about whether or not we should have sex:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

These questions are about buying condoms or getting them for free during the next three months:

9. For me, buying condoms or getting them for free during the next three months would be:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

10. Friends that I respect think I should buy condoms or get them for free, during the next three months.

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

11. My sexual partner thinks I should buy condoms or get them for free, during the next three months.

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

12. During the next three months, I'm planning to buy condoms or get them for free.

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

Please tell us what you think about carrying condoms with you (for example, in your backpack or purse) during the next three months:

13. During the next three months, carrying condoms with me would be:

Very true Somewhat true Neither true nor untrue Somewhat untrue Very untrue

14. Friends that I respect think I should carry condoms with me during the next three months.

Very true Somewhat true Neither true nor untrue Somewhat untrue Very untrue

15. My sexual partner thinks I should carry condoms with me during the next three months.

Very true Somewhat true Neither true nor untrue Somewhat untrue Very untrue

16. During the next three months, I'm planning to carry condoms with me.

Very true Somewhat true Neither true nor untrue Somewhat untrue Very untrue

Please tell us how you feel about using condoms every time you have sex during the next three months. If you don't think you will have sex during the next three months, answer all the questions below anyway. When you answer, tell us what it would be like to use condoms if you did have sex.

17. If I have sex during the next three months, using condoms every time would be:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

18. Friends that I respect think I should use condoms every time, if I have sex, during the next three months.

Very true Somewhat true Neither true nor untrue Somewhat untrue Very untrue

19. My sexual partner thinks I should use condoms every time, if I have sex, during the next three months.

Very true Somewhat true Neither true nor untrue Somewhat untrue Very untrue

20. If I have sex during the next three months, I'm planning to use condoms every time.

Very true Somewhat true Neither true nor untrue Somewhat untrue Very untrue

Please tell us about telling your sexual partner to use condoms with you, if you have sex during the next three months. Even if you don't have a sexual partner right now, or if you don't think you're going to have sex during the next three months, tell us what you think it would be like to tell a sexual partner to use condoms with you.

21. If we have sex during the next three months, telling my sexual partner we have to use condoms would be:

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

22. Friends that I respect think I should tell my sexual partner we have to use condoms, if we have sex, during the next three months.

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

23. My sexual partner thinks that I should tell them we have to use condoms, if we have sex during the next three months.

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

24. If I have sex during the next three months, I'm planning to tell my sexual partner we have to use condoms.

Very bad Somewhat bad Neither good nor bad Somewhat good Very good

The next questions ask a few more questions about what you plan to do about condom use in the future. Please answer all of these questions, even if you've never had sex before or never used condoms. Please tell us how likely you think each of the following things is to happen by selecting one answer to each question.

1. How likely is it that you will buy or get condoms in the next three months?

Will NOT happen Probably won't happen Probably WILL happen

2. How likely is it that you will carry condoms with you in the next three months?

Will NOT happen Probably won't happen Probably WILL happen

3. How likely is it that you will talk to a sex partner about using condoms in the next three months?

Will NOT happen Probably won't happen Probably WILL happen

4. How likely is it that you will use a condom every time you have sexual intercourse in the next three months?

Will NOT happen Probably won't happen Probably WILL happen

5. How likely is it that you will be able to ABSTAIN from having sex in the next three months?

I will definitely I will probably I will probably NOT I will definitely NOT

Please tell us what you think about the risk of getting HIV or AIDS. Please select one answer.

1. What do you think are your friends' chances of getting HIV/AIDS?

No chance Some chance About average chance Strong chance Very strong chance

2. What do you think are your own chances of getting HIV/AIDS?

No chance Some chance About average chance Strong chance Very strong chance

3. How afraid are you of getting HIV/AIDS?

Not at all afraid A Little afraid Slightly afraid Somewhat afraid Very afraid

Please tell us what you think about abstaining from sex (not having sex at all, until you are older):

1. I think it would be good if I didn't have sex until I was older.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

2. People who don't have sex until they're older are very responsible.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

3. People who don't have sex until they're older are usually unpopular people.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

4. You can still be very affectionate with a sexual partner, even if you don't have sex.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

5. I have friends who don't plan on having sex until they're older.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

Please tell us what you think about using condoms. Please try to answer every question, even if you've never had sex or never used a condom. Just do the best you can.

6. I like having sex with condoms.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

7. People who use condoms are very responsible.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

8. Condoms take all the fun out of sex.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

9. If you want to use a condom, your sexual partner might think you don't trust them.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

10. Most of my friends use condoms if they have sex.

Strongly disagree Disagree somewhat Neither agree nor disagree Agree somewhat Strongly agree

Please tell us how hard or easy it would be for you to do each of these things. Please select the best answer.

1. How hard or easy would it be for you to make sure you do not have sexual intercourse until you're older?

Very Hard Fairly Hard Neither Hard nor easy Fairly Easy Very Easy

2. How hard or easy would it be for you to tell your sexual partner you are not going to have sex with them? (If you don't have a sexual partner, please answer as if you had one).

Very Hard Fairly Hard Neither Hard nor easy Fairly Easy Very Easy

3. How hard or easy would it be for you to get condoms (buy them or get them free) at a place close to your home or school?

Very Hard Fairly Hard Neither Hard nor easy Fairly Easy Very Easy

4. How hard or easy would it be for you to carry condoms with you so they would be handy if you had sex?

Very Hard Fairly Hard Neither Hard nor easy Fairly Easy Very Easy

5. If you have sex, how hard or easy would it be for you to make sure you and your partner use a condom every time?

Very Hard Fairly Hard Neither Hard nor easy Fairly Easy Very Easy

6. If you have sex, how hard or easy would it be for you to make sure you and your partner use a condom every time, if you were under the influence of alcohol or drugs?

Very Hard Fairly Hard Neither Hard nor easy Fairly Easy Very Easy

7. How hard or easy would it be for you to talk about using condoms with your sexual partner? (If you don't have a sexual partner, please answer as if you had one).

Very Hard Fairly Hard Neither Hard nor easy Fairly Easy Very Easy

The next questions ask about how confident you are that you could use condoms if you wanted to. Please, answer all of these questions even if you have never had sex or have never used a condom. Please tell us how much you agree with each of the following statements by selecting one answer to each question.

1. I am confident that I could get condoms without feeling embarrassed.

Disagree a lot Kind of disagree Kind of agree Agree a lot

2. I am confident that I could remember to carry a condom with me in case I need one.

Disagree a lot Kind of disagree Kind of agree Agree a lot

3. I am confident in my ability to put a condom on myself or on my partner.

Disagree a lot Kind of disagree Kind of agree Agree a lot

4. I am confident in my ability to use a condom correctly.

Disagree a lot Kind of disagree Kind of agree Agree a lot

5. I am confident in my ability to put a condom on myself or on my partner quickly.

Disagree a lot Kind of disagree Kind of agree Agree a lot

6. If I were to suggest using condoms to a partner, I would be afraid that he/she would reject me.

Disagree a lot Kind of disagree Kind of agree Agree a lot

7. If I didn't know my partner's preferences for using condoms, I would not suggest using one.

Disagree a lot Kind of disagree Kind of agree Agree a lot

8. I would not suggest using condoms with a new partner because he/she would think I had a sexually transmitted disease.

Disagree a lot Kind of disagree Kind of agree Agree a lot

9. I would not suggest using condoms with a new partner because a new partner would think that I thought he/she had a sexually transmitted disease.

Disagree a lot Kind of disagree Kind of agree Agree a lot

10. I would not suggest using condoms with a new partner because he/she would think that I've had a past homosexual experience.

Disagree a lot Kind of disagree Kind of agree Agree a lot

11. I could discuss using condoms with any partner I might have.

Disagree a lot Kind of disagree Kind of agree Agree a lot

12. I could suggest using condoms even to a new partner.

Disagree a lot Kind of disagree Kind of agree Agree a lot

13. I could suggest using a condom without my partner feeling "diseased".

Disagree a lot Kind of disagree Kind of agree Agree a lot

14. I could remember to use a condom even after I have been drinking.

Disagree a lot Kind of disagree Kind of agree Agree a lot

15. I could remember to use a condom even if I were high.

Disagree a lot Kind of disagree Kind of agree Agree a lot

16. I could stop to use a condom even in the heat of passion.

Disagree a lot Kind of disagree Kind of agree Agree a lot

Appendix E

Baseline Sexual Behaviour History Questionnaire (B-SBHQ)

The next questions ask about your sexual behavior. Some of the questions ask about sensitive information. If there is any question that you feel is too personal, you do not have to answer that question. Please note: when we ask about sexual intercourse, we mean sex when the penis is put into the vagina or the anus (rectum).

1. Have you *ever* had sexual intercourse? Select one:

Yes, I have had sexual intercourse

No, I have never had sexual intercourse

2. How old were you the first time you had sexual intercourse? _____ years or select: Does not apply; I have never had sexual intercourse.

3. Have you ever bought condoms (or gotten them for free)? Select one:

Yes, I have bought or gotten condoms

No, I have never bought or gotten condoms.

4. Have you ever talked to a sexual partner about using condoms?

Select one: *Yes*, I have talked with a sexual partner *No*, I have never talked about condoms with about condoms with a sexual partner a sexual partner

5. How often do you carry condoms with you?

Never Sometimes Often Always

6. How much of the time have you used condoms when you've had sexual intercourse?

Never Almost never Sometimes Almost Always Does not apply; Never I have never had sexual intercourse

7. How much of the time have you used some other kind of birth control when you've had sexual intercourse?

Never Almost never Sometimes Almost Always Does not apply; Never I have never had sexual intercourse

8. How much of the time have you been using alcohol or drugs when you've had sexual intercourse?

Never Almost never Sometimes Almost Always Does not apply; Never
I have never had sexual intercourse

9. In your lifetime, how many people have you had sexual intercourse with?

Please write the number of people here: _____

10. In your lifetime, how many times have you used a condom when you had sexual intercourse? Please write the number of times here: _____

11. On average, how often do you have sexual intercourse? Please select one.

A few times a year Once a month Once a week 2-3 times a week 4-5
times a week Almost every day I don't have sexual intercourse.

12. Are you in a relationship right now?

Select one: Yes, I am in a relationship No, I am not in a relationship

13. How long have you been in this relationship?

Write the number of MONTHS here: _____ or select: Does not apply:

I am not in a relationship

14. Have you ever had a sexually transmitted disease like chlamydia, herpes, or warts?

Select one: Yes No

15. Have you ever been pregnant (if you are female) or gotten somebody pregnant (if you are male)?

Select one: Yes No

16. Which of these is true for you? (Select the letter that applies to you.)

- A If I had sexual intercourse, I would have it only with men.
- B If I had sexual intercourse, I would have it only with women.
- C If I had sexual intercourse, I would have it with either men or women.

17. Have you ever had an HIV blood test to find out whether you have been exposed to the virus that causes AIDS? Select one: Yes No

18. People have their own reasons for using condoms. If you have EVER used a condom, what was your reason for doing so? Please select one.

Birth control

To prevent AIDS and other STDs

For both birth control and to prevent AIDS and STDs

Does not apply. I have never used a condom when I had sexual intercourse.

Does not apply. I have never had sexual intercourse.

19. People also have their own reasons for NOT using condoms. If you have ever had sex WITHOUT using a condom, what was your reason for NOT using one?

Check all that apply:

I don't know where to get condoms

I can't afford condoms

I didn't have a condom with me

Sex doesn't feel as good with a condom

I didn't want to ruin the mood

My partner and I are in a monogamous relationship

My partner and I are using another kind of birth control

My partner and I want to have a baby

I was drunk or high

My partner and I have both been tested for HIV/STDs

I am afraid my parents would punish me if they found out I had condoms

I am embarrassed to buy condoms

I am embarrassed to talk about condoms

Having a condom with me would say to others I was with my partner just out "looking for sex."

Appendix F

Follow-up Sexual Behaviour History Questionnaire (F-SBHQ)

Please answer the following questions about your sexual activity. Please note: when we ask about sexual intercourse, we mean sex when the penis is put into the vagina or the anus (rectum).

1. Have you had sexual intercourse *in the past three months*?

Select one: *Yes*, I have had sexual intercourse in the past 3 months

No, I have not had sexual intercourse in the past 3 months

2. *In the past three months*, have you bought condoms (or gotten them for free)? Select one:

Yes, I have bought or gotten condoms

No, I have never bought or gotten condoms.

4. *In the past three months*, have you talked to a sexual partner about using condoms? Select one:

Yes, I have talked a sexual partner about using condoms

No, I have never talked a sexual partner about using condoms

5. *In the past three months*, how often did you carry condoms with you?

Select one: Never Sometimes Often Always

6. *In the past three months*, how much of the time have you used condoms when you've had sexual intercourse? Select one:

Never Almost never Sometimes Almost always Always Does not apply; have not had sexual intercourse in the past 3 months

7. *In the past three months*, how much of the time have you used some other kind of birth control when you've had sexual intercourse? Select one

Never Almost never Sometimes Almost always Always Does not apply; have not had sexual intercourse in the past 3 months

8. *In the past three months*, how much of the time have you been using alcohol or drugs when you've had sexual intercourse? Select one

Never Almost never Sometimes Almost always Always Does not apply; have not had sexual intercourse in the past 3 months

9. In the past three months, how many people have you had sexual intercourse with? Please type the number of people here: _____

10. In the past three months, how many times have you had sexual intercourse? Please type the number of times here: _____

11. In the past three months, how many times have you used a condom when you had sexual intercourse? Please type the number of times here: _____

12. In the past three months, how often do you have sexual intercourse?

Select one:

A few times a year Once a month Once a week 2-3 times a week 4-5
times a week Almost every day Does not apply; I have not had sexual
intercourse

13. In the past three months, have you had a sexually transmitted disease like Chlamydia, Genital herpes, or Genital warts?

Select one: Yes No

14. In the past three months, have you had an HIV blood test to find out whether you have been exposed to the virus that causes AIDS?

Select one: Yes No

15. People have their own reasons for using condoms. If you have used a condom *AT LEAST ONCE IN THE PAST THREE MONTHS*, what was your reason for doing so? Select one:

Birth control

To prevent AIDS and other STDs

For both birth control and to prevent AIDS and STDs

Does not apply. I have not used a condom when I had sexual intercourse in the past 2 months.

Does not apply. I have not had sexual intercourse in the past 2 months.

16. People also have their own reasons for NOT using condoms. If you have had sex *WITHOUT* using a condom *AT LEAST ONCE IN THE PAST THREE MONTHS*, what was your reason for NOT using one? Check all that apply:

I don't know where to get condoms

I can't afford condoms

I didn't have a condom with me

Sex doesn't feel as good with a condom

I didn't want to ruin the mood

My partner and I are in a monogamous relationship

My partner and I are using another kind of birth control

My partner and I want to have a baby

I was drunk or high

My partner and I have both been tested for HIV/STDs

I am afraid my parents would punish me if they found out I had condoms

I am embarrassed to buy condoms

I am embarrassed to talk about condoms

Having a condom with me would say to others I was with my partner just out "looking for sex."

1. Are you in a relationship right now?

Select one: Yes, I am in a relationship No, I am not in a relationship

2. How long have you been in this relationship?

_____ months or Select I'm not in a relationship

3. How much trust is there between you and your sexual partner?

Select one:

Does not apply:

No trust Very little trust Some trust A lot of trust I'm not in a relationship

4. Do you have sex with your sexual partner?

Select one: Yes, we have sex No, we don't have sex Does not apply: I'm not in a relationship

5. How often would you say you have sex with your sexual partner? Select one:

A few times a year Once a month Once a week 2-3 times a week

4-5 times a week Almost every day I don't have sexual intercourse.

6. Did you use condoms when you *first* started having sex with your sexual partner? Select one:

Yes No Does not apply: I'm not in a relationship Does

not apply: We haven't had sex

7. How often do you use condoms with your sexual partner *now*? Select one:

A few times a year Once a month Once a week 2-3 times a week 4-5

times a week Almost every day I don't have sexual intercourse.

8. Would you say that you are “in love” with your sexual partner?

Select one: Yes, I am in love No, I am not in love Does not apply: I’m not in a relationship