Factors affecting Condom Usage among Cape Town High School Students

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Abstract

The HIV/AIDS epidemic in South Africa is characterised mainly by heterosexual transmission and an extremely rapid spread among adolescents and young adults in their early twenties, indicating the need for an increased focus on preventive efforts aimed at this age group.

Apart from the development of a cure or vaccine to prevent HIV transmission, preventive programmes clearly offer the best chance of halting the spread of HIV, and these need to be based on behavioural change to modify or prevent risk behaviours. The challenge is to develop suitable theory-based programmes that address and promote safer sex behaviour, taking into account the local social and cultural environment.

This cross-sectional study focused on a key HIV preventive behaviour, namely condom usage, and used as its research target adolescents, a key risk group for HIV infection in South Africa. It aimed to investigate the key variables that influence condom usage among adolescents in the Cape Town metropolitan area. The study was based on an integrated theoretical model using constructs from 5 of the most common social cognitive behavioural theories, namely, the Health Belief Model, Bandura's Social Cognitive Theory, the Theory of Reasoned Action, the Theory of Planned Behaviour and the Theory of Subjective Culture and Interpersonal Relations. In addition, variables from Basch's contruct availability model were included.

The sample comprised a representative three-stage sample of grade 11 adolescents from 36 schools in the Cape Town Metropolitan area (n = 1931). Formative research, in the form of an elicitation study using 10 focus group interviews with a purposive sample of adolescents, was used to develop the theory-based self-completion questionnaire used in this study. Twelve constructs were included in the questionnaire as potential correlates of condom use, namely: intention, self-standards, self-efficacy, affect, attitude, beliefs, norms, condom availability, health concern, worry about AIDS, construct availability and condom availability. The dependent variable was condom use on the last coital episode.

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All data were separately analysed according to race and gender and confined to sexually active respondents. Only the sub-samples of sexually active Black and Coloured groups were large enough to allow for statistical model building. Data were weighted using the SUDAAN programme and all analyses stratified according to race and gender. Statistical analyses first examined the bivariate associations between the independent variables and both intention to use condoms and actual condom use at last coital episode. Variables identified as significantly associated with intention and actual condom use were then entered into multiple and logisitic regression models. Stepwise variable selection procedures were used on the same data set to identify those variables that best explained behaviour. Path diagrams were then created for each of the subsamples and finally data mining techniques using decision trees were used to analyse the influence of the independent variables on condom use.

The results provide support for using an integrated social cognitive framework for understanding adolescent condom use. The variable found to be the most consistent in influencing condom use across all race gender groups was construct availablility (thinking and/or talking about condoms with a sexual partner). The importance of the other independent variables differed considerably according to race and gender and highlights the importance of these variables in understanding condom use among South African adolescents. Other independent variables that correlated significantly with behaviour for three or more of the groups were self-standards, attitude, self-efficacy, and condom availability.

The results clearly indicate that interventions that target preparatory behaviour (more specifically, communicating about condoms and carrying a condom) are most likely to promote condom use. The results also highlight the importance of designing interventions that take into account gender and race/cultural specific factors. Lifeskills programmes in schools that teach condom negotiation skills, help young people think about condoms before they engage in sex, promote having condoms available, target self-standards, self-efficacy, and positive attitudes toward condoms are likely to increase use among the target group in this study.

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ABBREVIATIONS

ARRM	AIDS Risk Reduction Model
CAM	Construct Availability Model
CI	Confidence Interval
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
IQR	Interquartile range
SCT	Social Cognitive Theory
SD	Standard Deviation
SE	Standard Error
TIR	Theory of Interpersonal Relations and Subjective Culture
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
WCED	Western Cape Education Department

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CHAPTER ONE

INTRODUCTION

1.1 Background to the problem

The major public health problem facing South Africa in the next decade is to curb the rapid spread of HIV infection. According to a recent UNAIDS report (UNAIDS, 2002), 20.1% of adults in South Africa are now infected with HIV. With an estimated total of 5 million infected adults and children at the end of 2001, South Africa has the largest number of people living with HIV/AIDS in the world (UNAIDS, 2002). According to Whiteside and Sunter (2000), adult prevalence rates could increase to as much as 30% by the year 2010.

The epidemic in South Africa is characterised mainly by heterosexual transmission and by an extremely rapid spread among adolescents and young adults in their early twenties. In a recent study in the township of Khutsong in Carletonville, for instance, HIV prevalence rates were 18.9% in the 16-18 year age group and 43.1% in the 21-25 year age group (Williams, Campbell & MacPhail, 1999). Reports confirm the particularly high HIV infection rates among young women in their teens and early twenties, which highlights the gendered context of the disease in South Africa (UNAIDS, 2002; Williams *et al*, 1999). At the end of 2001 between 20.5% and 30.8% of women between the ages of 15 and 24 years were HIV positive in South Africa, compared to between 8.5% and 12.8% of the men in the same age group (UNAIDS, 2002). Williams, MacPhail and Campbell (in press) found that HIV prevalence rates in Khutsong were 0.2% and 8% at age 15 years and 11% and 47% at age 20 years, for men and women respectively. Close to 6 out of 10 women in their early 20's in this study tested positive for HIV and most of these women were probably infected during their teenage years. This is substantiated by sero-prevalence data for women attending ante-natal clinics. In 2001, 15.4% of pregnant

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women under the age of 20 years and 28.4% of those between the ages of 20 and 24 years tested positive for HIV nationwide (Department of Health, 2002).

The above figures highlight the fact that adolescents, and adolescent girls in particular, are a high risk group for HIV infection in South Africa and indicate the need for an increased focus on preventive efforts aimed at this age group. There are a large number of factors relating to the adolescent stage of development that contribute to their high risk status. A number of studies worldwide indicate that adolescents are commencing sexual activity at increasingly earlier ages, that they often have unprotected intercourse, and that most either do not use condoms or use them inconsistently (Abrams, Abraham, Spears & Marks, 1990; Donald, Lucke & Dunne, 1994; Feldman, O'Hara & Baboo, 1997; Hein, 1993; Kegeles, Adler & Irwin, 1988; Kraft & Rise, 1991; Malavaud, Dumay & Malavaud, 1990; Moore & Barling, 1991; Richter, Sy, Mukhtar & Addy, 1992; Richter, Valois, McKeon & Vincent, 1993; Rosenthal, Moore & Brumen, 1990; Schaalma, Kok & Peters, 1993; Slonim-Nevo, Ozawa & Auslander, 1991). Adolescents frequently either have a number of short, often monogomous relationships or have multiple sexual partners (Kelly & Parker, 2000; Rosenthal *et al*, 1990). There is also a trend toward increased sexual experimentation at a younger age with a greater number of sexual partners (Cochran & Peplau, 1991). First sexual intercourse is usually unplanned and therefore condoms are not used, and many adolescents enter into a sexual relationship after knowing their partner for a very short period (Lowe & Radius, 1987). Ingham, Woodcock & Stenner (1991) found that half of the adolescents in their study had intercourse for the first time within two weeks of initiating the relationship. All of these factors, coupled with low condom usage, place adolescents at particular risk for contracting HIV.

Although a number of studies have documented increasing levels of AIDS knowledge (both related to how HIV is transmitted and the value of condoms as protection against HIV) among adolescents (Eaton & Flisher, 2001; Rosenthal *et al*, 1990), this does not appear to result in safer sex practices, including increased condom usage (Kegeles *et al*,

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1988; LoveLife & Henry J Kaiser Family Foundation, 2001; Lowe & Radius, 1987; Reitman, St Lawrence, Jefferson, Alleyne, Brasfield & Shirley, 1996; Kelly, 2000; Richard & van der Pligt, 1991; Rosenthal *et al*, 1990; Varga & Makubalo, 1996). Despite evidence that some of the generally assumed negative attitudes toward condoms are changing and their benefits are being more widely recognised by adolescents, this also does not appear to result in increased use (Chapman, Stoker, Ward, Porrit & Fahey, 1990; Kelly & Parker, 2000; Moore & Rosenthal, 1991b; Varga, 1999). Many adolescents either do not feel that they are personally vulnerable to HIV/AIDS (Abrams *et al*, 1990; Breakwell, 1996; Moore, Rosenthal & Boldero, 1993; Woodcock, Stenner & Ingham, 1992) or show a 'fatalistic bias', in which the threat of AIDS is perceived to be so great that it is ignored or distorted (Blaxter, 1989; Leclerc-Madlala, 1997).

As is the case in much of the rest of the world, adolescent sexuality in South Africa is characterised by behaviours and attitudes that directly contribute to HIV transmission. These include early sexual debut, multiple sexual partners, and a sense of invulnerability to HIV (Abdool Karim, Abdool Karim, Preston-Whyte & Sankar, 1992a, 1992b; Buga, Amoko & Ncayiyana, 1996; Eaton, Flisher & Aarø, 2003; Flisher, Ziervogel, Chalton, Leger & Robertson, 1993; Kelly & Parker, 2000). In a review of studies on adolescent sexual behaviour in South Africa, Eaton *et al* (2003) found that at least 60% of young people are sexually active by age 16, and probably 80% by the age of 20. Boys report earlier sexual debut than girls, and Black ("African") youth are more likely to start sexual activity in their teens than other ethnic groups (Eaton *et al*, 2003). A recent study conducted among a sample of grade 8 and 11 learners in Cape Town revealed that 58% and 43% of the grade 11 male and female learners respectively had experienced sexual intercourse (Flisher, Reddy, Muller & Lombard, 2000). In addition 23% of the male and 11% of the female grade 8 learners were sexually active. Eaton *et al* (2003) found that the majority of school students who had ever experienced sexual intercourse reported at least one partner in the previous year, with a persistent minority of between 1% and 5% of females and 10% to 25% of males having more than four partners per year.

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For many young South Africans, having a boyfriend or girlfriend is synonymous with having sex and sexual activity not only confers status on the relationship, but also in the case of girls may bring the additional benefits of financial support and/or gifts (Rutenberg, Kaufman, Macintyre, Brown & Karim, 2002). There is very little communication relating to sexual matters between partners and girls have little say in relationships (Campbell, 1995b; Varga & Makubalo, 1996). Adolescent sexual relationships are often characterised by violence against women and South Africa has one of the highest reported incidences of rape in the world (Jewkes, Penn-Kekana, Levin, Ratsaka & Schreiber, 1999; Preston-Whyte, 1999). This is exacerbated by the fact that many adolescent girls have older male partners, further contributing to their powerlessness in sexual relationships. A further factor heightening the spread of HIV/AIDS among young people in South Africa is their lack of access to sexual and reproductive health information, education, and services (Abdool-Karim, S.S.; Q. *et al,* 1992; Abdool-Karim, Preston-Whyte *et al, 1992*; UNFPA, 2001).

It is widely accepted that, given the lack of a vaccine against HIV, the best means of protection against the virus (with the exception of celibacy and monogamy between uninfected partners), is the correct and consistent use of latex condoms (Cates & Stone, 1992; CDC National AIDS Clearinghouse, 1994; D'Angelo & DiClemente, 1996; Van de Perre, Jacobs & Sprecher-Goldberg, 1987; Whiteside & Fransen, 1999). Condoms have been shown to prohibit the transmission of viral pathogens, including HIV (Conant, Hardy, Sematinger, Spicer & Levy, 1986; Van de Perre *et al*, 1987). While newer barrier methods (e.g. female condoms) may prove to be as effective as the traditional condom, information about their efficacy among and acceptability to adolescents is not yet available (Donald *et al*, 1994; Joffe, 1993). For this reason, this study will focus solely on the male condom.

Research worldwide consistently reports on overall low and/or infrequent usage of condoms among adolescent populations (Abdool-Karim, S.S.; Q. *et al,* 1992; Abdool-Karim, Preston-Whyte *et al,* 1992; Fife-Shaw & Breakwell, 1992; Kelly, 2000; Kraft &

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Rise, 1991; Kraft, Rise & Traeen, 1990; LoveLife & Henry J. Kaiser Family Foundation, 2001; Malavaud, Dumay & Malavaud, 1990; Moore & Barling, 1991; Richter *et al*, 1992; Rotheram-Borus & Koopman, 1991; Slonim-Nevo *et al*, 1991), despite many adolescents having knowledge of HIV transmission (DiClemente, 1990; DiClemente, Durbin, Siegel, Krasnovsky, Lazarus & Comacho, 1992; Rotheram-Borus & Koopman, 1991). In addition, those adolescents who may be at highest risk for HIV are often less likely to use condoms (Joffe, 1993). Thus studies have shown that adolescents with greater number of sexual partners and/or those who use drugs or alcohol are less likely to use condoms (DiClemente *et al*, 1992; Hingson, Strunin, Berlin & Heeren, 1990b; Sonenstein, Pleck & Ku, 1989) and those who engage in one problem behaviour are more likely to engage in others (Biglan, Metzler, Wirt, Ary, Noell, French & Hood, 1990; Flisher; Ziervogel, Chalton, Leger & Robertson, 1996a & b; Jessor 1992). In addition, research also shows that many young people do not use condoms in relationships because they view their relationship as monogamous and believe that it will be long-term (Kelly & Murphy, 1992; Moore & Rosenthal, 1991a; Sunenblick, 1998).

Confirming worldwide trends, adolescent reproductive health in South Africa is also characterised by low contraceptive and condom usage (Adolescent Health Programme, 1997; Kelly, 2000; National Population Unit, 2000; National Progressive Primary Health Care Network, 1995; Richter, 1996; Wood, Maforah & Jewkes, 1996). For instance in a study conducted among 2108 black Xhosa-speaking adolescents in the Umtata district, 73.3% of the girls and 87.6% of the boys were sexually active. Of these, 62% of the boys and only 19% of the girls had used condoms (and reported condom usage does not necessarily mean that this is consistent condom usage) (Buga *et al*, 1996). Nearly a quarter of the sexually experienced girls and half of the boys had a past history of STDs, which implies that a large proportion were at risk for HIV infection (Buga *et al*, 1996). Many of the sexual encounters among young people in South Africa are characterised by violence and coercion against women, which increases the likelihood of HIV infection and makes it highly unlikely that condoms are used (Abrahams, Jewkes & Laubscher, 1999; Campbell, 1995a; 1995b; Jewkes & Levin, 2000; Jewkes *et al*, 1999; Kelly, 2000;

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Vetten & Bhana, 2001; Wood, 2000; Wood *et al*, 1996; Wood, Maforah & Jewkes, 1998). There is often little discussion or negotiation before the first sexual encounter, which is frequently unplanned and coercive (MacPhail, 1998; Varga, 1999; Varga & Makubalo, 1996).

According to Preston-Whyte (1999), there is conflicting evidence regarding condom use in South Africa, with different statistics for the same region and little consistency in the studies regarding reported attitudes to condoms or protective behaviour. Even where there is evidence that attitudinal resistance is decreasing, this is invariably mitigated by observation that actual usage tends to be inconsistent and decreases with time (Preston-Whyte, 1999). Varga (1999) in a study among youth in Natal, found that although an increasing number appeared to support condom use, only one third had ever used a condom. Wood (2000) reports that condom use among township youth in the Eastern Cape is highly erratic. Abdool Karim, SS., Q. *et al* (1992) in a study among high school students in Natal report that only 47% of those that were sexually active had used a condom at least once and that none had used a condom on every sexual encounter. In a recent study conducted among a random sample of 2000 South African adolescents, 41% of the sexually experienced young people said that they did not always use a condom when they had sex (LoveLife & Henry J. Kaiser Family Foundation, 2001). These figures are substantiated by research conducted among samples of adolescents and young adults conducted at 6 urban and rural sentinal sights across South Africa by Kelly (2000). This study found that 48% of the sample had not used a condom the last time they had had sex and 46% did not always use condoms for sex. Youth in rural areas were significantly less likely to use condoms than those in urban areas. Harrison, Xaba and Kunene (2001) cite that only 20% of sexually active adolescent women nationally reported using condoms on their last coital episode. In a review of studies on unsafe sexual behaviour among South African youth, Eaton *et al* (2003) found that overall between 50% and 60% of youth in the studies reviewed did not use condoms at all.

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1.2 Motivation for this study

Apart from the development of a cure or vaccine to prevent HIV transmission, preventive programmes clearly offer the best chance of halting the spread of HIV, and these need to be based on behavioural change to modify or prevent risk behaviours. As HIV is mainly spread by heterosexual contact in South Africa, we need to reduce the risk behaviours that propel the epidemic. The challenge is to develop suitable theory-based programmes that address and promote safer sex behaviour, taking into account the local social and cultural environment.

A key preventive behaviour, as already discussed, is the consistent and correct use of condoms. This behaviour, however, presents a formidable challenge. Condom use has proved to be a particularly difficult behaviour to instigate and maintain as it is determined by a range of intra- and interpersonal factors that are underpinned by gender power relationships.

> Condom use presents the behavioral end-point of a decision-making process which weighs relevant internal and external influences: interpersonal, social economic, psychological influences within a cultural context that are superimposed over traditions, values and patterns of social organization. Such a complex decision-making process is not likely to be understood in uni-dimensional or simplistic terms (D'Angelo & DiClemente 1996:341).

The challenge to researchers in this field is therefore to develop a better understanding of the correlates of condom use versus non-use and to develop more appropriate programmes to bring about behaviour change (Campbell, 1997; Kippax & Crawford, 1993). In addition, it is important to tailor such programmes to take into account group specific factors such as age, gender, race and sexual experience (Abraham & Sheeran, 1994).

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There is widespread agreement on the need for urgent prevention programmes for adolescents that target condom usage, but there is less agreement on the optimal content and format of such programmes (Schinke, Botvin, Orlandi, Schilling & Gordon, 1990). A large number of studies have focused on HIV-preventive behaviour and on condom usage in particular. A number of them have been based on multivariate predictions of condom usage and there have also been a number of attempts at theory-based interventions (for a discussion of these see Chapters 2 and 3). However, according to Fisher and Fisher (1992), much of this research is characterised by poor conceptualisation and inadequate elicitation research. A small, but growing number of studies have also tried to integrate variables from the more popular general theories of behaviour (e.g. Health Belief Model, Theory of Reasoned Action, Self-efficacy Theory) and "this approach holds more promise of offering some cumulative guide to the development of effective interventions for HIV and AIDS" (Lewis and Kashima 1993:37). These studies will be discussed in detail in Chapter 3.

A large number of programmes have been developed that aim to promote safer sex behaviour and condom usage among young people. However, many of these interventions have not been successful, which is at least partly due to the fact that they lack a theoretical base and careful pre-testing (Wight, Abraham & Scott, 1998). Fisher and Fisher (1992) note that interventions based on formal conceptualisations of any kind are 'exceedingly rare'. Unless an understanding of the origins and control of sexual behaviour, which is theory based, is applied to the design of behaviour-change programmes, these programmes are unlikely to target the most important determinants of young people's sexual behaviour and are, therefore, unlikely to be effective (Wight *et al,* 1998). There has, however, been a gradual shift toward theory-based approaches and a growing body of evidence points to the importance of such programmes (Kalichman, Carey & Johnson, 1996; Kirby, Barth, Leland & Fetro, 1991; Kirby, Short, Collins, Rugg, Kolbe, Howard, Miller, Sonnenstein & Zabin, 1994; Mellanby, Phelps, Crichton & Tripp, 1995). Kirby (1994) notes that a basis in social-cognitive theory is one of nine features that distinguish effective from ineffective programmes. This is substantiated by

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Kalichman *et al* (1996), who found highly significant positive outcomes in a meta-analysis of 12 controlled trials of HIV-preventive interventions based on social cognitive theory.

It is also important to design programmes taking into account the social and cultural environment related to decision-making with respect to HIV and build into these programmes specific local needs and concerns. There is a particularly urgent need for the development of culturally relevant programmes in the South African context. According to Preston-Whyte (1999:140), "Imported and inappropriate intervention programmes may be, in themselves, barriers to behavioural change, in that by their very irrelevance to local concerns, they may promote negative reactions and resistance to the intended prevention message". A study of the relevant literature reveals a dearth of studies that are theoretically based and that relate to the specific needs of the South African population (see Chapter 3). This is substantiated by MacPhail and Campbell (2000:2), who state that "understandings of the influences on sexual behaviour and mechanics of sexual behaviour change are still limited, particularly in the South African context. Due to these inadequacies in our knowledge, we have limited tools for understanding what is driving the epidemic amongst young people". Given the limited resources available for prevention programmes and the rapidly escalating HIV infection rates among the youth in this country, it is essential that interventions be rigorously planned and targeted and focus upon those variables that have the greatest probability of promoting the consistent and correct use of condoms by South African youth.

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It is precisely to address some of these issues that this study has been conducted. This study focuses on a key HIV preventive behaviour, namely condom usage, and uses as its research target adolescents, who have also been identified as a key risk group for HIV infection in South Africa. It aims to **investigate the key variables that influence condom usage among adolescents** in the Cape Town metropolitan area.

1.3 Conceptual framework

Behaviours that are necessary for the prevention of HIV transmission, namely safer sexual practices and in particular the consistent and appropriate use of condoms, have proved to be complex and multifaceted and as a result particularly difficult to change. At present no single theory exists which satisfactorily explains or predicts the wide variety of behaviours that are linked to health status in general and to sexual behaviour in particular. Five major theories that contain almost all of the variables that have been utilised in attempts to understand a wide variety of human behaviours, including sexual behaviour, are: the Health Belief Model (Becker, 1974, 1988; Janz & Becker, 1984), Social Cognitive Theory (Bandura, 1986, 1994), the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the Theory of Planned Behaviour (Ajzen, 1991; Ajzen & Driver, 1991; Ajzen & Madden, 1986) and the Theory of Subjective Culture and Interpersonal Relations (Triandis, 1972, 1977). These theories, which are called 'social-cognitive' in health psychology literature, deal mainly with factors related to the triad of behaviour-personal factors-interpersonal factors and processes (Conner & Norman, 1996; Eaton *et al,* 2003). These represent public health, clinical and social psychological approaches to the prediction and understanding of behaviour and will provide the framework for this research.

In a National Institute for Mental Health (NIMH) workshop held in Washington in 1992, the developers and/or leading proponents of these theories were brought together in order to attempt to identify a finite set of variables that need to be considered in any analysis of behaviour[1]. They agreed that as a first step the focus should be on trying to identify key variables that would enable one to predict and understand a specific behaviour (Fishbein, Bandura, Triandis, Kanfer, Becker & Middlestadt, 1992). In this process they identified a

[1] Note that the focus of this research is on theories of behavioural prediction rather than behavioural change. The focus of theories of behavioural change is on the variables that determine on-going behaviour at a given point in time, whereas theories of behavioural change focus on the stages a person goes through in an attempt to change behaviour (Prochaska & DiClemente 1983; Kanfer, 1987). Although the two types of theory are complementary, this research the focus will be on behavioural prediction only.

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limited number of variables they consider to be key potential determinants of any given behaviour. Specifically, they concluded that a behaviour is more likely to occur if:

a) The person has a strong positive ***intention*** to perform it
b) Constraints, either external or internal to the person, do not make the behaviour difficult to achieve (***environmental constraints***)
c) The person has the necessary skills to perform the behaviour (***ability***)
d) The perceived advantages outweigh the perceived costs, i.e. the person has a positive attitude toward performing the behaviour (***anticipated outcomes***)
e) The person perceives more social/normative pressure to perform the behaviour than not to perform the behaviour (***relevant referents***)
f) The person perceives the performance of the behaviour to be consistent with his/her self-image (***self-standards***)
g) The person's emotional reaction to performing the behaviour is more positive than negative (***emotions***)
h) The person perceives that he/she has the capabilities to perform the behaviour under a number of different circumstances (***self-efficacy***) (Fishbein *et al* 1992: 6-7).

According to Fishbein *et al* (1992), The first three variables are necessary and sufficient for a behaviour to occur, whereas variables 4 to 8 influence the direction and strength of intention, but can also directly influence behaviour. Further research is needed to measure them and examine the strength of association between each of these variables as well as their association with condom usage. This should then culminate in the identification of a limited number of variables that "most strongly influence the decision to perform (or not perform) a given behaviour in a given population. Once identified, these variables should then serve as the primary focus of an intervention" (Fishbein *et al* 1992:6).

It is likely that each specific health behaviour will be influenced in a different way by these variables. For this reason one specific behaviour, namely condom usage, was

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identified as the focus for this research. This specific behaviour was chosen as it is a key method of preventing the transmission of HIV, and because as already mentioned, it is a behaviour that is particularly difficult to accomplish.

The theoretical framework used in this research is based on recommendations emanating from the NIMH workshop discussed above as well as on a review of major behavioural theories and research relating to adolescent condom usage. This research will thus attempt to contribute to a better understanding of the usage/non-usage of condoms by adolescents in the Western Cape based on an integrative model using constructs from the conceptual framework just described.

1.4 Chapter overview

Following this introductory chapter, Chapter 2 will focus on the conceptual framework used in this study. I will present an overview of each of the five theories underpinning the conceptual framework as well as the construct availability model, briefly critique each of the theories and then compare the core constructs from these theories that will be used in my conceptual framework. The integrated model to be used in this research will then be presented. In Chapter 3 I briefly summarise studies that focus on psychosocial correlates of condom usage among adolescents and then critically review relevant theory-based studies on adolescent condom usage.

Chapter 4 describes in detail the methodology used in the study. In this chapter, I describe the elicitation study, construction of the questionnaire, give details on the sample used as well as the statistical procedures used to analyse the data. In Chapter 5 I present the results, first focusing on bivariate and then on multivariate data results. In the final chapter I discuss the results focusing primarily on the results of the multivariate analyses. I also discuss limitations of the study and present recommendations both for future research as well as classroom-based interventions.

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CHAPTER TWO

CONCEPTUAL FRAMEWORK

2.1 Introduction

In this chapter, I will present the conceptual framework used in this study. This framework is based on an attempt at integrating components from five of the major social cognitive theories[1] of behaviour. These are the Health Belief Model (HBM) (Becker, 1974, 1988; Janz & Becker, 1984), Social Cognitive Theory (SCT) (Bandura, 1986, 1994a, 1994b), the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), its revised version, the Theory of Planned Behaviour (TPB) (Fishbein & Ajzen, 1975), and the Theory of Interpersonal Relations and Subjective Culture (TIR) (Triandis, 1972, 1977), each of which will be briefly described and critically reviewed in this chapter. The framework also includes elements from the Construct Accessibility Model (CAM) (Bargh, 1984; Norris & Ford, 1995), which will be described below.

This research attempts to use social cognitive models of behaviour and behaviour change to study one specific health behaviour, namely condom use. It needs to be emphasized at the outset that these models address only one potential set of precursors of health behaviour, which lie mainly within the triad of *'behaviour - personal factors - interpersonal factors and processes'* (Eaton *et al,* 2003). This research does not claim to include or address all factors that have been shown to influence condom usage in other studies. This would be beyond the scope and purpose of a study of this nature.

In this research, social cognition is understood as the way individuals make sense of social situations (Conner & Norman 1996). Social cognitive models, such as those used

[1] Social cognitive theories refer to a range of theories, whereas Social Cognitive Theory (SCT) refers to Bandura's theory.

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in this study, have been widely used to study a range of health related behaviours, including HIV-preventive behaviour (Conner & Norman, 1996, Lugoe, 1996; Marteau, 1989). One of the reasons for the frequent use of social cognitive factors in this context is that they have been shown to be important proximal predictors of health behaviour and have also been shown to mediate the effects of many other behavioural determinants (such as social class, gender, ethnicity) (Conner & Norman, 1996). In addition, the factors that they study are assumed to be open to change and can thus provide important targets for effective behaviour change and maintenance interventions (Conner & Norman, 1996).

The underlying premise of this study is that no one social cognitive theory or model can adequately explain the numerous, complex, social and psychological factors that determine health behaviour in general and condom usage in particular. Therefore, it is assumed that a combination of components from the main social cognitive theories that have so far proved to be successful in explaining condom usage will lead to a better understanding of these factors and thus help in the design of more effective prevention interventions.

As mentioned above, the focus of the present study is on one type of preventive health behaviour, namely condom use. Health behaviour is defined by Kasl and Kobb (1966:246) as: "any activity or action undertaken by an individual who believes him/herself to be healthy, for the purpose of preventing or detecting an illness in an asymptomatic state". Thus, in order to prevent the spread of HIV/AIDS, individuals need to engage in quite specific preventive behaviours, which can include abstinence, a monogomous relationship with a non-infected partner, and/or the correct use of condoms every time sexual intercourse occurs. The aim of this study is to investigate the social cognitive factors that underpin one specific aspect of HIV/AIDS preventive behaviour, namely, condom usage.

Research has shown that a wide variety of factors can influence health behaviour. These include demographic, social, emotional, personality and cognitive factors. Cummings *et*

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al (1980, cited in Conner & Norman 1996:4) studied 14 different health behaviour models that contained 109 variables and derived six distinctive factors that influence health behaviour. These are:

1. accessibility of health care services
2. attitudes to health care
3. perceptions of disease threat
4. knowledge of the disease
5. social network characteristics
6. demographic characteristics.

According to Conner & Norman (1996), factors two to five represent social cognitive factors, which are central to the models used in this study.

McLeroy, Bibeau, Steckter & Glanz (1988) described another way of categorising factors influencing health-related behaviours. They categorised them according to 1) intrapersonal factors (e.g. knowledge, attitudes and beliefs), 2) interpersonal factors (family, friends and peers that provide social identity, support and role definition), 3) institutional or organisational factors (rules, regulations, policies and informal structures which may constrain or promote health behaviours), 4) community factors (social networks and norms which operate formally or informally among individuals, groups and organisations) and 5) public policy factors. The theories that are used in this research focus mainly on the intra- and interpersonal levels and do not address organisational, community and/or public policy factors.

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In the following section the five main theories that underpin this study will be described and critiqued.

2.2 The Health Belief Model

The Health Belief Model (HBM) is one of the oldest and most widely used social cognition models in health psychology. It was originally developed by Rosenstock (1966)

to investigate the relationship between health beliefs and behaviour and has been used to predict a diverse range of health behaviours in numerous settings. Thus, for instance, it has been used to predict smoking and alcohol usage, influenza vaccination, breast self-examination, dental behaviour and contraceptive use (Cummings, Jette & Brock, 1979; Lowe & Radius, 1987; Ronis & Harel, 1989; Stacy & Lloyd, 1990; Werch, 1990).

According to Rosenstock's (1966) original model, health behaviour is a result of a person's perception of the threat of a specific disease (health motive or threat) and their beliefs about the various courses of action open to combat the disease. Realising some degree of personal vulnerability to a disease/health risk is considered a major prerequisite for becoming motivated to change one's behaviour to avoid the disease/risks (Becker, 1974). Perception of threat is in turn dependent on the perceived susceptibility to the illness as well as the anticipated severity of the consequences of the illness (Sheeran & Abraham, 1996). Those who feel vulnerable are considered to feel more threatened, to be more responsive to educational messages and to be more inclined to behavioural change (Schwarzer, 1994). Behavioural evaluation also depends on two sets of beliefs, namely, those concerning the benefits or efficacy of the health behaviour and those concerning the perceived costs of or barriers to performing the behaviour. Thus a person will be likely to follow a particular health behaviour if they believe that they are susceptible to a particular condition, which they also consider to be serious, and believe that the benefits of the action taken will outweigh the costs (Conner & Norman, 1996).

A further component of the model is called a 'cue to action' and is presumed to be a requisite to trigger the decision-making process. Cues to action can include a diverse range of triggers to the individual to take action. These can be internal (e.g. a physical symptom of the disease) or external (e.g. a mass media campaign; a friend dying of AIDS) (Janz & Becker, 1984). Becker, Drachman and Kirscht (1972) and Becker, Haefner, Kasl, Kirscht, Maiman and Rosenstock (1977) added a further class of variables to the model, namely, those measuring an individual's general health motivation or 'different degrees of readiness to undertake a health action, aroused by health cues'

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(Becker *et al* 1972:853). This is generally viewed as a further predictor variable (Arnold & Quine, 1994).

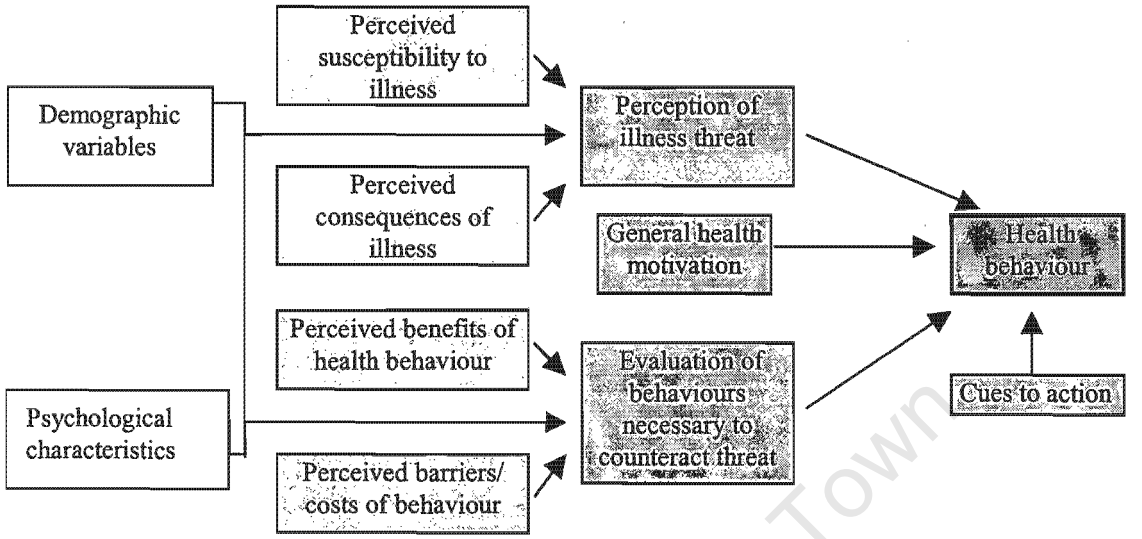

Figure 2.1: The Health Belief Model

If applied to condom use in order to prevent HIV transmission, the HBM would predict that condom use will be associated with high levels of perceived severity of and susceptibility to HIV/AIDS, and fewer perceived barriers than perceived benefits of condom use. Condom use will also be positively associated with a number of cues to action (e.g. media campaigns promoting condom use; friends dying of AIDS) and the degree of importance of being healthy to the individual.

The HBM has been used with varying degrees of success in predicting health behaviours, depending on the behaviour under study and the operationalisation of the variables (for reviews see Harrison, Mullen & Green, 1992; Janz & Becker, 1984; Sheeran & Abraham, 1996). In a review of studies using this model, Janz & Bekker (1984) found substantial support for the model and that perceived barriers and perceived susceptibility were the components most frequently reported to influence health behaviour. On the other hand, Harrison *et al* (1992), in a meta-analysis of studies using the HBM, found only weak support for the model. Only 16 of the 147 studies met their criteria of inclusion, namely,

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that they were based on original data collected from adults, included the four variables of susceptibility, severity, costs and benefits, related the variables to actual behaviour rather than to attitudes or intentions and reported reliability of the measures. They found the model's performance to be generally poor and questioned whether the key variables were able to discriminate between and therefore apply differentially to a variety of health behaviours.

According to Terry, Gallois and McCamish (1993) and Rutter and Quine (1994), it appears that across a range of different behaviours the dimension of perceived barriers is the most important predictor of the HBM. This means that those most likely to take up a preventive behaviour are those who see the least barriers to implementing that behaviour. There is also evidence to link each of the other four components of the model to health behaviour. However, there appears to be only weak support for the proposed link between perceived severity of illness/health condition and willingness to engage in appropriate preventive behaviour and it has produced the lowest overall significance ratios (Janz & Bekker, 1984; Terry, Gallois *et al,* 1993). According to Rutter and Quine (1994), this is probably because people are relatively unthreatened by negative long-term outcomes of disease/behaviour that are unlikely to happen and difficult to imagine. This is particularly the case for AIDS, as symptoms often do not appear until many years after infection and most people probably find it difficult to believe that it will affect them personally.

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Some researchers have found a substantial degree of predictive power of the variables of the HBM. Thus Lollis, Johnson & Antoni (1997) found that the model accounted for 22% of the variance in HIV risk behaviours among a sample of college students and Basen-Engquist (1992) found that the model accounted for 35% of the variance in condom usage[2].

[2] According to Cohen (1988) a large effect is where 26% or more of the variance (adjusted R^2) is accounted for in the dependent variable. He views 2% as a small effect and 13% as a medium effect.

Regarding the model's specific applicability to HIV-preventive behaviour, including condom usage, a number of other studies however failed to show strong support for use of the model in this context (Abraham, Sheeran, Abrams & Spears, 1996; Lewis & Kashima, 1993; Lollis *et al*, 1997; Lowe & Radius, 1987; Rosenthal, Hall & Moore, 1992; Warwick, Terry & Gallois, 1993). It appears as if the HBM has difficulty accounting for change in habitual behaviours as well as sexual behaviours, that are dependent on social interaction and are based on cultural mores and norms (Brown, DiClemente & Reynolds, 1991).

According to Terry, Gallois *et al* (1993), the focus of the HBM on health or disease outcomes may be one of the reasons that it is not that useful for predicting safer sex behaviours.

> Although engaging in safer sex is a strategy that can be used to avoid the transmission of HIV and other sexually transmitted diseases, it is difficult to reduce the behaviour to the same status as other health behaviours, such as having a pap test or receiving a vaccination against influenza. The latter behaviours are discrete health behaviours that, beyond the time and temporary discomfort involved in engaging in them, have little impact on a person's life. In contrast, engaging in safer sex may mean making changes that have an impact on an important aspect of people's relations with others (Terry, Gallois *et al* 1993:7).

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A number of studies have shown that neither perceived susceptibility/vulnerability nor severity of HIV/AIDS were predictors of HIV preventive behaviour (Abraham, Sheeran, Spears & Abrams, 1992; Lowe & Radius, 1987). A number of different reasons for this have been identified. Thus Rosenthal *et al* (1992) speculate about the possibility of a curvilinear rather than a linear relationship between perceived severity and behaviour, such that extremely low and extremely high levels of perceived seriousness inhibit action. Montano (1986) criticises the fact that the HBM addresses only perceptions of health

outcomes and does not measure the perceived probability of the outcomes nor subjective evaluations of their desirability. Thus increased susceptibility to HIV may make certain groups less likely to take preventive behaviour as they deny that they are susceptible and this increases their risk behaviour (Joseph, Montgomery, Emmons, Kessler, Oshow, Worman, *et al,* 1987; Sheeran & Abraham, 1996; Van der Pligt, 1994). A further factor that could influence results is that only beliefs held immediately before a behaviour actually affect it. Thus the time between measuring perceived susceptibility and actual behaviour could influence results. In addition, perceived susceptibility and severity may affect behaviour indirectly through more proximal cognitions (e.g. attitudes) (McCuskar, Zapka, Stoddard & Mayer, 1989). It is thus clear that more research is needed into the exact role of perceived susceptibility and vulnerability and also into how it affects behaviour.

Regarding adolescent sexual behaviour, the HBM presents an ambiguous picture. Walter, Vaughan, Gladis, Ragin, Kasen & Cohall (1992) found that constructs of the HBM were not significantly associated with high risk behaviour in a sample of New York 9th grade learners. Mahoney, Thombs & Ford (1995) and Lollis *et al* (1997) found that the HBM was inadequate in explaining condom use among college student populations and Abraham *et al* (1996) that it did not predict condom use among a sample of adolescents in the United Kingdom. Petosa and Jackson (1991) and Hingson *et al* (1990a, 1990b), however, found some support for the model in the prediction of safer sex intentions among a sample of younger adolescents. However, the model's components accounted for only a small proportion of the variance in risk behaviour. (For further discussion of studies using the HBM to predict adolescent condom usage, see Chapter 3). Other studies have shown that perceived benefits of condom use are unrelated to their use in adolescents (Abraham *et al*, 1992; Richard & Van der Pligt, 1991). According to Brown *et al* (1991), the exclusion of factors such as emotional reactions, peer group influences and the influence of developmental and maturational constructs are most likely to account for the limitations of the model for the prediction of adolescent HIV preventive behaviour. This is substantiated by research by Abraham *et al* (1992) among Scottish

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teenagers, which found that variables outside those specified by the HBM predicted HIV prevention intentions. They conclude that although the variables specified in the model are useful predictors, there are other important predictors not accounted for in the model.

The HBM has a number of other weaknesses. One of the most frequently cited is that a number of social cognitive variables found to be predictive of health behaviour in other models are not included in the HBM. These include the intention to perform a behaviour, social pressure, self-efficacy, affect, self-control and self appraisal and prior behaviour (Aspinwall, Kemeny, Taylor, Schneider & Dudley, 1991; Bandura, 1992; Conner & Norman, 1996; Lewis & Kashima, 1993; Lollis *et al*, 1997; McCuskar *et al*, 1989; Richard & Van der Pligt, 1991; Rosenthal, Moore & Flynn, 1991; Schaalma *et al*, 1993; Sheeran & Abraham, 1996). These constructs are only considered as modifying factors in the HBM, even though research has shown that they may play a direct and major role in determining adolescent sexual behaviour (Brown *et al*, 1991). With regard to sexual behaviour, the HBM has been criticised for being too individualistic and failing to take into account the interactional nature of sexual negotiation and behaviour as well as habitual behaviours and peer group influences (Brown *et al*, 1991; Davies, Hickson, Weatherburn & Hunt, 1993).

The precise way in which the variables of the HBM combine to predict behaviour has never been specified and as a result they are frequently tested as six independent predictors of behaviour rather than as a theoretical model (Brown *et al*, 1991; Weinstein, 1993). Further shortcomings of many studies using the HBM are that cues to action and health motivation are often omitted as variables and/or there are inconsistencies in the definition, operationalisation and measurement of variables (Warwick *et al*, 1993). According to Sheeran and Abraham (1996), this could be due to inadequate guidelines on how to operationalise and construct these variables as well as the fact that the HBM fails to account for proximal and distal determinants of behaviour. Thus, for example, the model fails to include intention as a mediating proximal variable, despite research that shows that beliefs are often mediated via intention (Warwick *et al*, 1993).

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A further frequently cited shortcoming of the model is that it has not really evolved since its development and has undergone no real conceptual reformulation (Sheeran & Abraham, 1996), except for the addition of self-efficacy in 1988 (Rosenstock, Strecher & Becker, 1988).

Despite mixed findings regarding its applicability to the field of HIV preventive behaviour, the HBM has a number of strengths that can be utilised in the field of health prevention, one of which is that it was developed by researchers working directly with health behaviour and many of the concepts possess face validity to those working in this field (Conner & Norman, 1996). It also provides researchers with a useful theoretical framework that contains a number of core variables which are important predictors of health behaviour and which have been successfully incorporated into other social cognitive theories of behaviour (e.g. Theory of Reasoned Action).

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2.3 Social Cognitive Theory

Social cognitive theory (SCT) attempts to predict and explain behaviour by using, among others, the concepts of intention, outcome and self-efficacy expectancies (Bandura, 1977a, 1977b, 1986, 1989). According to this theory, behaviour is cognitively motivated and governed by expectations and incentives. "An incentive pertains to the subjective importance of a particular outcome and object: behaviour is regulated by its consequences (reinforcements) as perceived by the person" (Schwarzer 1992:218). Behaviour is thus perceived to be dependent on forethought and is based on three types of expectancies, namely, a) situation-outcome expectancies, b) action-outcome expectancies and c) perceived self-efficacy (Schwarzer, 1992; Schwarzer & Fuchs, 1996). Situation-outcome expectancies (also sometimes referred to as perceived threat) refer to the perceived consequences and/or threat of the behaviour if a person does not act. Action outcome expectancies refer to the belief that a specific behaviour will or will not lead to a given outcome and self-efficacy expectancies relate to the belief that a specific behaviour is

under a person's control (Conner & Norman, 1996). Thus according to social cognitive theory, behaviour change and maintenance are a function of beliefs that one is at risk, beliefs that a specific behaviour will reduce the risk as well as expectations about having the ability to engage in that behaviour (efficacy expectancies) (Bandura 1977b, 1986, 1989; Baranowski, 1992-3; De Vries, Dijkstra & Kuhlman, 1988; Strecher, DeVellis, Becker & Rosenstock, 1986).

The way in which these variables combine to influence behaviour is depicted in figure 2.2 below. Thus, according to SCT, situation outcome expectancies or perceived threat is assumed to be a distal determinant of behaviour and to influence it via its impact on action outcome expectancies (Conner & Norman, 1996). Action outcome expectancies in turn influence both intentions and self-efficacy expectations. Self-efficacy is assumed to have both an indirect impact on behaviour via intentions as well as a direct affect on behaviour (Conner & Norman, 1996, Schwarzer, 1992).

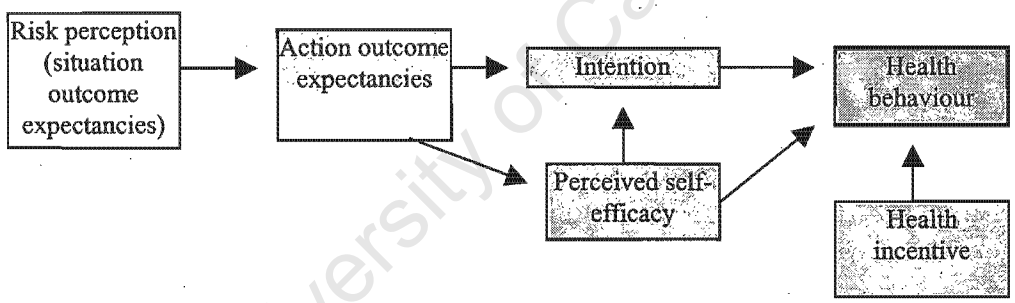

Figure 2.2: Social cognitive theory
(adapted from Conner & Norman, 1996)

With its inclusion of perceived self-efficacy as a predictor of behaviour, SCT introduced an important new predictor variable. The concept of self-efficacy in this model relates to people's beliefs and perceptions about their capabilities of performing a specific behaviour in specific situations and is not necessarily the same as actually having the necessary skills to perform the behaviour (De Vries *et al,* 1988; Schunk & Carbonari, 1984; Terry, 1993). "Perceived self-efficacy is concerned with people's beliefs that they can exert control over their own motivation, thought processes, emotional states, and

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patterns of behavior" (Bandura 1994b:26). According to the SCT, a positive appraisal of one's self-competence (self-efficacy) will generate the self-confidence to successfully perform the behaviour in question. The model thus focuses on perceived rather than actual capabilities as an important influence on behaviour. For Bandura (1977a) there is a difference between locus of control and self-efficacy. Locus of control is a generalised concept about the self, while self-efficacy is focused on beliefs about one's personal abilities in specific settings (Rosenstock *et al*, 1988). Efficacy expectations are learnt from personal experience, vicarious experience (observation of events and/or other people), from verbal persuasion and/or from one's physiological state (Strecher *et al*, 1986).

Self efficacy is a core construct of the SCT and is assumed to influence all aspects of behaviour, including the acquisition of new behaviours, inhibition of existing behaviours, disinhibition of behaviours, choices of behavioural settings, amount of effort a person will spend on a behaviour and the length of time they will persist in the face of obstacles and long-term maintenance of behavioural change (Bandura, 1986, 1989; O'Leary, 1992; Strecher *et al*, 1986). It is important to note that Bandura (1986) recommends using a domain specific measure of self-efficacy rather than a general measure of self-efficacy.

In addition to the above variables, the value a person attaches to a particular outcome such as health status, physical appearance and so on (called health incentive) is also assumed to affect his/her health behaviour. A person's behaviour is thus regulated by how he/she interprets and understands the consequences of that behaviour (Rosenstock *et al*, 1988). Thus to perform a health behaviour a person would have to value his/her health, believe that the behaviour concerned would improve their health and believe they could perform the behaviour. For example, individuals who value the perceived effects of keeping themselves free of HIV infection (health incentive) will attempt to change their behaviour if: a) they believe that their current lifestyle poses a threat to this outcome (environmental cues/perceived risk/situation outcome expectancies); b) they believe that changing their behaviour will reduce the threat of HIV infection (action outcome

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expectancies); and c) that they are personally capable of adopting the new behaviour required (e.g. using condoms) (self-efficacy expectations).

There is a great deal of similarity in the concepts used in the HBM and SCT as illustrated by the following table:

Table 2.1: Comparison of concepts of SCT and HBM

Social Cognitive Theory	Health Belief Model
risk perception (situation outcome expectancies)	perceived susceptibility to and severity of illness or its consequences (threat)
expectations about action outcomes (SCT does not explicitly include costs or barriers)	perceived benefits of taking a particular action minus perceived costs or barriers to action
expectations about self-efficacy	(not explicitly included though implied in 'perceived barriers')
health incentive	health motive: value of reduction of perceived threats

(adapted from Rosenstock *et al* 1988)

Perhaps the most important contribution of SCT to the field of the study of health behaviour is the introduction of the construct of self-efficacy. A number of studies in the field of health behaviour have revealed a strong association between perceived self-efficacy and progress in health behaviour change and maintenance, including safer sexual behaviour (Bandura, 1992; Gilchrist & Schinke, 1983; O'Leary, 1992, Strecher *et al*, 1986; Van der Velde & Van der Pligt, 1991). Studies among a diverse range of population groups have shown that the perceived capability to negotiate safer sex practices is the most important predictor of these behaviours (Basen-Engquist, 1992; Basen-Engquist & Parcel, 1992; Kasen, Vaughan & Walter, 1992; Kok, De Vries, Mudde & Strecher, 1991; O'Leary, Goodhardt, Jemmott & Boceau-Lattimore, 1992). Likewise HIV preventive behaviour in adolescents has been found to be dependent on perceptions of self-efficacy (Basen-Engquist & Parcel, 1992; Hingson *et al*, 1990a, 1990b; Jemmott, Jemmott & Fong, 1992; Jemmott, Jemmott, Spears, Hewitt, & Cruz-Collins, 1992; Kasen

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et al, 1992b; Mahoney *et al*, 1995; O'Leary *et al*, 1992; Richard, Van der Pligt & De Vries, 1995; Rosenthal *et al*, 1991; Schaalma *et al*, 1993). These studies show that adolescents are more likely to refrain from having sexual intercourse or will use condoms if they believe themselves capable of managing sexual situations, for example, resisting pressure from a partner, overcoming social constraints such as the non-availability of a condom; negotiating and/or insisting on condom use and so on.

Outcome expectances, which are a person's perceptions that a given behaviour will lead to specific consequences, have also been shown to affect HIV risk behaviour. Negative outcome expectancies about condoms have been identified as influencing condom use in a variety of populations (O'Leary *et al*, 1992; Siegel & Gibson, 1988). For an in-depth discussion of these see Chapter 3.

Although perceived self-efficacy as used in the HBM has been shown to have an important influence on a number of health behaviours, including condom usage, some researchers question the relevance of self-efficacy in cultures where individual decisions are the result of group norms and being individualistic is contrary to what is acceptable in that culture (Airhihenbuwa & Obregon, 2000). They question the applicability of individual psychological models, such as SCT in such contexts and recommend rather focusing on collective efficacy (Airhihenbuwa & Obregon, 2000; Bandura, 1998). However, this argument needs further investigation as culture is never static and many of the cultures referred to as not being individualistic are in fact changing as they become more urbanised.

As is the case for the HBM, the SCT also does not include a number of variables that have been shown to be important in influencing health behaviour in other theoretical approaches, which has caused some researchers to question its sufficiency (Wurtele, Britcher & Saslawski, 1985). These include affect, personality, social and cultural factors. In addition, it fails to include an expectancy-value component, i.e., it does not include measures of the value attached to the different outcomes as is the case in the TRA

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(Schwarzer & Fuchs, 1996). However, the core contribution of this model remains the addition of the concept of perceived self-efficacy, which is now used as an essential component of most major social cognitive models (Schwarzer & Fuchs, 1996). Thus, for instance, self-efficacy has been added to the HBM and to the Theory of Reasoned Action in the Theory of Planned Behaviour (see below).

2.4 The Theory of Reasoned Action

Much of the theory-based research around safer sex behaviour has been based on the Theory of Reasoned Action (TRA) or its revised version, the Theory of Planned Behaviour (TPB). This theory is concerned with the relationship between attitudes and behaviour (Fishbein, 1967). The central premise of the TRA is that people are rational actors whose behavioural decisions are made on the basis of a 'reasoned consideration' of all available information (Ajzen, 1985; Ajzen & Fishbein, 1980; Chan & Fishbein, 1993; Fishbein & Ajzen, 1975). The model proposes that people do not just act spontaneously but rather base their choice of behaviour on a rational analysis of the consequences of performing a specific behaviour and on what they think other people expect them to do.

The TRA introduces the notion of intention as an important mediating factor in predicting behaviour. It proposes that the immediate antecedent of any behaviour is a person's intention to perform that behaviour. "Intention is a person's motivation in the sense of his/her conscious plan to exert effort to carry out the behaviour" (Eagly & Chaiken 1993:173). Intention is in turn presumed to be determined by two conceptually independent influences. The first is a personal factor comprising a person's positive or negative feelings toward performing the behaviour in question (the attitude toward the behaviour). The second is a social factor comprising a person's perception of whether significant others think he/she should or should not perform the behaviour (perceived norms).

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The TRA adopts what is called an expectancy-value model of attitude and norms. This means that in the case of attitudes, they are viewed as a function of a person's salient beliefs about a specific behaviour multiplied by the how important those beliefs are perceived to be by the person concerned. Likewise perceived norms are a function of salient normative beliefs multiplied by the motivation to comply with the referents in question (Chan & Fishbein, 1993).

Ajzen (1991) stresses the importance of eliciting the salient beliefs that underpin attitudes and norms from the sample population using an elicitation or pilot study. According to Ajzen (1988), the relationship between attitudes and behaviour will be strongest when action, target, context and time elements are assessed at the same level of generality or specificity. He calls this the principle of compatibility.

Other external variables such as poverty, gender, age and socio-economic status have also been found to influence behaviour, but according to the TRA, these will have only an indirect effect via their effects on attitudes and norms (Eagly & Chaiken, 1993; Terry, Gallois *et al*, 1993).

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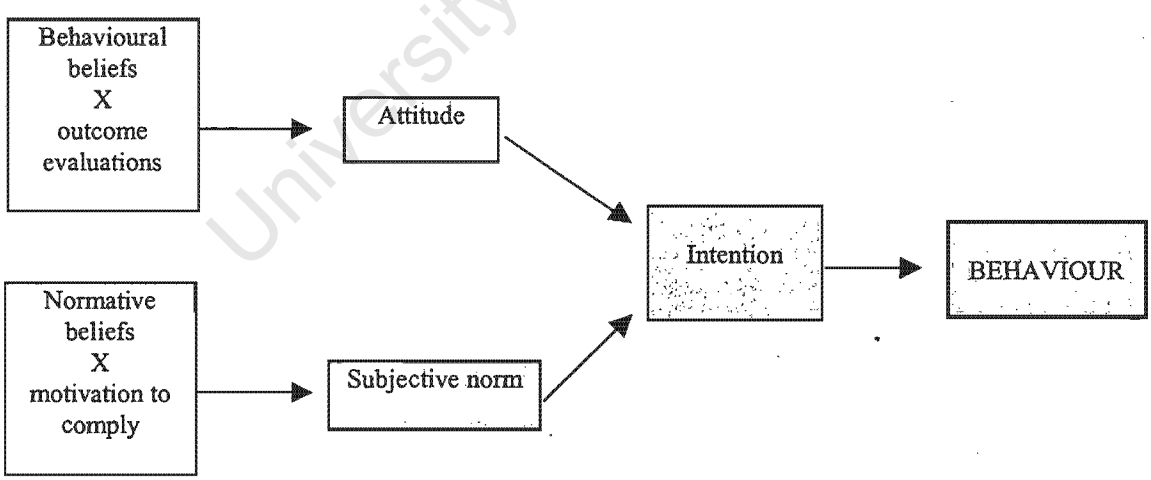

Figure 2.3: The Theory of Reasoned Action
(adapted from: Terry, Gallois *et al*, 1993 and Adler, Kegeles, Irwin & Wibbelsman, 1990)

Condom use, according to the TRA, will thus be predicted by a person's intention to use condoms. Intention will in turn be predicted by a person's general attitude towards condoms as well as by their perception of the extent to which significant others approve or disapprove of condom use. Attitude toward condom use will be predicted by the person's set of negative and positive beliefs regarding the use of condoms weighted by the importance he/she attaches to each belief. The sum of the products of the beliefs weighted by the values attached to them will predict the general attitude toward condoms. Similarly, the person's general perceived views of what significant others views are regarding condom will be a function of the person's beliefs about what each of a range of salient significant others (e.g.. peers, parents, sexual partners) want him/her to do with respect to condom use, weighted by his/her motivation to comply with each of these perceived normative beliefs.

The TRA is one of the most widely used social cognitive theories of behaviour and has been successfully used for predicting a large range of health related behaviours in many diverse populations. These include alcohol use (Kilty, 1978), blood donations (Bagozzi, 1981), smoking (Budd, 1986), breastfeeding (Manstead, Proffitt & Smart, 1983), decisions about abortion (Smetana & Adler, 1979. 1980), birth planning (Crawford & Boyer, 1985; Davidson & Jaccard, 1979), weight loss (Schifter & Ajzen, 1985) and contraception (Davidson & Morrison, 1983; Pagel & Davidson, 1984). It has also been used to predict intention to use condoms in a range of population groups (Baker, Morrison, Higgins, Budney & Fuerg, 1996; Chan & Fishbein, 1993; Krahe & Reiss, 1995; Rise, 1992; Serovich & Greene, 1997).

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According to Bagozzi (1992), the strength of the TRA lies in its clear definition of variables, its use of well-supported measurement scales, a clear statement of the relationship between the variables, the 'grounding' of the model in the beliefs of the population under study and in its parsimony.

However there are a number of points of criticism that can be levelled at the model, some of which are very similar to those that have been raised against the HBM and SCT. A

frequently cited limitation of the model is its over-reliance on cognitive structures to explain behaviour and the assumption that a person's behaviour is reliant on a complex equation of beliefs, attitudes, perceptions of outcomes and social norms (Kippax & Crawford, 1993; Salt, Boyle & Ives, 1990). Some behaviours, and sexual behaviour in particular, are not always rational and planned and the role of other factors such as affect, personal values and assumptions, sexual arousal, and the cultural and social context in which the behaviour occurs need to also be considered it its explanation (Amaro, 1995; Boldero, Moore & Rosenthal, 1992; Breakwell, Fife-Shaw & Clayden, 1991; Ingham *et al*, 1991; Kashima & Gallois, 1993; Kippax & Crawford, 1993; Marin, Gomez, Tschann & Gregorich, 1997; Richard *et al*, 1995; Salt *et al*, 1990). Thus, for instance, gender power relations have been found to play a major role in adolescent sexual decision-making (Marin *et al*, 1995; Varga, 1999; Varga & Makubalo, 1996). Although the TRA does include social norms, these are thought to operate at an individual level, whereas sexual decision-making is often a joint and co-ordinated activity based on social processes and collective practices (Kippax & Crawford, 1993; Moore *et al*, 1993; Salt *et al*, 1990). Salt *et al* (1990) feel that it is more appropriate to study a behaviour like condom use in the context of human interaction rather than assume that one individual alone is somehow responsible for use. Thus, for instance, in a study of Zimbabwean adolescents, Wilson and Lavelle (1992) found that the social and interpersonal aspects of condom usage were primarily responsible for intentions to use them. In addition, much sexual activity is unplanned and not under volitional control, and the cognitive activity presupposed by the TRA may only take place after the behaviour has take place (Kippax & Crawford, 1993).

There has also been criticism levelled against the norms measured in the TRA. They are viewed as being too unidimensional and failing to capture the complexity of norms, especially as they relate to adolescent sexuality (Moore *et al*, 1993). Beliefs about love, fidelity, trust, romance, in addition to perception of peers' beliefs about these issues, could influence condom use in addition to the attitudes and subjective norms conceptualised in the TRA (Buzwell, Rosenthal & Moore, 1992; Moore & Rosenthal,

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1991a, 1992). The theory also fails to take into account what could be termed personal moral norms, which represent a person's perceived moral obligation towards the behaviour and reflect personal beliefs about right and wrong (Eagly & Chaiken, 1993). Some studies have shown that the predictive power of the TRA improved when personal moral obligation was included as a variable (Beck & Ajzen, 1991; Gorsuch & Ortberg, 1983). Eagly and Chaiken (1993) therefore suggest that a direct measure of moral obligation or self-identity be added to the model as a predictor of behavioural intention.

The TRA does try to account for variables external to the theory. However this is by assuming that they can only influence behaviour indirectly through their impact on the theoretical determinants of intention used in the model. The theory provides no model for specifying the more distal determinants of behaviour and also does not indicate exactly how they affect behavioural and normative beliefs and thus intention (Eagly & Chaiken, 1993). Some studies have, for instance, found direct links between external variables and behaviour that are not mediated by intention (Bagozzi, 1981; Fisher, 1984; Kantola, Syme & Campbell, 1982; Moore *et al*, 1993; Saltzer, 1981). Ingham *et al* (1991) and Richard and Van der Pligt (1991) found that perceived control over outcomes (which is similar to self-efficacy) was a greater determinant of condom use than intentions. This is substantiated by numerous other studies in which perceived competence in sexual behaviour has been found to account for a significant proportion of variance in sexual risk-taking (Pendergrast, DuRant & Gaillard, 1992; Rosenthal *et al*, 1991; Strecher *et al*, 1986). Other studies have found that intentions themselves may not be reliable predictors of behaviour (Abraham *et al*, 1994; Boldero *et al*, 1992; Breakwell, Millward & Fife-Shaw, 1994; Warwick *et al*, 1993).

Bagozzi (1992), however, warns that the list of new predictors and moderators that could theoretically be included in the model is unlimited and that the theory will lose its parsimony and generality if the content and structure increase haphazardly. New factors will need to be comprehensively integrated and the question then remains whether the core of the theory can be retained if too many other variables are added. However, it is

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important to remember that the TRA is not a general theory of behaviour, but a theory that relates to the immediate proximal causes of volitional behaviour (Eagly & Chaiken 1993).

A further problem with the TRA is what Bagozzi (1992:186) calls the 'missing motivational link in the attitude-behavior equation'. Intention is assumed to be a motivational impetus to behaviour, but this is only the case if intention is measured immediately prior or as closely to the behaviour that is being measured as possible (Fishbein & Middlestadt, 1989). This so-called 'intention-in-action' is different from and can override 'prior intention' as circumstances change (Boldero *et al*, 1992). Thus for example, Abrams *et al* (1990) found that there was no significant link between intention to use a condom and condom use one year later in an adolescent sample. In a study that tested the applicability of the TPB (see below) to condom use among Australian adolescents, Boldero *et al* (1992) found that there was no correspondence between intention and behaviour. They found that intention changed over time and that the predictive ability of intention is dependent on the time between its measurement and the behaviour in question. A number of other studies have shown low correlations between intention and behaviour (Ajzen & Fishbein, 1980; Reinecke, Schmidt & Ajzen, 1996), which could be influenced by the time lapse between measurement of the two and/or postdiction problems (see Chapter 4 for a more detailed discussion on this). In applying the TRA, it is therefore important that intention is measured as close to the actual behaviour as possible. Richard *et al* (1995) suggest that there is evidence that behavioural expectations are more accurate predictors of particularly non-volitional behaviour such as condom use, than intentions.

Another factor that is ignored by the TRA is the role of past behaviour. A number of studies have shown that past behaviour can influence intentions and present behaviour beyond the effect that is mediated by the model and have shown that it is the strongest predictor of intention and/or actual condom use (Bagozzi, 1981; Moore *et al*, 1993; Rise, 1992; Van der Velde & Van der Pligt, 1991). Some researchers (Bentler & Speckart,

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1979; Fredricks & Dossett, 1983) feel that prior behaviour influences later behaviour independently of beliefs, attitudes, subjective norms and intentions and suggest that it be included as a substantive predictor of later behaviour equivalent to other independent variables in the model. However, according to Ajzen (1991:202):

> Under the assumption of stable determinants, a measure of past behavior can be used to test the sufficiency of any model designed to predict future behavior. A model that is sufficient contains all important variables in the set of determinants, and thus accounts for all non-error variance in the behavior. Addition of past behavior should not significantly improve the prediction of later behavior.

Ajzen (1991) suggests that past behaviour be treated as a reflection of all factors that determine the behaviour of interest and that the correlation between past and later behaviour will indicate the behaviour's stability or reliability.

A further factor that could play an important role in sexual decision-making and that is not explicitly included in the TRA, is affect. Affective processes have been shown to be an important component of attitudes (Eagly & Chaiken, 1993) and have been found to play an important role in condom use/non-use (De Wit, Victoire & Van den Bergh, 1997). The TRA assumes that attitude is affect and the direct of measure of attitude in the TRA fails to distinguish between feelings about a behaviour and evaluative responses to it (Ajzen, 1991; Kashima & Gallois, 1993). Triandis (1977) argues for making a distinction between evaluation and affect and has attempted to incorporate this in his theory (see below). Nucifora, Gallois & Kashima (1993) however found that affect did not contribute significantly to intention once attitude and subjective norm were controlled for. However, Kashima & Gallois (1993) recommend that the independent influence of affect on sexual behaviour merits further investigation.

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A further criticism of the model is its linearity. In the model, social norms and attitudes are parallel determinants of intention and no attempt is made to relate them to each other (Ajzen & Fishbein, 1980; Bagozzi, 1989; Kippax and Crawford, 1993) "The dynamic nature of belief and norm formation and the intimate connection between belief and norm, on the one hand, and practice on the other, are not adequately captured by the theory of reasoned action....There is a dynamic interplay between practice, beliefs and normative structure that the TRA avoids" (Kippax & Crawford 1993: 264). It is therefore proposed that new sequences and interactions be considered among the existing variables in the theory (Liska, 1984). This is further substantiated by DeBono and Omoto (1994), who found that individual differences influenced the relationship of attitude and subjective norm to intention. Eagly and Chaiken (1993) also point out that in reality the causation between beliefs and attitudes can be in both directions and not just from beliefs to attitudes as assumed in the TRA.

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2.5 The Theory of Planned Behaviour

One of the shortcomings of the TRA is that it appears to apply only to behaviour that is under a person's volitional control (Fishbein & Ajzen, 1975). Intention, which is a central factor in the TRA will only lead to behaviour if the behaviour in question is volitional, that is the person can decide at will whether or not to perform it (Ajzen, 1991). In order to extend the theory to include situations where behaviour is not completely under a person's control (which would include condom use), Ajzen (1985; 1987; 1991; Ajzen & Madden, 1986) modified the TRA to include the situational context in which such behaviour occurs. This modified theory is called the Theory of Planned Behaviour (TPB) and includes the predictor variable of perceived control.

As it is difficult to measure actual control over behaviour, Ajzen and Madden (1986) proposed that measures of perceived control be used as proxy measures of actual control. They formulated two versions of the TPB. The first version proposed that behavioural control would emerge as a significant predictor of behavioural intention after controlling

for attitudes and norms. The second version proposed that behavioural control would have both a direct and indirect (through intentions) effect on behaviour (Ajzen & Madden, 1986). According to Ajzen and Madden (1986), perceived behavioural control only has a direct effect on behaviour when it is not completely under a person's volitional control and the perceived behavioural control is an accurate reflection of the degree of actual control that a person has over the behaviour (Terry, Galligan *et al*, 1993). Perceived behavioural control is viewed as a function of beliefs concerning whether a person has access to the necessary resources and opportunities to perform the behaviour successfully, weighted by the power of each factor to achieve the behaviour. These include both internal control factors (such as information, skills, abilities) and external control factors (such as opportunities, dependence on others, barriers) (Terry, Gallois *et al*, 1993).

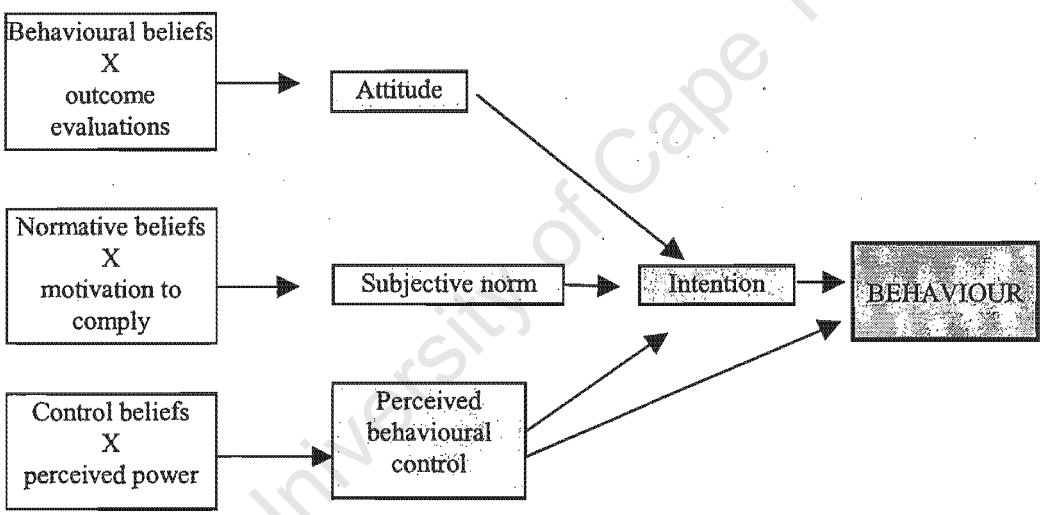

Figure 2.4: Theory of Planned Behaviour
(adapted from Conner & Norman, 1994; Terry, Gallois *et al*, 1993)

According to Ajzen (1991), perceived behavioural control in the TBP differs from Rotter's (1954) concept of perceived locus of control. "Consistent with an emphasis on factors that are directly linked to a particular behavior, perceived behavioral control refers to a person's perception of the ease or difficulty of performing the behaviour of interest. Whereas locus of control is a generalized expectancy that remains stable across situations and forms of action, perceived behavioural control can, and usually does, vary across

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situations and actions" (Ajzen 1991:183). The use of behavioural control in the TPB is thus very similar to the concept of perceived self-efficacy used in the HBM. Ajzen (1991) stresses the importance of assessing both intentions and perceptions of control in relation to the particular behaviour that is being studied, and that the specified context must be the same as that in which the behaviour is to occur. Two other characteristics of behavioural control are important, namely that its relative importance in the prediction of behaviour will vary across situations and behaviours and secondly that it should become increasingly important as volitional control over a behaviour declines (Ajzen, 1991).

The addition of perceived behavioural control to the TRA has consistently improved the predictive power of the model regarding behavioural intentions (Terry, 1993). However most of the limitations that apply to the TRA (see above) also still apply to the TBP and will not be repeated here. This is particularly the case for the importance of other factors relating to the broader social context of adolescent sexuality, which are not included in either model.

Some researchers see perceived behavioural control as being very similar to Bandura's concept of self-efficacy that is used in the SCT (Jemmott, Jemmott & Hacker, 1992). Terry (1993), however, points out that that there are differences in the two concepts. Perceived behavioural control as used in the TPB reflects the extent that a person perceives internal and external factors that are likely to interfere with performance of a behaviour. Self-efficacy on the other hand primarily reflects the extent to which internal barriers are perceived to impede on the performance of a behaviour. According to Norman and Bennett (1996:82), "One question which is open to further research is the extent to which it is necessary to hold on to the HLC construct when predicting health behaviour. Even in the modified social learning theory there is a good case to be made for simply replacing the HLC construct with behavioural efficacy beliefs. Thus to perform a health behaviour, individuals would have to value their health, believe that the behaviour would facilitate their health and believe that they could perform the behaviour".

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According to Bagozzi (1992:181), "a philosophical problem left unsolved by the theory of planned behavior is whether any action can be in part volitional and in part nonvolitional". He recommends that one should rather think of behaviour as comprising intended and unintended actions.

2.6 Theory of Interpersonal Relations and Subjective Culture

The Theory of Interpersonal Relations and Subjective Culture (TIR) is based on the TRA, but adds a number of additional variables, namely, perceived susceptibility, self-efficacy, personal normative beliefs, habit, fear, and affect (Triandis, 1972, 1977, 1980). The likelihood of performing a specific behaviour is viewed as a factor of intention, level of motivation to perform the behaviour, facilitating conditions (these are things like self-efficacy, perceived control and perceived knowledge) and past behaviour/habit (Boyd & Wandersman, 1991; Triandis, 1972, 1977, 1980). Level of motivation is based on perceived susceptibility to and/or fear of a specific disease/condition. Intention is hypothesised to be a function of cognitions, affect, and social factors. The cognitive component of this model is similar to the attitudinal concept in the TRA and TPB and comprises a personal analysis of the advantages and disadvantages of performing a specific behaviour weighted by an evaluation of the value of these consequences (Godin, Maticka-Tyndale, Adrien, Manson-Singer, Willms & Cappon, 1996). Social factors include normative beliefs and the motivation to comply with them, a person's personal normative or moral beliefs and role beliefs (these related to the appropriateness of the behaviour for one's perceived social role). In addition, interpersonal agreements and self-definition are also counted as social factors in the original model developed by Triandis (Boyd & Wandersman, 1991; Triandis, 1977).

The Triandis model adds two new and important variables to the models discussed previously, namely, habit (past behaviour) and affect. Triandis (1980:204) defines habit as "situation-specific sequences that are or have become automatic, so that they occur without self-instruction". Habit is operationalised in the model as the number of times

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that a behaviour has been performed in the past. Triandis made a distinction between automatic/habitual behaviour and deliberate, conscious, intentional behaviour and stated that the two kinds of components vary according to the type of behaviour being studied. According to Triandis (1977:204-5), " If intentions are relatively constant over time, they will cause the same behaviour over and over. Habit reflects the frequency of this behaviour. As behaviour repeatedly takes place, habit increases and becomes a better predictor of behaviour than behavioural intentions". When a behaviour is new then the behavioural-intention component will be solely responsible for the behaviour, but as the behaviour becomes learned and automatic, it comes under the control of the habit component (Sutton, 1994).

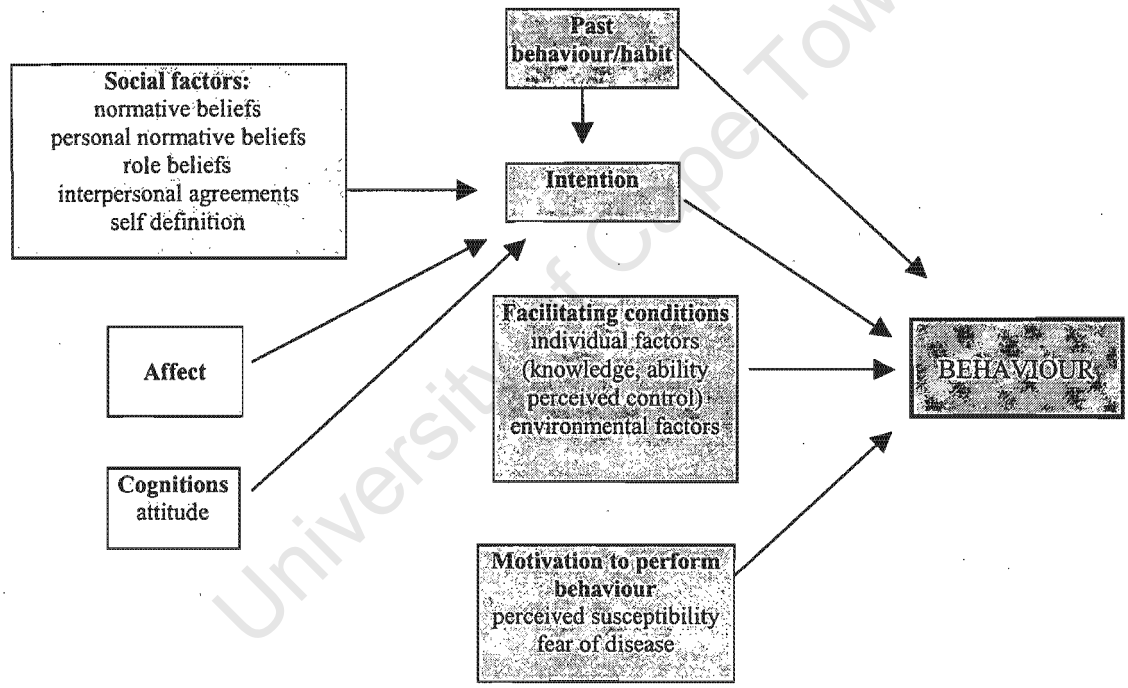

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Figure 2.5: Theory of Interpersonal Relations and Subjective Culture
(adapted from Boyd & Wandersman, 1991)

A number of studies have shown that the inclusion of past behaviour improves the prediction of various behaviours including condom usage (Bentler & Speckart, 1979; Boyd & Wandersman, 1991). According to Godin, Fortin, Michaud, Bradet & Kok

(1997: 298), "it is difficult to give meaning to the contribution of past behaviour" and they speculate that other predictor variables not contained in the theoretical framework used might account for the influence of past behaviour. However, according to Eagly and Chaiken (1993), the role of habit remains indeterminate due to the difficulty of designing appropriate measures. They state that past behaviour and later behaviour could have shared error variance due to the use of similar response formats for the two variables and also to the influence of many other factors that are not included in the model. "Nevertheless, the research now available suggests that quite a number of everyday behaviors are controlled partially by intentions and may be controlled in part by habit" (Eagly & Chaiken 1993: 181).

One of the other new constructs perceived to influence behaviour in this model is affect. According to Triandis (1977), affect refers to the emotions elicited by the thought of the behaviour and is a crucial component of attitudes. Affect is the 'particular configuration of emotions [that] becomes activated at the thought of the behavior' (Triandis 1977: 16). Thus in the case of condom use, these would be the emotions that are connected to the thought of using condoms. The difference between affect toward the behaviour as construed in this model and attitude toward the behaviour as used in the TRA and TPB is that affect is conceptualised as a much stronger, classically conditioned positive or negative 'gut' reaction to the 'thought' of performing the behaviour in question (Fishbein *et al*, 1992; Chan & Fishbein, 1993). It is therefore more of a conditioned response and should be less cognitively based than attitude towards the behaviour (Chan & Fishbein 1993). Triandis views affect as separate and distinct from the cognitive (expectancy-value) measures of attitude (Boyd & Wandersman, 1991).

In a study by Chan & Fishbein (1993) to predict college women's intentions to tell their partners to use condoms, Triandis' construct of emotional reaction/affect was found to be an important predictor of intentions and the study provided initial evidence that emotional reactions should be used in addition to the 'affective' component of attitude. "Triandis's concept of a classically conditioned, emotional 'gut' reaction to the mere thought of

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performing a behavior was very different from more traditional measures of 'affect' or 'attitude'. Consistent with this, the measure of this emotional reaction did account for variance in intention over and above that explained by attitude" (Chan & Fishbein 1993:1465). The importance of affective processes is substantiated by Richard *et al* (1995), who found that the predictive ability of the TPB for adolescent sexual behaviour was increased with the incorporation of anticipated affective reactions.

Although in many respects similar to the TRA (most of the components of the TRA are subsumed under the broader Triandis model), Triandis' model has been used less frequently to predict behaviour, possibly due to its increased complexity relative to the TRA (Boyd & Wandersman, 1991). When it has been applied it has, however, had promising results. In a study by Boyd and Wandersman (1991) that compared the use of the two models relating to undergraduate condom use, they found that the Triandis model explained almost twice as much variation in condom use as the TRA (53% versus 27% respectively). Much of the increase was however derived from past condom use behaviour in the Triandis model. When habit (past condom use) was dropped from the analysis, the Triandis model explained 41% of the variance compared to 27% in the TRA. (Boyd & Wandersman 1991:1825-6). Perceived susceptibility to and fear of AIDS were also found to significantly increase the explanatory power of intention in the prediction of condom use.

In a study that tested the applicability of the TPB, TRA and TIR to condom use across three different ethnocultural communities, Godin *et al* (1996) found that personal normative belief from the TIR was the most important factor from the TIR across all three communities. They found that the TIR performed as well as the TPB and found that "the best result, however, was obtained when the various constructs were combined into a single model" (Godin *et al* 1996: 1580).

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2.7 The Construct Accessibility Model (CAM)

The Construct Accessibility Model (CAM) holds that particular constructs, such as beliefs, attitudes, or intentions, are most likely to influence behaviour if they are accessible (activated) in a person's memory (Bargh, 1984). Thus "while the TRA identifies intention as an important determinant of behaviour, the CAM predicts that the intention to engage in a particular health behavior is not likely to be acted upon unless that intention is in an accessible state. Constructs become accessible when use during information processing causes them to become highly activated" (Norris & Ford 1995:1804).

If the CAM is applied to condom use, it would assume that people who frequently think and/or talk about condoms are likely to have condom-related constructs available and would be expected to use condoms more frequently than those who do not think or talk about them (Norris & Ford, 1995). A number of studies have shown that both thinking and talking about condom use are related to actual use (Catania, Coates, Kegeles, Fullilove, Petersen, Marin, Siegel & Hulley, 1992; Lear, 1995; Norris & Ford, 1992, 1995; Rickman, Lodico, DiClemente, Morris, Baker & Huscroft, 1994; Weisman, Nathanson, Ensminger, Teitelbaum, Robinson & Plichta, 1989; Wenger, Greenberg, Hilbourne, Kusseling, Mangotich & Shapiro, 1992). Based on this, the addition of measures of thinking and talking about condoms could be an important addition to the models discussed above in predicting condom use.

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2.8 Comparison and integration of the theoretical models

Many of the constructs proposed as determinants of behaviour by the behavioural theories/models underpinning this research are similar and complementary even though the operationalisation of the variables might differ (see Table 2.2 below). In many instances perceived differences are a matter of labelling rather than in the underlying constructs (Cummings, Becker & Maile, 1980). This leads to the hypothesis that there

may well be a restricted number of key predictors of a behaviour such as condom use (see Conner & Norman, 1996).

Table 2.2: Comparison of the constructs used in the various models

Construct	HBM	SCT	TRA/TPB	TIR
AIDS worry	cue to action	risk perception	component of beliefs	motivation to perform behaviour
perceived risk of contracting HIV/AIDS	perceived susceptibility and severity	risk perception (expectancies about environmental cues)	component of behavioural beliefs	motivation to perform behaviour (includes perceived susceptibility and threat)
attitude towards behaviour			attitude	Attitude = part of cognitions
perceived consequences of behaviour	costs and benefits of behaviour	outcome expectancies	behavioural beliefs	cognitions
affect - feelings about the behaviour			part of behavioural beliefs/attitude	affect
self-efficacy		self-efficacy (internal barriers)	perceived behavioural control (internal and external barriers)	one of the facilitating conditions
perceived barriers to performance of behaviour (internal and external)	perceived barriers	self-efficacy (internal barrier)	control beliefs	one of the facilitating conditions (individual characteristics)
normative influences	one of cues to action	outcome expectancies	subjective norm	social factors (normative beliefs personal normative belief + role belief)
self-standards/ personal norms				personal normative beliefs = part of social factors
mediating variable between other social cognitive variables and behaviour		intention	intention	intention
past behaviour			assumed to influence cognitions – not directly measured - primarily mediated by perceived behavioural control	habit
other variables (e.g. SES, environmental influences etc)	influence cues to action	indirect effect via cognitions	indirect effect via cognitions	
condom availability	cue to action			one of facilitating conditions
talking and thinking about condoms = construct availability	cues to action	indirect influence via cognitions	influences behavioural beliefs	one of facilitating conditions
health importance	general health motivation	health incentive		part of motivation to perform behaviour

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Thus, for instance, perceived threat forms part of the HBM, where it is called perceived susceptibility, as well as the SCT, where it is called risk perception and is subsumed under expectancies about environmental cues. In the TRA and TPB, perceived threat forms part of behavioural beliefs and would be included as one of the barriers or facilitators to the behaviour being studied. In the TIR, perceived threat is an integral part of a person's motivation to perform a specific health-related behaviour.

A second common construct in all the theories is an expectancy or cost-benefit component. This is called barriers/costs and benefits of behaviour in the HBM, outcome expectancies in SCT, behavioural beliefs in the TRA/TPB and forms part of the cognitive factors in the TIR. In comparing the TRA with the HBM, it is important to note that although the TRA incorporates the barriers and benefits dimensions of the HBM, they are conceptualised differently in the two models (Fishbein & Middlestadt, 1989). In the HBM, the barriers and benefits are proposed to have a direct influence on behavioural intentions, whereas in the TRA, the effects of behavioural beliefs on intentions are mediated by attitudes. The HBM shares many elements of SCT, TRA and TPB (Ajzen & Madden, 1986) but differs in that it proposes that beliefs affect behaviour directly rather than through influence of intentions. Further, in the TRA and TPB beliefs are weighted by the evaluation of each of the perceived outcomes, whereas they are unweighted in the HBM. In the TRA/TPB, positive and negative aspects of beliefs are assessed together, whereas they are assessed separately in the HBM (Warwick *et al*, 1993).

Three of the theories share the concept of perceived behavioural control and/or self-efficacy as an important predictor of behaviour. They are, however, not exactly the same in the different models. The construct of perceived behavioural control in the TPB (Ajzen 1987, 1991) reflects the extent to which a person perceives that both external and internal factors are likely to interfere with the performance of the behaviour weighted by the perceived power/impact of each factor to facilitate or inhibit the behaviour (Montano & Kasprzyk, 2002). Perceived self-efficacy (SCT) reflects a person's judgement of the

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extent to which internal barriers (e.g. inappropriate skills) will impede the performance of the behaviour. Perceived behavioural control is also similar to the facilitating conditions in Triandis' (1972, 1977) Theory of Interpersonal Relations and Subjective Culture, which addresses either individual characteristics (e.g. knowledge or ability) or the environment that makes it easier or more difficult to perform a specific behaviour, independent of intention (Montano & Kasprzyk, 2002). Perceived self-efficacy is also often used as an addition to the HBM (Boyd & Wandersman, 1991; Wilson *et al*, 1992). According to Montano and Kasprzyk (2002:76):

> Each of these theorists is describing different dimensions of the same construct, one concerned with the factors that influence whether intention is translated into behavior. Both Triandis and Ajzen view this construct as moderating the effect of intention on behavior. Intention will have a greater effect on behavioural performance if perceived behavioural control is high, and perceived behavioural control will have a greater effect on performance if intention is high.

Prior behaviour or habit is a construct that was added by Triandis' Theory of Interpersonal Relations and Subjective Culture and is not present in the other three models. Condom availability and thinking and talking about condoms (called construct availability in this research) would be considered to be a cue to action in the HBM and a facilitating condition in the TIR.

The following variables that are derived from the above theories will be tested as potential variables related to condom usage in this study: intention, attitude, beliefs, norms, self-efficacy, affect, self standards, AIDS worry, perceived threat of HIV, construct availability and condom availability.

Thus, in the model tested in this study it is assumed that in order for a person to use condoms one or more of the following must be true:

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1. The person has formed a strong behavioural intention to use condoms (intention) (TRA, TPB, TIR)
2. The person believes that the advantages of using condoms outweigh the disadvantages - in other words, the person has positive beliefs about using condoms (behavioural beliefs) (HBM, TRA, TPB)
3. The person has a generally favourable attitude/feeling toward using condoms (attitude) (TRA, TPB)
4. The person perceives more normative pressure to use condoms that not to use condoms (norms) (SCT, TRA, TPB)
5. The person perceives that using condoms is more consistent than inconsistent with his/her self-image, or that using condoms does not violate personal standards that activate negative self-standards. One would expect a person to act in accordance with his/her own principles and values (self-standards = similar to personal normative beliefs as used in TIR)
6. The person's emotional reaction to using condoms is more positive than negative (affect) (TIR)
7. The person perceives that he/she has the capabilities to use condoms under a number of inhibiting circumstances (self-efficacy) (SCT)
8. The person thinks and talks about condoms with his/her sexual partner (construct availability) (critical event) (TIR)
9. The person has condoms available when they are needed (HBM – one of cues to action)
10. The person believes that they are personally at risk for HIV and that condoms are an effective way of preventing them from becoming infected with HIV (perceived susceptibility) (HBM)
11. The person is worried about becoming infected with HIV (AIDS worry) (HBM)
12. The person feels that their health is important (Health importance) (HBM, SCT, TIR)

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In addition to these variables, Fishbein *et al* (1992) propose that there should not be any environmental constraints that make it impossible for a person to use condoms and that the person has the skills necessary to use condoms. It was not possible to measure skills directly in this study (e.g. by getting respondents to demonstrate usage on a model). I was only allowed to do the research in the schools if I took into account the fact that a large percentage of the learners were not yet sexually active and therefore questions had to be formulated in the future, rather than to assume that learners were already familiar with using condoms. Similar problems related to environmental constraints. In this study perceived environmental constraints will form part of beliefs regarding barriers and facilitators to condom use (see Chapter 4).

In the current study, these variables will be combined according to the following hypothesised model (see Figure 2.6 below). For a discussion of the operationalisation of these variables, see Chapter 4. The proposed model hypothesises that intention is an immediate precursors of condom use. The other factors described above are hypothesised to influence condom use directly as well as indirectly via intention.

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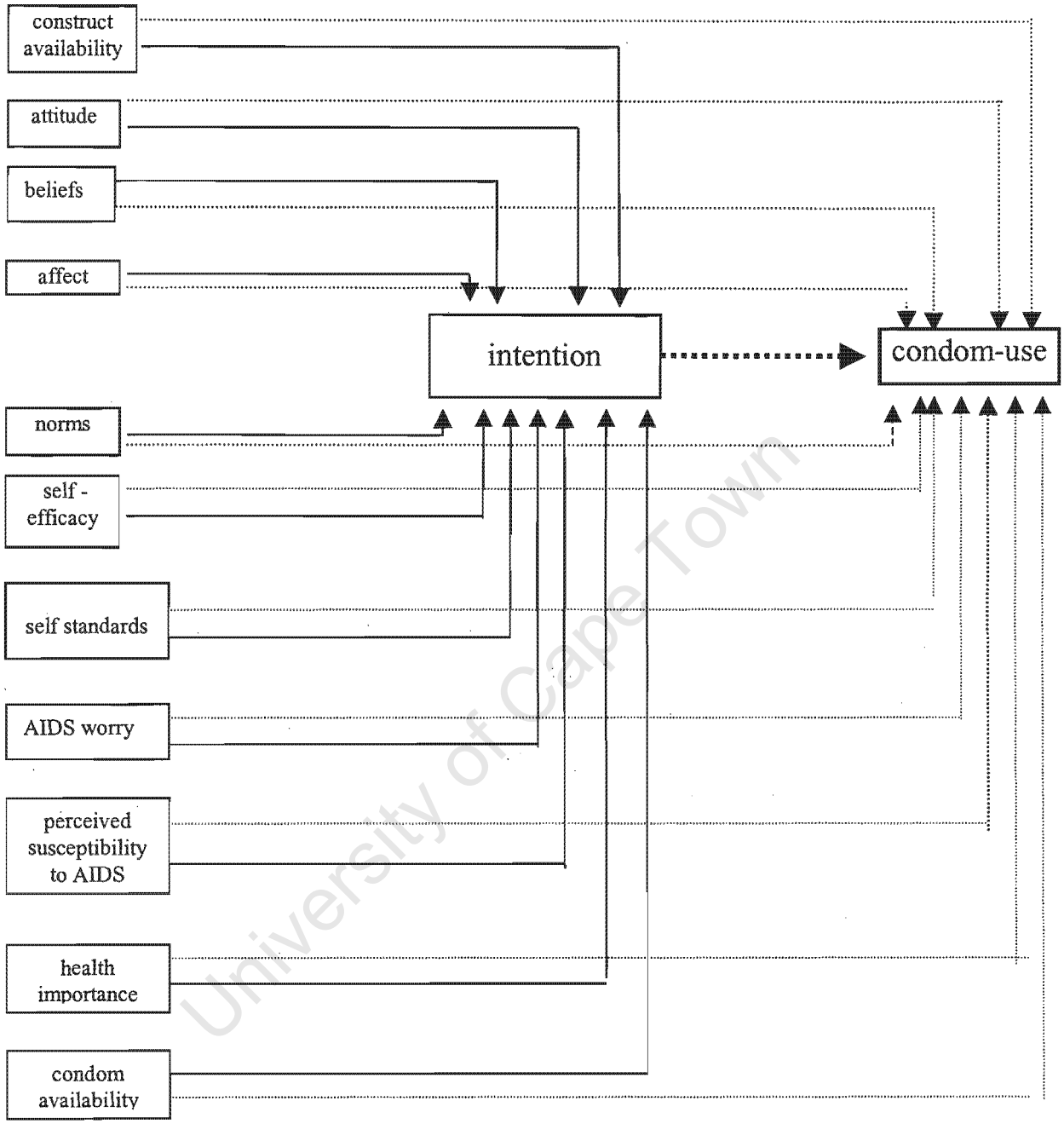

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Figure 2.6: Integrated model to be tested in this research

2.9 Limitations of the theoretical models used in this research

In the preceding discussion of the various models, a number of common limitations and shortcomings emerged, which will be briefly discussed in this section. The first is the issue of sufficiency, which refers to the extent to which these types of models adequately address all potential factors that could influence behaviour. According to Fishbein (2000) and Fishbein *et al* (1992), there are only a limited number of theoretical variables underlying any given behaviour, and these are all contained in the theories discussed above. Other researchers, however, disagree with this view (Joffe, 1996; Lugoe, 1996). It is important to stress that the models of behavioural prediction and change discussed above approach behaviour from a particular social-cognitive view, namely, that "anticipation of a negative health outcome and the desire to avoid this outcome or reduce its impact creates motivation for self-protection" (Weinstein 1993:324).

An individual's behaviour is thus assumed to be a cost-benefit decision-making process that is based on the influence of intentions, the skills to actually perform the behaviour and the extent to which environmental constraints will allow or enable a person to perform the behaviour. Intentions are in turn assumed to be a function of attitudes towards the behaviour, social normative influences and self-efficacy to perform the behaviour. There are, however, a number of other factors, some of which form part of the macro-social environment and some that are related to specific individual differences that can also influence behaviour. Thus, for example, personality traits, demographic variables, alcohol and drug use, affect and emotional factors, past behaviour, gender and cultural norms have also been found to influence behaviour. Some of the models (e.g. TRA and TPB) attempt to account for these factors, in that they are presumed to affect behaviour indirectly via their effects on perceived normative influences, perceived barriers and constraints to the behaviour, perceived self-efficacy and/or by their contribution to environmental constraints. Triandis (1977) attempts to account for the influence of past behaviour through his introduction of the concept of habit as influencing behaviour.

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Perhaps the most frequently cited criticism for this type of model is the fact that they pay insufficient attention to factors within the macro-social environment, namely, the broader social, economic, cultural and environmental factors that influence behaviour (Conner & Norman, 1994, 1996; Eagly & Chaiken, 1993; Joffe, 1996). Fishbein (2000:274) however argues that if properly applied these models are culturally specific and points out that the relative importance of each of the variables in these models are expected to vary as a function of both the behaviour and the population under consideration. He argues further that each of the variables in these models can be found in almost any culture or population (Fishbein 2000:274). However, it is necessary to conduct proper elicitation studies to understand and operationalise the components of each variable from the perspective of the population being studied in order to address cultural specificity issues. "One must go to members of that population to identify salient outcomes, normative and efficacy beliefs. One must understand the behaviour from the perspective of the population one is considering" (Fishbein 2000:276).

A further common criticism of these types of models is that the underlying assumption that an individual always has control over his/her behaviour is questionable. This is particularly pertinent in the case of sexual behaviour, which is assumed to be based on joint decision-making, is often coercive (particularly in South Africa) and almost always embedded in gender power relations, which reflect cultural norms (Holland, Ramazanoglu, Scott, Sharpe & Thompson 1991; Joffe, 1996; Richardson, 1990; Rosenthal *et al*, 1991; Wood & Jewkes, 1997; Wood *et al*, 1996). It is suggested that condom use is likely to depend on the interaction between the couple and situational factors and not simply on an individual's intentions and beliefs (Salt *et al*, 1990). Conner and Norman (1994:19) question whether the most appropriate variables are being measured by these models and whether "individualisation of attitude measures in the health area are at all warranted". The TPB attempts to address this limitation by including the variable of perceived behavioural control to address the issue of volitional control over behaviour.

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The influence of anticipated affective reactions to the behaviour as well as personal norms and self-standards are also factors that are not included in three of these models, namely the HBM, SCT & TRA. Thus, for example, Richard and Van der Pligt (1995) found that anticipated regret affected condom usage. Triandis (1977) however makes provision for both affect and personal normative beliefs as predictive variables in his model. Proponents of the TPB would, however, argue that anticipated affective reactions are included in the model as they form part of behavioural beliefs about the consequences of behaviour (Lugoe, 1996).

A further criticism that is raised against these models, is that their predictive power is often inadequate (Conner & Norman, 1996). However, this appears to be often due to a lack of specificity regarding the behaviour being studied and the operationalisation of the components of the model. Fishbein (2000) stresses the importance of precisely specifying the target behaviour, the action, the context and the time period in which the behaviour is observed or expected. It is also important that the time gap between the measurement of intention and behaviour is not too great. Further, it is important to focus on a specific single behaviour rather than generalised behaviour as each behaviour is unique and the underlying factors will differ according to the behaviour and population being studied (Eagly & Chaiken, 1993; Fishbein, 2000, Montano & Kasprzyk, 2002).

These models are further criticised as being overly simplistic in the causality that they specify between the variables and behaviour. They all tend to be uni-directional and ignore possible interaction effects between the variables and for instance, that behaviour can in turn influence attitudes (Liska, 1984; Weinstein, 1993). They also fail to identify conditions under which the constructs differentially predict behaviour (Lugoe, 1996). Thus, for instance, each of the components of the model could contribute differentially to the prediction of behaviour, depending on the individual population, circumstances and behaviour being studied. This, however, need not necessarily be viewed as a limitation, but can also been seen as a strength in that these models are able to differentiate according to populations and circumstances. The challenge to researchers is rather to

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attempt to understand and explain why the different components predict differently for different groups rather than reject the models. In addition, to specify every possible linkage between variables will be too complicated a process for most researchers and will also make the models too difficult to translate into practical behaviour change programmes.

Weinstein (1993) further criticises these models by pointing out that none of them actually predict the amount of precautionary behaviour that will occur. 'Instead what is predicted is the relative likelihood of action by different individuals or different treatment groups" (Weinstein 1993:326). In addition, all of the theories discussed in this section do not take into account the fact that health behaviour may comprise a number and series of stages rather than a single decision. A body of research supports the concept of stage theories of behaviour change (Prochaska & DiClemente, 1983; Weinstein, 1993) and different psychosocial predictors have been found to operate at different stages of condom use (Freimuth, Hammond, Edgar, McDonald & Fink, 1992). Progress toward condom usage is thus probably best explained by the addition of stage theory to that of social cognitive theories. As already stated in Chapter One, this research specifically focuses on behavioural prediction rather than behavioural change, for which stages of change theory appear more appropriate.

Despite the cited limitations of social cognitive theories of behaviour, they nevertheless provide a useful and popular framework for studying and understanding the social psychological determinants of a range of health behaviours, that include HIV/AIDS preventive behaviours and condom use in particular. Some of the advantages are that they offer a clear theoretical framework, guidelines on how to conceptualise and measure variables and also guidelines on how these can be combined to predict behaviour (Conner & Norman, 1996). They appear to have identified most of the key social-cognitive variables that are the proximal causes of behaviour. This is substantiated by the considerable overlap in the variables used in the different models. They also provide a finite set of variables that have been shown to influence a wide range of health behaviours

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in a wide range of populations and settings and also provide useful targets for intervention (Conner & Norman, 1996; Fishbein, 2000). It is for this reason that they are used in this study, despite their limitations.

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CHAPTER THREE

A REVIEW OF SOCIAL-COGNITIVE PREDICTORS AND CORRELATES OF ADOLESCENT CONDOM USAGE

3.1 Introduction

In this chapter I will review studies relating to social-cognitive factors that have been found to affect condom usage among adolescents. The first section of this chapter will comprise a brief general overview of determinants of condom usage among adolescents. This will be followed by a more detailed discussion of research that uses constructs from the specific theories underpinning this thesis, a discussion of the methodological shortcomings of these studies and finally a synthesis of the main findings.

In the second section of the chapter in which theory-based studies relating to adolescent condom use are reviewed, only studies that were based on one or more of the theories that underpin this research, namely the HBM, SLT, TRA/TPB, TSC and/or the CAM were included. Further criteria for inclusion were condom usage as the dependent variable and adolescents, or in some cases young college/university students, as the population. Studies that used intention as the dependent variable were excluded from the review. Similarly studies that did not focus exclusively on adolescents and/or young adults were not included. In some cases studies that were conducted with younger college/university students were included as they overlap in age range with the ages of grade 11 learners in South African schools. A further reason for the inclusion of this group was that "college youth straddle a developmental stage between adolescence and adulthood, functioning as members of both groups and neither, yet like their younger counterparts, are primarily concerned with social acceptability and opinions of their peers" (Paul & White, 1990, cited in Lear 1995:312).

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The data for this chapter was obtained from an extensive search of databases such as MEDLINE, SOCLIT, PSYCHLIT, Social Sciences Index and Index to South African Periodicals (ISAP) for articles that included combinations of the keywords 'adolescents', 'youth', 'condom usage', 'predictors', 'sexual behaviour', and 'reproductive health'. In addition references cited in various journal articles were followed up. Both published works and unpublished dissertations and reports were considered.

3.2 Review of studies on predictors and correlates of adolescent condom usage

There is a growing body of literature that relates to various factors that affect adolescent condom usage. Much of it is, however, either descriptive, atheoretical and/or includes key constructs from various social cognitive theories without testing the efficacy of these models. According to Albarracin, Fishbein and Middlestadt (1998:658), "...many studies that are not typically viewed as 'theory based' use KABP surveys to provide descriptive baseline information about a given population". These studies will not be reviewed in any detail here, but as they nevertheless contribute to our understanding of the wealth of factors that can affect adolescent condom usage, their key findings are briefly summarised in Table 3.1 below. A summary of the findings from these studies allows us to identify patterns of influence that can provide useful pointers for future intervention programmes, particularly if they are combined with the theory-based studies discussed in the next section of this chapter.

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Table 3.1: Correlates of condom usage among adolescents:

Predictor	association with condom usage			Comments
	positive	negative	none	
Gender	Abraham *et al*, 1996 Anderson *et al*, 1990 Brown *et al*, 1992a Brown *et al*, 1992b DiClemente & Fisher, 1992 DiClemente *et al*, 1996b Donald *et al*, 1994		Biglan *et al*, 1990 DiClemente, 1991 DiClemente *et al*, 1992 Hingson *et al*, 1990 Orr *et al*, 1992 Orr & Langefeld, 1993 Sacco *et al*, 1991 Shafer & Boyer, 1991	males more likely than females to be consistent users/ use condoms; females less likely to insist on condom use

Predictor	association with condom usage			Comments
	positive	negative	none	
	Edem & Harvey, 1994-5 Kann *et al*, 1991 Laraque *et al*, 1997 Richardson *et al*, 1997 Richter *et al*, 1992 Sheeran & Abraham, 1996 Varga, 1999			
SES/poverty	Catania *et al*, 1992 Kost & Forrest, 1992 Roper *et al*, 1993 Wilson *et al*, 1994		Jemmott & Jemmott, 1992	higher SES associated with greater condom usage; poverty associated with non-use
		Sheeran & Abraham, 1996		higher SES associated with less consistent condom use
Educational level	Wilson *et al*, 1994			higher education level associated with greater condom usage among black male adolescents
	St Lawrence, 1993			lower grade associated with use
Age		Abraham *et al*, 1996 Breakwell *et al*, 1994 D'Angelo & DiClemente, 1996 DiClemente *et al*, 1996b Hingson *et al*, 1990b Kraft & Rise, 1991 Moreau-Gruet *et al*, 1996 Pendergrast *et al*, 1992 Reitman *et al*, 1996 Richard *et al*, 1991 Sheeran & Abraham, 1996 Santelli *et al*, 1997 St Lawrence, 1993 Wingood & DiClemente, 1998	DiClemente, 1991 DiClemente *et al*, 1992 Jemmott & Jemmott, 1992 Orr & Langefeld, 1993 Orr *et al* 1992 Rotheram-Borus *et al*, 1995 Wilson *et al*, 1994	older adolescents less likely to use condoms; younger adolescents more likely to use condoms
Age and race		Pleck, 1989 Wilson *et al*, 1994		older Black males less likely to use condoms
		Richter *et al*, 1993		older white males + older black females less likely to use condoms
Age and gender		Richter *et al*, 1993		older white males & black females less likely to use condoms
		Donald *et al*, 1994		younger girls more likely to use condoms
	Adih & Alexander, 1999			older male respondents more likely to use condoms

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Predictor	association with condom usage			Comments
	positive	negative	none	
Race/ethnicity	Anderson *et al*, 1990 Brown *et al*, 1992a Hingson *et al*, 1990a		DiClemente *et al*, 1992 Donald *et al*, 1994 Orr & Langefeld, 1993 Orr *et al*, 1992	whites more likely to use condoms
	DiClemente, 1992,			'blacks' less likely to use condoms'
Age at sexual debut	Brown *et al*, 1992a, b Richard *et al*, 1991 Santelli *et al*, 1997 Schaalma *et al*, 1993		DiClemente, 1991 DiClemente *et al*, 1992	later sexual debut more likely to use condoms – those that had early sexual debut less likely to use condoms
Frequency of sexual intercourse		Abraham *et al*, 1998		more frequent sexual intercourse, less likely to use condoms
Use of condom at first intercourse	Kraft & Rise, 1991 Pleck, 1989 (black males) Richard *et al*, 1991 Schaalma *et al*, 1993 St Lawrence, 1993 St Lawrence & Scott, 1996			condom use at first intercourse significant predictor of further use and vice versa
Previous use of condoms/ past condom behaviour	Abraham *et al*, 1998 Brown *et al*, 1992b DiClemente *et al*, 1996 Reinecke *et al*, 1996			past condom use significantly related to use
Number of sexual partners	Richard *et al*, 1991 (boys)	Kost & Forrest, 1992 Richter *et al*, 1993	DiClemente, 1991	multiple partners associated with less likelihood of using condoms
	DiClemente *et al*, 1992	D'Angelo & DiClemente, 1996 DiClemente *et al*, 1992 DiClemente & Fisher, 1992 Richard *et al*, 1991 Richter *et al*, 1993	Donald *et al*, 1994 Wulfert & Wan, 1995	condom use decreased with number of lifetime sexual partners
	Howard *et al*, 1999 Mahoney *et al*, 1995 Wilson *et al*, 1994			condom use increased with number of sexual partners
Type of sexual partner: regular versus casual			Donald *et al*, 1994	no relationship between type of partner and condom use
Length of relationship		Kraft & Rise, 1992		relationships of less than 1 week negatively associated with condom use
Communication with parents	Miller *et al*, 1998, 1999			communication with parents associated with increased use

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Predictor	association with condom usage			Comments
	positive	negative	none	
Use of oral contraceptives		Donald *et al*, 1994 Roper *et al*, 1993	Orr & Langefeld, 1993 (males) Orr *et al*, 1992 (females)	use of oral contraceptives - less likely to use condoms
Alcohol and drugs		Adih & Alexander, 1999 Biglan *et al*, 1990 Hingson *et al*, 1990 Horan & DiClemente, 1993 Keller *et al*, 1991 Kraft & Rise, 1992 Kraft *et al*, 1991 Mahoney *et al*, 1995 Orr & Langefeld, 1993 Orr *et al*, 1992 Shafer & Boyer, 1991	DiClemente *et al*, 1992 Donald *et al*, 1994 Rotheram-Borus *et al*, 1995 Senf & Price, 1994 Wingood & DiClemente, 1998	use of alcohol and/or drugs - less likely to use condoms
		Richter *et al*, 1993		alcohol use = only significant predictor of non-use for Black females
		Richter *et al*, 1993		drugs = significant predictor for Whites, not for Blacks
		Biglan *et al*, 1990 D'Angelo & DiClemente, 1996		smoking related to non-usage of condoms
Other risk-taking behaviour (e.g. juvenile delinquency, conduct problems)		Brown *et al*, 1992b Flisher & Chalton, 1995 Orr & Langefeld, 1993 Orr *et al*, 1992 Santelli *et al*, 1997	Rotheram-Borus *et al*, 1995	risk behaviour associated with non-use of condoms
Perceived susceptibility to HIV/perceived risk	Basen-Engquist, 1992 Cochran & Peplau, 1991 Donald *et al*, 1994 Hingson *et al*, 1990b MacPhail & Campbell, 2001 Mahoney *et al*, 1995 Meekers & Klein, 2002 Pleck *et al*, 1991 Rotheram-Borus, *et al*, 1995 Sacco *et al*, 1991	Goldman & Harlow, 1993 Kegeles *et al*, 1989	Catania *et al*, 1989 DiClemente, 1991 Ellen *et al*, 1996a Eversley *et al*, 1993 Lollis *et al*, 1997 Mahoney *et al*, 1995 Pendergrast, ***et al,*** 1992 Schaalma *et al*, 1993 St Lawrence, 1993 Tigges *et al*, 1998 Weisman *et al*, 1989 Wulfert & Wan, 1995	perceived susceptibility related to increased condom usage; lack of perceived risk related to non-usage
	DiClemente *et al*, 1990			low perceived susceptibility related to condom non-usage
		Ford & Norris, 1995		perceived susceptibility related to less condom usage

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Predictor	association with condom usage			Comments
	positive	negative	none	
Perceived severity of HIV/AIDs			Hingson *et al*, 1990	no relationship
Fear/anxiety/worry about HIV	Cochran & Peplau, 1991 Hingson *et al*, 1990 Pleck *et al*, 1990		Brown *et al*, 1992b Brown *et al*, 1991 Catania *et al*, 1989 Norris & Ford, 1995 Pendergrast *et al*, 1992 Petosa & Wessinger, 1990	most studies show no relationship between AIDS worry and condom usage
Cues to action: carrying a condom/condom availability	Boldero *et al*, 1992 Donald *et al*, 1994 Furstenburg *et al*, 1997 Guttmacher *et al*, 1997 Kashima *et al*, 1993 MacPhail & Campbell, 2001 Schuster *et al*, 1997, 1998 St Lawrence, 1993		Kirby *et al*, 1999	non-availability associated with non-usage; availability associated with modest increase in usage
AIDS/sex education course	Edem & Harvey, 1994-5			attending AIDS education course linked to usage
Speaking to others, e.g. a doctor, about HIV	Edem & Harvey, 1994-5 Hingson *et al*, 1990b			speaking to a others about HIV, condoms related to use
Communication with partner about condoms/sexual risk	Biglan *et al*, 1990 Boldero *et al*, 1992 Catania *et al*, 1989, 1992 DiClemente, 1991 DiClemente & Fisher, 1992 Donald *et al*, 1994 Ford & Norris, 1995 Kashima *et al*, 1993 Weisman *et al*, 1989 Whitaker *et al*, 1999 Wilson *et al*, 1994		Schaalma *et al*, 1993	communication with partner positively associated with condom use
Perceived self-efficacy/ behavioural control	Basen-Engquist, 1992 Basen-Engquist & Parcel, 1992 DiClemente *et al*, 1996 Donald *et al*, 1994 Gilchrist & Schinke, 1983 Hingson *et al*, 1990b	Breakwell *et al*, 1994	Catania *et al*, 1989 DiClemente *et al*, 1992 Laraque *et al*, 1997 Lollis *et al*, 1997 Mahoney *et al*, 1995 Murphy & Boggess, 1998 Richardson *et al*, 1997	self-efficacy positively related to condom use

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Predictor	association with condom usage			Comments
	positive	negative	none	
	Jemmott & Jemmott, 1992 Jemmott *et al*, 1992b Kasen *et al*, 1992 Levinson, 1982 Mahoney *et al*, 1995 McKusick *et al*, 1990 Meekers & Klein, 2002 O'Leary *et al*, 1992 Pendergrast *et al*, 1992 Richard ***et al***, 1995 Richard & Van der Pligt, 1991 Rotheram-Borus *et al*, 1995 Sacco *et al*, 1991 Schaalma *et al*, 1993 St Lawrence, 1993 Wingood & DiClemente, 1998 Wulfert & Wan, 1995		Terry, 1993	
		Kasen *et al*, 1992 Reitman *et al*, 1996		deficit in self-efficacy related to non-use
Coping styles	Basen-Engquist, 1992			people who deal with anxiety by blocking our stressors, less likely to use condoms
Knowledge about HIV	Edem & Harvey, 1994-5 Hausser & Michaud, 1994 Orr & Langefeld, 1993 Roscoe & Kruger, 1990 Shafer & Boyer, 1991 St Lawrence, 1993 (girls only) Wilson *et al*, 1994	DiClemente *et al*, 1996b Donald *et al*, 1994 Edem & Harvey, 1994-5	Akande, 2001 Anderson *et al*, 1990 DiClemente, 1991 DiClemente *et al*, 1992 Fisher & Fisher, 1992 Jemmott & Jemmott, 1991 Jemmott & Jemmott, 1992 Lowe & Radius, 1987 Orr & Langefeld, 1993 Orr *et al*, 1992 Reitman *et al*, 1996 Rosenthal *et al*, 1992 Rotheram-Borus, *et al* 1995 Varga & Makubalo, 1996	positive relationship between knowledge and usage in some studies; most studies show no relationship

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Predictor	association with condom usage			Comments
	positive	negative	none	
Norms: perceived peer norms regarding condom use	Adler *et al*, 1990 DiClemente, 1989 DiClemente, 1991 DiClemente *et al*, 1996b DiClemente & Fisher, 1992 Donald *et al*, 1994 Fisher, 1988 Ford & Norris, 1995 Hausser & Michaud, 1994 MacPhail & Campbell, 2001 Murphy & Boggess, 1998 Romer *et al*, 1994 Schaalma *et al*, 1994 Shafer & Boyer, 1991 Wulfert & Wan, 1995		Brown *et al*, 1995 (predicted intention but not actual use) Catania *et al*, 1989 Richardson *et al*, 1997 Rotheram-Borus *et al*, 1995 St Lawrence, 1993 Wilson *et al*, 1994	perceived positive peer support for condom use positively associated with condom use; perceived negative support associated with non-usage
Perceived parental support regarding condom use	Jemmott & Jemmott, 1992 (mothers) Laraque *et al*, 1997 Meekers & Klein, 2002 Schaalma *et al*, 1993 Wilson *et al*, 1994	Pleck *et al*, 1991		perceived parental support for birth control/condom use related to condom use
Perceived sexual partner norms regarding condom use		Schaalma *et al*, 1993 Strader & Beaman, 1989		perceived partner opposition/reluctance negatively influences condom use
	DiClemente *et al*, 1996b Fisher *et al*, 1992 Ford & Norris, 1995 Jemmott & Jemmott, 1992 Laraque *et al*, 1997 Murphy *et al*, 1998 Pendergrast *et al*, 1992 Pleck *et al*, 1991 Wingood & DiClemente, 1998			perceived partner support positively related to condom use
	Murphy *et al*, 1998			females scored higher in importance of partner norms than males
Social support		St Lawrence *et al*, 1994b		less social support related to less frequent condom use
	Adih & Alexander,			high levels of social support

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Predictor	association with condom usage			Comments
	positive	negative	none	
	1999 Wulfert & Wan, 1995			related to greater condom usage
Attitude (general)	Adler *et al*, 1990 Catania *et al*, 1989 Reitman *et al*, 1996 Richard & Van der Pligt, 1991 Rotheram-Borus *et al*, 1995 Schaalma *et al*, 1993			positive attitude to condoms related to use
Perceived benefits: contraception	Laraque *et al*, 1997 Orr *et al*, 1992 Orr & Langefeld, 1993 Schaalma *et al*, 1993 Wingood & DiClemente, 1998			perceived benefit of contraception positively related to condom usage
Perceived benefits: STD/AIDS prevention	DiClemente *et al*, 1992 Hingson *et al*, 1990 Orr & Langefeld, 1993 Orr *et al*, 1992 Wilson *et al*, 1994		Catania *et al*, 1989 Laraque *et al*, 1997 Lollis *et al*, 1997 Mahoney *et al*, 1994	perceived benefit of HIV/STD prevention positively related to condom usage
Perceived barriers: reduction of pleasure – factors related to reduced feeling		Basen-Engquist, 1992 DiClemente *et al*, 1992 Hausser & Michaud, 1994 Jemmott & Jemmott, 1991, 1992 Jemmott, *et al*, 1992b Hingson *et al*, 1990b Pleck *et al*, 1991 Valdiserri *et al*, 1988	Mahoney *et al*, 1994 Lollis *et al*, 1997	negative attitudes and beliefs negatively related to condom usage
Perceived barriers: embarrassment		Hingson *et al*, 1990 Pleck *et al*, 1991 St Lawrence, 1993		feelings of embarrassment negatively related to condom usage
Perceived barriers: fear of physical abuse		Varga & Makubulo, 1996		fear of physical abuse negatively related to condom usage
Perceived barriers: condoms imply lack of trust in partner		Hausser & Michaud, 1994 Varga & Makubalo, 1996		implied lack of trust in partner negatively related to usage
Intention	Adler *et al*, 1990 Basen-Engquist, 1992 Basen-Engquist &		Boldero *et al*, 1992 (only intention in action and not prior intention	intention predicts condom use weaker intention predicts non-use

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Predictor	association with condom usage			Comments
	positive	negative	none	
	Parcel, 1992 Brown *et al*, 1992a & b Fisher, 1984 Ford & Norris, 1995 Jemmott & Jemmott, 1991 Reinecke *et al*, 1996 Schaalma *et al*, 1993 Skinner, 2001 Terry, 1993 Wulfert & Wan, 1995		significantly related to behaviour) Breakwell *et al*, 1994 Fisher *et al*, 1995	
		Richardon *et al*, 1997		condom non-use predicted by weak intention
	Sheeran & Abraham, 1996			intention positively correlated with behaviour for men, but not women

As can be seen from Table 3.1, a wealth of factors have been shown to affect adolescent condom usage. With respect to demographic variables, male gender, white race, higher socio-economic status, higher educational level and/or younger age are the most common variables associated with more consistent condom usage. A number of studies have shown that minority group status (e.g. African-Americans or Hispanic-Americans), which is often highly correlated with lower socio-economic status and earlier school drop-out, is significantly associated with condom non-usage. Various risk behaviours have also been found to correlate significantly with less frequent condom use. Thus concurrent risk behaviours such as alcohol and/or drug use and a greater number of lifetime sexual partners have been found to correlate negatively with condom usage. Later age of sexual debut has been associated with more consistent condom usage. Use of a condom at first intercourse significantly increases the likelihood of further usage as does having a condom available.

A number of social-cognitive constructs have also been found to correlate significantly with condom usage. Particularly perceived self-efficacy and perceived peer norms that are positive to condom usage have been found to be strongly associated with usage. Other studies have also shown positive links between perceived parental support as well

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as perceived sexual partner support for condom usage and actual usage. High levels of actual social support have also been related to greater condom usage. In addition, increased communication with parents is also associated with increased use. The influence of perceived susceptibility to HIV on condom usage has produced mixed and contradictory results. Thus a number of studies have found a positive relationship between perceived susceptibility and condom usage and a number of other studies have found no relationship to condom usage. Similarly, whereas a study by Pleck *et al* (1991) found a positive relationship between fear of HIV and condom usage, a number of other studies found no relationship between fear of HIV and condom usage (see Table 3.1).

It is often widely assumed that increased knowledge about HIV will lead to increased condom usage. The majority of studies that have examined the influence of knowledge on actual condom usage, have, however, found no significant relationship between level of knowledge and usage, pointing to the importance of factors other than knowledge. However, although most studies show no direct link between knowledge and condom usage, it may be an important prerequisite for other factors found to influence usage, such as social assertiveness, and may also be a prerequisite for acknowledging some of the benefits of condom usage (e.g. protection from HIV/AIDS) (Donald *et al*, 1994; Ross, Caudle & Taylor, 1991).

A number of the theories that are used to explain health behaviour (e.g. HBM, TRA, TPB), stress the importance of the influence of perceived barriers and benefits of condom usage on condom use behaviour. Some studies have shown that perceived barriers to condom use are negatively associated with use – the greater the perceived barriers, the less likely that condoms will be used. Some of the main barriers that have been found to be negatively associated with usage are perceived reduction of pleasure and/or feeling, embarrassment at using and/or obtaining condoms, fear of physical abuse and that using condoms imply that a person does not trust his/her partner (see Table 3.1). Conversely, more positive attitudes toward condoms and greater perceived benefits of condoms, e.g. as a form of contraception and/or as a means of preventing STDs, including HIV, have

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been found to be positively associated with both intentions to use condoms as well as actual condom usage. Communicating with a partner about condoms and/or sexual risk has also been found to be positively associated with actual usage. In addition, partner status or stage of relationship have also been related to usage (Wight, 1992) as well as receiving sexuality education (Edem & Harvey, 1994-5).

In addition to these factors, the cultural and contextual realities of sexual interactions have been shown to be important factors affecting condom usage, with gender-based power relations proving to have a particularly strong influence on the ability of women to demand condom use (Gomez & Marin, 1996; Holland, Ramazanoglu, Scott, Sharpe & Thompson, 1990, Holland, Ramazanoglu, Sharpe & Thompson, 1992; Kalof, 1995; Wingood & DiClemente, 1992, 1995, 1998). Gender power factors play a particularly important role in South Africa, with its high rates of gender-based violence (Varga & Makubalo, 1996; Wood *et al*, 1998). A number of studies have shown that gender related variables are important predictors of condom usage (Cochran & Peplau, 1991; Wingood & DiClemente, 1998). Thus, for instance, perceived assertiveness to negotiate condom use and perceived control over condom use by women have been positively linked to higher levels of condom use by male partners (Wingood & DiClemente, 1998). In addition, factors such as greater sexual self-control and relational factors such as perceiving one's partner to be committed to the relationship have also been related to increased use. Gender has also been found to play a significant role in other cognitive predictors of condom use. Thus Cochran and Peplau (1991) found that men perceived themselves as being significantly less vulnerable to contracting AIDS than women in their study

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3.3 Theory-based studies relating to the social-cognitive predictors of adolescent condom use

In the following section, theory-based studies relating to the social-cognitive predictors of adolescent condom use will be classified and discussed according to the theoretical model on which they were based. Findings arising from research relating to adolescent condom

usage based on each of the theories used for this study will be described, with key studies discussed in more detail. All the studies included in this review are summarised in Table 3.2.

A total of 47 studies were found to be based on one or more of the theoretical approaches underpinning this research, with condom usage as the dependent variable and adolescents/youth as their target group. As can be seen from Table 3.2, the majority of these studies were conducted in the USA (n = 29), with 7 studies conducted in Australia, 3 in the UK, 2 each in Canada and Holland, and one each in Germany, Ghana, Nigeria and South Africa. Only three studies using these theories to study adolescent condom use have been conducted in an African context, and only one in South Africa, namely that of Skinner (2001), who applied the TRA/TPB to condom behaviour of youth in two semi-rural communities in the Western Cape.

3.3.1 Methodological issues

The most frequently used sample groups in the reviewed studies comprised either adolescents seeking health care or attending family planning services (n = 8) (Adler *et al*, 1990; Catania *et al*, 1989; Laraque *et al*, 1997; Orr & Langefeld, 1993; Orr *et al*, 1992; Reitman *et al*, 1996; St Lawrence, 1993; Wilson *et al*, 1994), undergraduate university or college students (n = 10) (Boldero *et al*, 1992; Edem & Harvey, 1994-5; Fisher 1984; Kashima *et al*, 1993; Lollis *et al*, 1997; Mahoney *et al*, 1998; Rosenthal *et al*, 1992; Terry, 1993; Warwick *et al*, 1993; Wulfert & Wan, 1995), sexually active adolescents living in high risk inner-city urban areas (n = 4) (DiClemente *et al*, 1996; DiClemente *et al*, 1992; Ford & Norris, 1995; Murphy *et al*, 1998) or high school students (Brown *et al*, 1992; Fisher *et al*, 1995; Richardson *et al*, 1997). One study focused specifically on gay and bisexual male adolescents (Rotherum-Borus *et al*, 1995) and one on adolescents living in juvenile rehabilitation centres (Godin *et al*, 1997) and one on incarcerated adolescents (DiClemente, 1991).

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Only two studies focus specifically on rural or semi-rural adolescents (Adih & Alexander, 1999; Skinner, 2001). All of the remaining studies focused on urban samples. Ten studies use gender-specific samples, eight of which focused on males (Adih & Alexander, 1999; DiClemente, 1991; Fisher, 1984; Orr & Langefeld, 1993; Pendergrast *et al*, 1992; Pleck *et al,* 1990; Rotheram-Borus *et al*, 1995; Wilson *et al*, 1995) and two on females (Catania *et al*, 1989; Orr *et al*, 1992). Twenty nine of the studies used either sexually active samples or restricted the data analysis to sexually active subsamples.

Only ten of the studies used representative samples, which allow for a better generalisability of the results (Abraham *et al,* 1996; Basen-Engquist & Parcel, 1992; Donald *et al*, 1994; Hingson *et al*, 1990; Kahn *et al*, 1989; Norris & Ford, 1995; Pleck *et al*, 1991; Reinecke *et al*, 1996; Schaalma *et al*, 1993; Sheeran & Abraham, 1996). A range of sampling strategies are reported, varying from quota samples (Abraham *et al,* 1996), simplified cluster sample (Adih & Alexander, 1999), household probability samples (Ford & Norris, 1995), second stage cluster sampling (Donald *et al,* 1994) to cohort sequential design (Breakwell *et al,* 1994). The majority of studies (n = 27) used non-representative samples of urban adolescents and/or young adults. Most of these were convenience or purposive samples.

Most studies described their sampling strategies. They, however, varied in the amount of detail given. Only two of the studies took the sampling design into account by weighting their samples (Basen-Engquist & Parcel, 1992; Donald *et al,* 1994). Ten of the studies reported results according to gender (Abraham *et al,* 1996; Adler *et al,* 1990; Laraque *et al,* 1997; Lollis *et al*, 1997; Murphy *et al,* 1998; Norris & Ford, 1995; Richard *et al*, 1991; Rosethal *et al*, 1992; Schaalma, 1995; St Lawrence, 1993). Norris and Ford (1995) also analysed the data according to ethnicity.

As far as the design of the studies surveyed is concerned, 32 studies surveyed used a cross-sectional design, which limits their capacity to establish causality between determinants and actual condom usage (see Chapter 6 for a further discussion of this). Only 13 of the studies report the use of elicitation studies to help develop their

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questionnaires (Adler *et al,* 1990; DiClemente *et al,* 1996; Fisher 1984; Fisher *et al, 1995;* Ford & Norris, 1995; Godin *et al,* 1997; Kashima *et al,* 1993; Norris & Ford, 1995; Orr *et al,* 1992; Reinecke *et al,* 1992; Schaalma *et al,* 1993; Skinner, 2001; Terry, 1993; Warwick *et al,* 1993). This is in line with recommendations made by Fishbein *et al* (1991), Ajzen and Fischbein (1980) and Triandis (1980), who recommend that population specific elicitation studies are a prerequisite for operationalising many of the core social-cognitive constructs used in these models. In the case of those studies that did not use elicitation studies, it is therefore questionable to what extent they actually measured and incorporated the core beliefs and/or subjective social norms of the populations concerned. Thirteen of the studies used a longitudinal cohort sequential design, with behaviour (i.e. condom use) measured between 6 weeks and one year after the baseline study. These allow for a better establishment of causality between predictor variables and condom use behaviour.

Not only do the studies use a wide variety of combinations of the theories and/or core constructs from the theories (see Table 3.2), but they also operationalise the core predictor variables very differently. This leads at times to conceptual confusion and makes it very difficult, if not impossible, to compare the studies and to generalise results. In addition, most studies pay very little attention to the validity and reliability of the measures they used (Conner & Norman, 1996). Although many claim to be theory-based and use components of the theories that underpin this research, reported results are often solely descriptive and/or they fail to give an integrated analysis of the results that relates to the theoretical model used (e.g. Catania *et al,* 1989; DiClemente, 1991; DiClemente *et al,* 1992; DiClemente *et al*, 1996;. Pendergrast *et al,* 1992; Pleck *et al,* 1990; Reitman *et al,* 1996; St Lawrence, 1993; Wilson *et al,* 1993).

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Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Abraham *et al*, 1996 UK	Representative sample of 16 & 18 year olds N = 1075 Follow-up sample = 258 Sub-sample used in research = 122 (those with new partners over 1 year period)	No elicitation study reported Self-completion postal questionnaire Follow-up after one year Longitudinal study	1.Prior condom use 2. Consistent condom use over 1 year period	Perceived susceptibility Perceived severity Perceived condom effectiveness Perceived offensiveness Perceived attractiveness Cues to action Relative health value Intention Norms	Consistent condom use over previous year significantly predicted by: o Intercourse frequency o Prior condom use o Age o Gender HBM measures did not predict use	HBM
Adih & Alexander, 1999 Ghana	Sexually active males from predominantly rural district Ages: 15-24 years Mean age: 20.8 years Cluster sampling N = 601	No elicitation study reported Questionnaire administered by interviewers Cross-sectional design	Lifetime condom use Condom use at last sexual intercourse	AIDS knowledge Perceived susceptibility to AIDS Perceived benefits of condom use Perceived barriers to condom use Self-efficacy to use a condom Social support to use condoms Risk and problem behaviours	Significant predictors of condom use: o Older age o Less alcohol use o Fewer perceived barriers o High level of self-efficacy to use condoms o High levels of social support o Barriers significantly interacted with perceived susceptibility to HIV infection and with perception of self-efficacy to use condoms. Respondents who perceived high susceptibility to HIV and low barriers to condom use significantly more likely to use condoms	HBM SLT
Adler *et al*, 1990 USA	Sexually active adolescents aged 14 – 19 years seeking health care at 2 adolescent medical clinics in San Francisco	Elicitation study Self-administered questionnaire Follow-up interview 1 year later to assess	Frequency of condom use during past year (one of four different dependent variables)	Attitude towards condoms Norms Intention Beliefs of consequences of using condoms X evaluation of	Significant predictor of condom use: o Intention Intention predicted by attitude and norms Attitude predicted by beliefs General social perceptions predicted by norms	TRA

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
	Randomly sampled Ages: 14-19 years Mean age: 16.9 years N = 325	contraceptive behaviour Longitudinal study		consequences	Confirms TRA	
Basen-Engquist, 1992 USA	2 undergraduate classes at a university Mean age: 21.6 years N = 275	No elicitation study reported Self-completion questionnaire Cross-sectional design	Condom use over previous 2 months	Perceived susceptibility Barriers Self-efficacy Social support Monitoring Blunting Intention – discussion Intention- behaviour	Condom use significantly associated with: o intention o male gender Barriers to practicing safer sex negatively associated with condom use Susceptibility and barriers to behaviour change related to condom use	HBM TRA SLT
Basen-Engquist & Parcel, 1992 USA	Multistage probability sample of 9th graders Convenience sample Ages: 14-18 years Mean age: not given N = 1720	No elicitation study reported Self-administered questionnaire Cross-sectional design	Frequency of condom use	Attitude Norms Self-efficacy Intention	Significant predictors of condom use: o Self-efficacy o Intention o Attitudes + norms affected behaviour indirectly through relationship to intention o Norms = weakest predictor of condom use	TRA SLT
Boldero *et al*, 1992 (same study as Moore *et al*, 1993 below but reports on different variables) Australia	Sexually active volunteer undergraduate students at metropolitan university Ages: 17 – 20 yrs Mean age: 18.74 years N = 144 Convenience sample (those who	No elicitation study reported 2 self-completion questionnaires – Second questionnaire within 6 weeks of first questionnaire and within 24 hours of a sexual encounter	Condom use on last coital episode	Behavioural beliefs about condoms as AIDS protection Attitude Norms Intention Condom availability Communication with partner about condom use Sexual arousal Influence of alcohol	Condom use significantly predicted by: o Intention in action (not prior intention) o Communication about condoms o Condom availability Condom non-use significantly predicted by o Perceiving disadvantages o Increased level of sexual arousal Stronger prior intention to use condoms predicted by: o Perceptions of advantages and	TPB + contextual factors (communication with partner, sexual arousal, condom availability)

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
	responded to requests for participation in an advertisement)			Concern over AIDS and other STDs Type of relationship with partner	disadvantages o Number of previous sexual partners No influence: Norms	
Breakwell *et al*, 1994 United Kingdom	Sexually active adolescents from one geographical area in urban London Ages: 16-20 years N = 63 (only those that provided non-missing data on key variables at Time 1 and 2 included in analysis = bias toward more verbally skilled and motivated respondents))	Longitudinal study over 1 year period 2 self-completion questionnaires 1 year apart Cohort sequential design	Condom use at 2 time spans 1 year apart = composite indices of condom use comprising ever used condom + condom use on last intercourse	Health concern Norms Informational influence Worry about AIDS General worriedness Perceived susceptibility Importance of safe sex Perception of risk Self-efficacy Attitude Intention	Condom use related to: o Low levels of sexual self-efficacy (low levels = more likely that condoms were used = the higher the perceived self-efficacy, the less likely to use condoms) o Perceived interpersonal cost of condom use o Increased age = less likely to use condoms o Normative and value considerations = broader commitment and not specific behavioural intention found to predict condom use o Perceptions of risk very little impact on use	elements of TRA, HBM & SLT
Brown *et al*, 1992a USA	9, 10 & 11 grade high school students – convenience sample Mean age = 16.2 years N = 1049	No elicitation study reported Self-administered questionnaires Cross-sectional design	Consistent condom use over past month	AIDS knowledge Fear of HIV infection Tolerance towards persons living with AIDS Intention Attitude Past history of risk-taking Perception of friends' use of condoms (norms)	Consistent condom use significantly associated with: o Gender (male) o Intention = best predictor o Best predictor of safe behavioural intention = perceived referant group normative behaviour (perceptions of friends use of condoms)	elements of TRA

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Brown *et al*, 1992b USA	9th, 10th & 11th grade learners from 4 school districts in Rhode Island Convenience sample to represent range of ethnicity, SES and urbanicity Mean age: 16.2 years N = 1049	Self-completion questionnaire No elicitation study reported Cross-sectional design	Consistent condom use (condom use at last intercourse + always used a condom)	Perceived salience of HIV HIV knowledge Attitude Intention Perceived susceptibility Perceived peer norms General risk attitudes Covariates = age, gender, ethnicity	Consistent condom use significantly associated with: o Gender (male) o Intention o Less history of risk behaviour o Perceived peer norms significantly predicted intention, but did not predict consistency of use No relationship between condom use and: o Fear of HIV	elements of HBM TRA
Catania *et al.*, 1989 USA	Convenience sample of adolescent females attending family planning clinic California Mean age: 17,9 years N = 114	Self-administered questionnaire Pilot study of questionnaire but no elicitation study reported cross-sectional design	Condom use over previous 2 months with primary sexual partner	Egocentrism AIDS susceptibility AIDS anxiety Benefits Self-efficacy General sexual and condom-specific communication Social norms	Condom use significantly associated with: o Greater enjoyment of condom use o Greater willingness to request partners to use condoms All other predictors insignificant	does not specify theoretical model (self-efficacy + elements of HBM)
DiClemente, 1991 USA	Sexually active incarcerated adolescents – predominantly Black male N =112	Self-report questionnaire	Consistent condom use (always used condoms)	General AIDS knowledge Perceived susceptibility Risk reduction knowledge Perceived peer norms Communication about AIDS Prevalence of sexual behaviour	Consistent condom use associated with: o Race (non-black) o Communication with sexual partner regarding AIDS o Perceived peer norm support for condom use No association with condom use: o Gender o Age o HIV knowledge o Risk reduction knowledge o Perceived susceptibility	HBM

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
					o Age at sexual debut o Lifetime sexual partners o Sexual partners in previous year	
DiClemente, Durbin *et al.*, 1992 USA	Sexually active adolescents from 3 inner-city, predominantly non-white junior high schools in San Francisco area ages = 11 – 16 yrs N = 403	No elicitation study reported Self-report questionnaire cross-sectional design	Consistent condom use (always used condoms)	AIDS knowledge Perceived condom efficacy Perceived costs of condom use Perceived susceptibility to HIV infection Drug-use	Significant predictors of condom use/non-use: o Benefits and barriers: perceived costs linked to non-use, perceived efficacy in preventing AIDS linked to use o History of less than 3 sexual partners linked to use	HBM
DiClemente & Fisher, 1992 USA	All students enrolled in family life education classes in 9 primary high schools in San Francisco Subsample of sexually active adolescents, N = 270	Self-report questionnaire	Consistent condom use (always used condoms)	HIV knowledge Knowledge of HIV risk-reduction strategies Perceived susceptibility to HIV Age at sexual debut Number of life-time sexual partners Peer norms Communication with sexual partner regarding AIDS	Consistent condom use associated with: o Discussion of AIDS with sexual partner o Perceived peer norms supportive of condom use o Fewer life-time sexual partners o male gender	HBM

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
DiClemente & Horan, 1992 USA	Sexually active adolescents enrolled in 10th grade family life and 11th grade social studies classes in San Francisco N = 455	Self-report questionnaire	Consistent use of condoms	HIV knowledge Knowledge of HIV risk-reduction strategies Perceived susceptibility to HIV Resistance self-efficacy (ability to refuse high-risk behaviour) Perceived condom efficacy to prevent HIV Communication with parents and friends about AIDS Age at sexual debut Number of life-time sexual partners Number of sexual partners in past year	Consistent condom use significantly associated with: o High self-efficacy to insist on condom usage o Not having experienced sexual disinhibition due to alcohol use Condom self-efficacy affected by: o Alcohol use = increases likelihood that will not be able to insist on usage	HBM + self-efficacy
DiClemente *et al*, 1996 USA	Sexually active African-American adolescents and young adults living in high-risk urban environment San Francisco Volunteered and recruited Ages: 12 – 21 years Mean age: not specified	Elicitation study Structured personal interviews Follow-up personal interview after 6 months Prospective research design	Consistent condom use over 6 months (always used condoms over 6 months)	Knowledge about HIV Peer norms Communication with parents about condoms Self-efficacy Perceived susceptibility to HIV Perceived condom efficacy Past difficulty in using condoms Emotional states Behavioural measures (age at first intercourse,	Consistent condom use in baseline study (cross-sectional analysis) associated with: o Age (younger adolescents more likely to use condoms) o Gender (males more likely to use condoms) o Self-efficacy to assert condom use (most powerful determinant) o Perception of supportive peer norms o Knowledge about HIV related to less condom use o Frequency of intercourse related to less condom usage Baseline level of condom use = only	SCT + other social-cognitive and behavioural constructs

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
	N = 116			number of sexual partners etc)	significant predictor of consistent condom use at follow-up	
Donald *et al* 1994 Australia	Sexually active grade 10-12 adolescents from 72 public secondary schools – 2-stage cluster sampling Mean age: 16 years 10 months N = 932	No elicitation study reported Self-report questionnaire Cross-sectional design	Condom use at last sexual intercourse	Peer influence Self-efficacy (negotiation of condom use) HIV risk AIDS knowledge	Condom use associated with: o Male gender o Communication with partner about HIV/STDs o Belief that more peers used condoms o Higher perceived risk of HIV/STDS o Lower knowledge of STDs Non-use associated with: o Use of oral contraception o Unavailability of condoms (boys) For girls, use additionally associated with: o Younger age o Perceived ability to persuade partner to use condoms No association with condom use: o Number of sexual partners o Regular versus casual partner	self-efficacy + various other predictors
Edem & Harvey, 1995 Nigeria	Second year university students Ages: 19-22 years N = 395	No elicitation study reported Self-administered questionnaire Cross-sectional design	Ever used a condom	Intention Perceived susceptibility/severity Perceived benefits Perceived barriers Cues to action (discussion of HIV with others + course on HIV) AIDS knowledge	Both past condom use and intention to use condom significantly predicted by: o Perceived benefits (+ association) o Perceived barriers (-association) o Cues to action o Knowledge negatively predicted condom use (more knowledge = less likely to use condoms) o Gender (male)	HBM
Fisher,	Male psychology	Elicitation study	Consistent	Intention	Condom use predicted by:	TRA

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
1984 USA	undergraduates Purdue University Mean age = 19.88 yrs N = 145	Self-administered questionnaire 4 weeks later second questionnaire to measure condom use in past month	condom use over 1 month period	Attitude Norms Beliefs about consequences of condom use X evaluations of these Perceptions of salient referent support for condom usage X motivation to comply with these Erotophilia – erotophobia	o Erotophobia – erotophilia (erotophilic males least likely to have used condoms) o Intention Intention predicted by: o Attitude o Norms	sexual behaviour sequence theory: erotophobia-erotophilia
Fisher *et al*, 1995 USA	Heterosexual 9th high school convenience sample – mid-sized city in NE USA Ages: not specified N = 265 completed both questionnaires (study also included university students and gay men – but used as three separate samples)	Elicitation study Open-ended questions Self-completion questionnaire Follow-up questionnaire 1 month later	Always using Condoms for sex	Intentions Attitude Norms Beliefs about consequences of condom use X evaluations of these Perceptions of salient referent support for condom usage X motivation to comply with these	Intention did not significantly predict consistent condom usage for both boys and girls Intention predicted by o Attitudes o Norms For boys: intention to use condoms predicted by attitude, but not by subjective norm For girls intention to use condoms predicted by both attitudes and subjective norm	TRA
Ford & Norris, 1995 USA	African-American and Hispanic adolescents & young adults Household probability sample	Elicitation study Interviews Cross-sectional design	Use of condom with a casual partner	AIDS knowledge Beliefs about AIDS susceptibility Communication about condoms Peer norms Attitude	Condom use significantly related to: o Perceived partner attitude o Attitude toward condoms o Communication with casual partner about condoms Condom use significantly negatively related	HBM TRA

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
	Ages = 15-24 N = 1435			Beliefs	to : o Perceived AIDS susceptibility (the more perceived susceptibility, the less use)	
Godin *et al*, 1997 Canada	Adolescents living in urban juvenile rehabilitation centres Mean age: 16.05 years N = 106	Interviews = elicitation study Questionnaire 1 Questionnaire 2 = 3 months later	Frequency of condom use over 3 month period	Intention Attitude Norms Perceived behavioural control Personal normative belief Perceived social support Self-esteem Sexual experience	Significant predictors of condom use: o Interaction between intention and perceived behavioural control o Interaction between perceived behavioural control and habit of using condoms Significant predictors of intention: o Personal normative beliefs o Perceived behavioural control o Habit o Not influenced by attitude or social norms o No gender differences	TPB TIR
Hingson, Strunin, Berlin & Heeren, 1990a USA	Random sample of adolescents in Massachusetts Ages: 16-19 years Mean age: not specified N = 1773	No elicitation study reported Telephone survey Cross-sectional design	Frequency of condom use (always used condoms)	Perceived condom efficacy Perceived HIV susceptibility Perceived severity of HIV Perceived barriers to using condoms Behavioural cues to action (having discussed AIDS with a doctor + carrying condoms) Alcohol + marijuana use	Consistent condom use related to: o Race (whites) o Age (younger adolescents more likely to report consistent condom use) o Perceived susceptibility o Condom efficacy o Perceived barriers = most powerful predictor. o Cue to action o Moderating variables: adolescents who did not drink or use marijuana more likely to use condoms consistently and vice versa	HBM

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Kashima *et al*, 1993 Australia	Undergraduate, heterosexual, sexually experienced students Volunteered Ages: 17-21 years Mean age: not specified N = 149	Elicitation study Self-completion questionnaire Follow-up self-completion questionnaire after next sexual contact	Condom use on last coital episode	Intention Attitude Subjective norm Expectancy-value attitude Expectancy-value subjective norm Past sexual behaviour Satisfaction of behavioural conditions Partner normative beliefs	Condom use associated with: o Meeting of behavioural conditions (i.e. having a condom available and agreeing with partner to use a condom) o Interaction between intention + past behaviour o Past behaviour predicts extent to which behavioural conditions necessary for performance of behaviour are satisfied o Past behaviour, intention & satisfaction of behavioural conditions interact o Partner normative belief had direct impact on intention and attitude	TRA, TPB, + behavioural conditions (condom availability, agreement with partner to use condoms + partner normative belief)
Laraque *et al*, 1997 USA	Adolescents enrolled in a hospital-based pregnancy prevention programme in central Harlem Mean age: 15.5 years N = 557	No elicitation study reported Self-completion questionnaires Cross-sectional design	Condom use at last intercourse Frequency of condom use over past 3 months	Attitude Beliefs Perceived risk of becoming pregnant Barriers to using condoms Parenting attitudes Teen-parent conflict Depression Self-esteem Health locus of control Parent & peer support for birth control Perceived benefits = avoidance of STDs, HIV, pregnancy	Strongest predictors of condom use: o Partner preference for condoms o Perceived benefit of avoiding pregnancy o Male gender o Support for birth control (usually by a parent) No association with condom use: o Self-esteem o Health locus of control	elements of HBM + self-esteem, health locus of control, partner norm

University of Pretoria

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Lollis *et al*, 1997 USA	White heterosexual college students Convenience samples of psychology students Ages: 17 – 33 Mean age: 19.8 N = 122	No elicitation study reported Self-completion questionnaire Cross-sectional design	Condom use (does not specify exactly how it is measured)	Barriers Benefits Self-efficacy Susceptibility	HBM did not significantly predict condom use for either men or women	HBM
Mahoney *et al*, 1995 USA	Convenience sample of college undergraduate students Ages: 18-24 years Mean age: not specified N = 366	No elicitation study reported Self-completion questionnaire Cross-sectional design	Frequency of condom use in past 12 months	Perceived susceptibility Perceived benefits Perceived barriers Condom use self-efficacy	Measures unable to significantly distinguish between nonusers and consistent users Only assertiveness (as part of self-efficacy factor) distinguished sporadic users from nonusers and consistent users	HBM self-efficacy
Moore *et al*, 1993 Australia	Sexually active volunteer undergraduate students at metropolitan university Ages: 17 – 20 yrs Mean age: 18.74 years N = 144 Convenience sample	No elicitation study reported 2 self-completion questionnaires Second questionnaire within 6 weeks of first questionnaire and within 24 hours of a sexual encounter	Condom use on last sexual encounter	Attitudes to condoms Behavioural beliefs Subjective norm Prior intention Type of relationship Drug and alcohol usage Level of sexual arousal AIDS worry Communication about condom use Condom availability	Significant predictors on condom use: o Prior intention o Communication about condom use o Condom availability o Intention in action o Level of sexual arousal o Perception of disadvantages of condoms use linked to non-usage	TRA

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Murphy, Rotheram-Borus & Reid, 1998 USA	Heterosexual, sexually active, inner city adolescents recruited from 2 community-based centres New York City + Los Angeles Ages: 14-21 years Mean age: not specified N = 132	No elicitation study reported Individual interviews Cross-sectional design	Sexual risk: *high risk (did not use condoms consistently and had number of sexual partners and unprotected intercourse) *low risk – always used condoms regardless of number of partners	Knowledge of AIDS Self-perception of AIDS risk Peer and partner social norms Self-efficacy Outcome expectancies Condom use competence/skills Safe sex negotiation	Condom use (lower risk status) significantly associated with: o Positive partner norms toward safe sex o Outcome expectancies of favourable partner reactions. Significant differences according to gender: females = scored higher on peer norms; males scored higher on partner norms. o Favourable partner reactions and perceived favourable partner norms Significant gender differences: Females = scored higher on peer norms; males scored higher on partner norms Outcome expectances related to approval from others for safer sex were lowest for females in the low-risk group and for males in the high-risk group Condom use not related to: o Self-efficacy o Condom skills	elements of: SLT TRA HBM
Norris & Ford, 1995 USA	Household probability sample of African & Hispanic adolescents & young adults Urban, low-income area Ages: 14-25 years Mean age: 19.1 years	Elicitation study Individual interviews Cross-sectional design	Frequency of condom use over past month Number of months of condom use with partner	Condom beliefs AIDS knowledge Perceived susceptibility Communication about condoms & AIDS Attitudes toward AIDS = own & perceived partners Frequency of thinking	Condom use/non-use determined by: o Condom predisposition (attitudes, social norms + construct availability) o Belief that condoms have negative effects on pleasure negatively affects condom predisposition	HBM TRA Construct Accessibility Model (CAM)

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
	N = 1435			about condoms		
Orr & Langefeld, 1993 USA	Male adolescents receiving reproductive health care at 3 clinics Indianapolis area Ages: 15-19 years Mean age: 17 N = 116	No elicitation study reported Self-completion questionnaire Cross-sectional cohort study	Frequency of condom use Condom use at last intercourse	Self-esteem Self-motivation Behavioural and emotional risks Cognitive complexity STD knowledge STD attitudes Condom attitudes STD risk Health seeking behaviour Reasons for condom use	Condom use associated with: o Perceived benefits (pregnancy prevention + avoidance of STDs) Non-use associated with: o Other risk-taking behaviour No significant differences according to: o Age o Ethnicity o Clinic site o Knowledge o Cognitive maturity	HBM
Orr *et al*, 1992 USA	Female sexually active adolescents from family planning, adolescent & school-based clinics Ages: 12-19 years N = 390	Elicitation study = interviews with 25 respondents Self-completion questionnaire Cross-sectional design	Condom use at last coital episode	Knowledge, attitudes & beliefs regarding STDs and condoms Self esteem Global cognitive maturity Self-motivation Behavioural and emotional risks	Condom use at last coital episode strongly associated with: o Fewer risk behaviours o Less alcohol and drug usage o Greater cognitive complexity (i.e. less egocentricity, greater ability to tolerate ambiguity & greater understanding of social & other behaviours) o Women without sexual experience most likely to intend to use condoms o No direct relationship between general knowledge about STDs and condom use o No differences according to age, race or type of clinic	HBM

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Pendergrast *et al*, 1992 USA	Males attending an adolescent clinic Ages: 11-21 Mean age: 16.5 N = 105	Self-completion questionnaire Cross-sectional design	Frequency of condom use Intention to use condoms	Hassle of condom use Perceived partner attitude Self-efficacy Condom safety Perceived vulnerability to STDs	Significant correlates of intent: o Past condom use o Perceived partner attitude o Self-efficacy o Lower perceived hassle o STD education programme Significant correlates of condom use: o Perceived hassle of condom use o Perceived partner attitude o Self-efficacy o Age	no model specified: elements of TRA/TPB
Pleck, Sonenstein & Ku, 1990 USA	National probability sample of males stratified to over-represent Hispanics and Blacks Ages: 15-19 years N = 1263	Personal interviews	Condom consistency with last partner Condom consistency with recent partners	Subjective expected utility (cost-benefits) of condoms in: Preventing pregnancy = personal benefits Preventing pregnancy = normative benefits Avoiding AIDS Partner expectation Embarrassment + reduction of pleasure associated with condom use	Significant independent association with condom use: o Normative beliefs re. male responsibility o Partner using birth control pills o Frequency of worry about AIDS o Partner appreciating condom use o Embarrassment related to condom use o Parents may find out o Reduction in sexual pleasure	Elements of HBM
Reinecke *et al*, 1996 Germany	Random representative sample Ages: 14-24 years N = 650 (subsample of 172 who had had sex with new partner in previous year used for analysis)	Self-completion questionnaire Follow-up questionnaire 1 year later Longitudinal panel	Frequency of condom use with new sexual partner over past 12 months	Intention Attitude Norms Perceived behavioural control	Attitudes, norms and perceived behavioural control accounted for 60% of variance in intention Only 10% of variance in behaviour accounted for by intention and perceived behavioural control Past behaviour found to directly affect later intentions + perceived behavioural control	TPB

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
	mean age: not specified	design				
Reitman *et al*, 1996 USA	African American adolescents recruited from a clinic Ages = 12 – 19 years Mean age: 15.86 years N = 312 (subsample used = 114 sexually active adolescents)	No elicitation study reported Self-completion questionnaire Cross-sectional design	Condom use index (condom protected intercourse frequency/[condom protected intercourse frequency + unprotected intercourse frequency]x100	Attitude Perception of HIV risk Efficacy belief Social support Church attendance AIDS risk knowledge	Condom use predicted by: o Positive attitude o Younger age No relationship with condom use: o Risk perception o AIDS risk knowledge	elements of HBM & TRA
Richard *et al*, 1991 Richard & Van der Pligt, 1991 Holland	Sexually experienced adolescent high school students Ages: 15 – 19 years Mean age: not specified N = 822	No elicitation study reported Personal interviews + self-report questionnaire Cross-sectional design	Frequency of condom use with steady partner Frequency of condom use with casual partner Frequency of condom use	o Attitude o Norms o Personal efficacy toward condom usage o Anticipated affective reactions o Sexual experience o Perception of risk o Knowledge of AIDS prevention o Knowledge of AIDS transmission o Previous condom use	o Results analysed according to: o monogamous versus non-monogomous relationships and gender Monogomous group (only sex with one partner): o Self-efficacy + attitude toward condoms = strong effect on condom usage o Condom use on first sexual encounter predicts later condom use o Condom use decreases with frequent sexual intercourse o Older age at first sexual encounter decreases likelihood of usage Non-monogomous group: o For girls, personal efficacy is most important predictor o Personal efficacy also important for boys but mediated by other variables o Anticipated affective reactions	TRA + variables from TIR

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
					significantly related to condom use in males – mediated by other variables for females o Usage increases with age that first had sex for boys o Usage increase with number of partners and decreases with age o Usage at first sexual encounter predicts further usage o Knowledge of AIDS and AIDS transmission not related to condom usage	
Richardson *et al*, 1997 Canada	Grade 9 – 12 high Students from one high school in Nova Scotia Ages: 13-19 years Mean age: not specified N = 640	No elicitation study reported Self-completion questionnaire Cross-sectional design	Condom use: ever had sex without a condom + use of condom for last three coital episodes. Students who answered yes and no respectively included in final analysis	Attitudes toward condom use Social normative beliefs regarding condom use Perceived behavioural control Intention	Condom non-use predicted by: o Female gender o Negative attitude o Weak intention No significance: o Perceived behavioural control o Social norms	TPB

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Rosenthal *et al*, 1992 Australia	Volunteer heterosexual, first-year psychology students Mean age = 18.5 years N = 308	Elicitation study: using focus groups Self-completion questionnaire Cross-sectional design	2 measures: Casual risk (level of risk with casual partner) regular risk (risk with regular partner) Non-risky behaviour = never engaging in risky behaviour or consistently using a condom	Perceived susceptibility Perceived seriousness of AIDS Costs & benefits of using condoms Sources of information General health motivation Health beliefs about AIDS AIDS knowledge Cues to action – receiving AIDS information	o Low correlation between casual and regular risk o For men, HBM failed to predict sexual risk-taking either with casual or regular partners o For women, model significantly predicted sexual risk with casual but not regular partners. o Of health beliefs, only perceived susceptibility contributed significantly to variance in sexual risk for women with casual partners o Knowledge about AIDS = not a significant predictor o HBM did not provide satisfactory model for explaining sexual behaviour in this group	HBM
Rotheram-Borus *et al*, 1995 USA	Gay and bisexual male adolescents seeking services at a social service agency Mean age = 16.8 years N = 136	No elicitation study Interviews + self-completion questionnaires Cross-sectional design	Consistent safer sex = consistent condom use on each sexual act or abstinence	AIDS knowledge Perceived susceptibility to HIV Perceived threat Safer sex attitudes Condom self-efficacy Self-control Perceived peer support Conduct problems Alcohol + drug use Self-esteem Emotional distress Stressful life events	Consistent safe sex significantly influenced by: o Perceived susceptibility to AIDS o Positive attitudes toward safe sex o Greater perceived self-efficacy o Greater perceived self-control o Lower anxiety levels No influence on safe sex: o Knowledge o Perceived HIV threat o Perceived peer support o Self-esteem o Alcohol and drug use o Life stressors	HBM Self-efficacy theory perceived peer norms conduct problems alcohol + drug use stress and coping factors

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Schaalma *et al*, 1993 Holland	Sample of 18 Dutch secondary schools Sub-sample: 137 sexually active adolescents (had intercourse 5 or more times) Ages: 12-19 years Mean age: not specified N = 1018	Elicitation study Self-completion questionnaire Cross-sectional design	Consistent condom use	Attitude Social norms (distinguished between injunctive and descriptive) Self-efficacy Perceived vulnerability Intention	Consistent condom use related to: o Positive attitude toward use o Perception of less negative consequences o Perceived positive social norm o Confidence in abilities to use condoms (self-efficacy expectations) o Intention No influence of perceived vulnerability Non-users perceive greater negative perceptions from parents, peer & esp sexual partners	TRA, TPB, Bandura's self-efficacy theory
Sheeran & Abraham, 1996 Scotland	Selected random quota samples of 16 and 18year olds N =122	Postal self-completion questionnaire Second questionnaire 1 year later to measure condom use (only respondents who had a new sexual partner in intervening period included in final analysis)	Condom use consistency over 1 year period (combination of 4 items = frequency of use ever; frequency of use in past year, frequency of non-use in past year; frequency of intercourse in past year)	Intention Norms Perceived susceptibility to HIV Perceived severity of HIV Benefits and barriers to condom use Perceived effectiveness Condom attractiveness Cues to action (AIDS education campaigns) Relative health value Previous behaviour	Consistent use in past year with new sexual partners significantly predicted by: o Number of lifetime partners o Intercourse frequency o Previous condom use Other variables did not predict use Women, older teenagers + those from higher SES backgrounds reported less consistent use Gender: intention-behaviour correlations significant for men, but not for women	HBM + intention + norms + previous behaviour

University of Cape Town

Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Skinner, 2001 South Africa	Sample of youth from poor semi-rural African townships N = 406 15-30 year olds	Elicitation study Interviews using questionnaire Cross- sectional design	Intent – but also included behaviour = condom use over last 4 months	Norms Attitude Perceived behavioural control Past behaviour Intention	Significant correlates of condom use: o Intention o Perceived behavioural control o Significant correlates of intention: o Attitudes o Norms o Perceived behavioural control	TRA/TBP & lay theory
St Lawrence, 1993 USA	African-American adolescents recruited from clinics, community-based teen centres, after school centres and family service agency waiting rooms Mean age: 15.3 years N = 195	No elicitation study reported Self-completion questionnaire Cross-sectional design	Percentage of intercourse occasions on which condoms used in previous 6 months	Attitude AIDS knowledge Perceived peer sexual norms Perceived personal AIDS risk Condom availability Health locus of control	Significant predictors of condom use: o Condom use at first intercourse o Internal locus of control o Less perceived effect on sexual experience o Greater perceived self-control o Greater AIDS knowledge o Carrying a condom o Positive global attitudes towards condoms o Lower school grade No significant relationship with condom use: o Perceived peer norms o Perceived risk Gender differences: Significant predictors for boys: o Favourable global attitude toward condoms o Having a condom with them Significant predictors for girls: o AIDS knowledge o Favourable global attitudes toward	No theoretical base stated – but elements of HBM

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Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
					condoms o Greater perceived self-control o Internal locus of control	
Terry, 1993 Australia	Sexually experienced heterosexual undergraduate students Mean age = 19.9 years N = 151	Elicitation study Self-completion questionnaire Follow-up self-completion questionnaire to assess actual behaviour Prospective design	Condom use on last sexual encounter	Attitude Norms Self-efficacy Perceived behavioural control Past behaviour Intention Covariates = gender, relationship status	Intentions predicted by:: o Attitude o Norms o Weak evidence to link self-efficacy with intention Behaviour predicted by: o Intention No direct effect of self-efficacy on behaviour Perceived behavioural control = no influence on behaviour or intention	TRA self efficacy perceived behavioural control (TPB)
Warwick *et al*, 1993 Australia	Sexually experienced heterosexual undergraduate psychology students Mean age = 18.6 years N = 138	Elicitation study Self-completion questionnaire Follow up questionnaire to assess actual behaviour Prospective design	Condom use on last sexual encounter	Attitude Norms Perceived susceptibility Barriers to use Benefits of use gender = co-variate	Intention mediated influence of all variables Barriers and benefits effects on intention mediated via their effects on attitudinal and normative components of TRA TRA accounted for more variance than HBM	HBM TRA
Wilson *et al*, 1994 USA	Sexually active black males attending adolescent clinic in Washington Ages = 11-19 Mean age = 16.2 Convenience sample N = 242	No elicitation study reported Structured interviews Cross-sectional design	Ever used condoms	Communication with sexual partners, friends or parents Condom knowledge AIDS worry	Condom use significantly predicted by: o Higher condom knowledge score o Communication with partner about contraception o Multiple sexual partners o Higher SES o Perceived benefit: prevention of STDs	Elements of HBM

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Table 3.2: Studies with condom use as dependent variable and using one of more of theories and or constructs used in this research

Study	Sample	Instrument	Dependent variable	Predictor variables	Results	Theoretical model
Wulfert & Wan, 1995 USA	Convenience sample of predominantly white, sexually active undergraduate students in advanced psychology courses Mean age = 20.3 years N = 105	Self-completion questionnaire Follow-up questionnaire on sexual behaviour 3 months later Longitudinal design	Condom use over 3 month period	Intention Condom use self-efficacy Outcome expectancies/ benefits and barriers Perceived severity and vulnerability Attitude Norms AIDS knowledge Social desirability	Condom use not significantly influenced by: o Number of sexual partners o Risk perceptions of HIV Condom use predicted by: o Intention o Expected consequences of condom use o Perceived social support o Self-efficacy	HBM TRA SCT

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3.4 Studies using the Health Belief Model

A number of the studies used the HBM as their framework for studying condom use. Thus, for example, Hingson *et al* (1990a) tested whether components of the HBM were related to condom use among a statewide survey of 1762 16-19 year olds in Massachusetts using a cross-sectional study design. Condom use was found to be related to the belief that condoms were effective in preventing HIV transmission, worry about getting AIDS, discussion of AIDS with a doctor and/or the carrying of condoms. Barriers to use, such as the belief that they reduce pleasure as well as being embarrassing to use, were highly predictive of non-use. Similar findings were reported among runaway youth in New York (Rotheram-Borus & Koopman, 1991) and incarcerated adolescents in San Francisco (DiClemente, 1991).

A study by Basen-Engquist (1992) supported the usefulness of some of the HBM variables for predicting condom usage. She found that perceived susceptibility to HIV and perceived barriers to condom use were significantly related to both actual condom use and intention to use condoms. Orr *et al* (1992) used the HBM to identify factors associated with condom use among a sample of sexually-active female adolescents attending reproductive health clinics and found that the perceived benefits of condom use were strongly related to actual use. Thus perceiving condoms as an important means of protection from STDs/AIDS and pregnancy was associated with condom use. No direct relationship between general knowledge about STDs and condom use was found. A study by DiClemente *et al* (1992) among sexually active inner-city junior high school students found that the most important determinants of consistent condom use were fewer perceived costs/barriers, the perception that condoms are effective in preventing AIDS (benefits) and a history of fewer than three sexual partners. They also found no association between knowledge and condom use. These findings were substantiated by a study by Orr and Langefeld (1993), who used variables from the HBM to examine predictors of condom usage among a sample of male adolescents at risk for STDs. They found that condom use was influenced by perceived benefits, namely, protection from

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pregnancy and STDs/AIDS. They also found no relationship between knowledge about STDs and condom use for STD prevention.

In a study that used the HBM framework to examine predictors of condom usage in an African setting, Edem and Harvey (1995) found that all the major variables were significant predictors of condom usage. Thus perceived benefits, perceived barriers, cues to action, AIDS knowledge and male gender were found to significantly predict condom usage among a sample of second year university students in Nigeria. AIDS knowledge was, however, inversely related to condom use. Perceived barriers and benefits and gender also predicted intention to use condoms. These studies suggest that adolescents do appear to engage in a cost-benefit analyses of the use of condoms for HIV/AIDS prevention (Hingson & Strunin, 1992). Other studies have shown that condom use is also related to perceived benefits relating to preventing pregnancy as well as preventing other STDs (Hingson *et al*, 1990b, Pleck *et al*, 1991).

A number of other studies, however, found that variables from the HBM had either limited and/or no value in predicting condom usage among adolescents and young adults. Thus a study by Lollis *et al* (1997) that examined the ability of the HBM to predict condom usage and risky sexual practices among white heterosexual college students found that it did not significantly explain condom usage in this group. It did, however, explain a proportion of the variance in multiple sexual partnerships. Similarly, Mahoney *et al* (1995) found that the HBM could not distinguish between condom nonusers, sporadic users and consistent users in a sample of undergraduate students in New York. Rosenthal *et al* (1992) examined the applicability of the HBM to sexual risk-taking behaviour of volunteer first-year psychology students in Australia using a cross-sectional study design. This is one of the few studies that included all the variables of the HBM, including general health motivation and cues to action (see Chapter 2). They found that the HBM failed to predict sexual risk-taking for young men with either casual or regular partners, but significantly predicted sexual risk behaviour for young women with casual but not regular partners. However, of the health beliefs, only perceived susceptibility

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contributed significantly to the variance in female respondents' sexual behaviour with casual partners. Knowledge about AIDS was not found to be a significant predictor. When knowledge was removed from the regression model, the HBM variables accounted for only 13% of the variance in female respondents' scores. A longitudinal study by Abraham *et al* (1996) that used a HBM framework to predict the antecedents of adolescent condom use in Scotland also found that the measures did not predict adolescent condom use. The results of these studies appear to confirm the fact that factors other than those included in the HBM play an important role in adolescent sexual behaviour.

A number of factors could have contributed to the fact that the HBM variables did not predict condom usage in some of the studies reviewed. These include the fact that most of studies use a cross-sectional study design, which results in difficulties relating to the determination of causal relationships between the dependent and independent variables (Ford & Norris, 1995; Hingson *et al*, 1990; Rosenthal *et al*, 1992) (see Chapter 4). Most leave out general health motivation and cues to action and focus only on perceived susceptibility to AIDS as well as perceived barriers and facilitators of condom usage (see Table 3.2). A number of these studies are solely descriptive and/or include some variables from the HBM (e.g. perceived risk) without relating them to the theory (e.g. Ford & Norris, 1995; Laraque *et al*, 1994; Orr *et al*, 1992; Orr & Langefeld, 1993; Wilson *et al*, 1994). Some are also characterised by poor operationalisation of variables. Thus, for instance, Ford and Norris (1995) include perceived partner norm and intention to use condoms as part of attitudes, which makes comparison between studies very difficult. The differences in the results of the Lollis *et al* (1996) study that found no relationship between condom usage and HBM components and Basen-Engquist's (1992) study, which found that condom usage was predicted by HBM components, could thus be due to differential operationalisation of the core variables (Lollis *et al*, 1997). The variables from the HBM have also been found to differently predict different types sexual risk behaviour (Lollis *et al*, 1997) and also to predict differently for different groups of young people. Thus, for instance, differences have been found according to gender (Rosenthal

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et al, 1992) and type of sexual partner (casual versus long-term). It is noteworthy that most of the studies do not include elicitation studies, so that the measures of barriers and benefits might not necessarily be appropriate for the sample population (see Table 3.2). Is is often difficult to know where and why certain questions have been included in the studies and how they link to the HBM.

To summarise, the components of the HBM that appear to have the greatest value for predicting adolescent condom usage are the perceived barriers and benefits dimensions (particularly the benefits of contraception and/or protection against STDs and AIDS). The main perceived barriers that appear to play a role in condom non-usage are perceived diminishment of pleasure and issues related to trust. Thus condom usage among adolescents is linked to perceiving the benefits of condoms as a form of protection against pregnancy and/or STDs and to perceiving more benefits than barriers to use.

Knowledge does not appear to directly influence adolescent condom usage in the majority of studies (see Table 3.1). The only study that showed a significant positive influence of knowledge on condom use behaviour was that of St Lawrence (1993). Three studies found that knowledge negatively predicted condom use (DiClemente *et al*, 1996; Edem & Harvey, 1995; Donald *et al,* 1994). One of the possible reasons for the lack of a proven relationship between knowledge and condom use in many studies is that knowledge may be an enabling factor and/or necessary factor rather than a sufficient factor in adolescent condom usage. Thus it may be an important prerequisite for other factors found to influence condom use more directly (Donald *et al*, 1994). Social assertiveness has, for instance, been found to be associated with AIDS knowledge (Ross *et al*, 1991) and it is also very difficult to separate knowledge from beliefs (Orr & Langefeld, 1993). Thus, for instance, adequate knowledge is a prerequisite for acknowledging the benefits and effectiveness of condoms as a protection against HIV/AIDS.

Perceived seriousness of the threat of AIDS also does not appear to directly influence adolescent condom usage in most of the studies (refer to Table 3.1). Rosenthal *et al*

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(1992:170) feel that one of the reasons is that "in the case of AIDS, very high levels of seriousness are combined with a long delay in onset of the disease, a factor which may also contribute to problems in predicting behaviour from rational decision-making models since the positive outcomes of 'good', and negative outcomes of 'bad' behaviour are not immediately, or even soon, apparent." A further explanation could be that increasing perceptions of threat among those who already acknowledge personal susceptibility may result in denial and thus lead to an increased likelihood of risk behaviour (Sheeran & Abraham 1996). In addition, perceived risk and/or seriousness of AIDS may be a necessary step in the process of changing risky sexual behaviour, but may not be related to actual behaviour performance as is the case for knowledge (Fishbein, Chan, O'Reilly, Schnell, Wood, Beeker & Cohn, 1992).

Results regarding perceived worry about contracting HIV also reveal mixed findings. Whereas Cochran and Peplau (1991), Hingson *et al* (1990b) and Pleck *et al* (1991) found that levels of worry about HIV/AIDS were significantly related to condom use, a number of other researchers have found no link between worry/fear of HIV and condom use behaviour (Brown *et al*, 1991, Catania *et al* 1989 – see Table 3.1). Cochran and Peplau (1991) conceptualise worry about AIDS as a motivating cue to action (see discussion of HBM in Chapter 2).

In summary, the above studies present mixed findings regarding the applicability of the HBM model to predicting condom usage among adolescents. Whereas some studies show that the HBM explains a substantial amount of variance in condom usage, others have found no significant relationship between HBM variables and condom usage. It is for this reason that researchers are increasingly adding other variables such as perceived self-efficacy and a normative component to the model (Adih & Alexander, 1999; DiClemente & Fisher, 1992; DiClemente & Horan, 1992; Laraque *et al*, 1997). They substantiate the criticism often levelled at the HMB and other theories based on a model of rational decision-making (e.g. TRA), that adolescent sexual behaviour is multi-determined and that other non-rational processes appear to play a vital role in condom

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usage (see Chapter 2). "While beliefs about susceptibility to and seriousness of AIDS, and about the benefits of, and barriers to condom use may be important, these must be considered alongside the contribution of other factors. Among these, we contend, are perceptions of the meanings and obligations associated with love and relationships, as well as domain-specific factors, such as the ability to communicate about sexual matters and to assert one's right to make sexual decisions" (Rosenthal *et al* 1992: 170).

3.5 Studies using Social Cognitive Theory

Very few studies used the social cognitive theory framework to study adolescent condom use behaviour. In a study that did attempt to apply the SCT to adolescent condom use behaviour, Kasen *et al* (1992) surveyed 181 urban tenth grade learners to measure past year involvement in sexual intercourse and condom use, beliefs about self-efficacy for AIDS preventive behaviours, and beliefs about susceptibility to and severity of AIDS and outcome efficacy of AIDS preventive actions. They found that those learners with lower self-efficacy for correct, consistent condom use were five times less likely to have used condoms consistently. These associations remained even after adjusting for the influence of other AIDS-related beliefs. DiClemente *et al* (1996) examined the demographic, social-cognitive and behavioural correlates of condom use among African-American adolescents in public housing developments in San Francisco using social cognitive theory as a framework. They used a longitudinal study design and a follow-up interview was conducted six months after the initial baseline interview. They found that adolescents who had high assertive self-efficacy to demand condom use, perceived peer norms as supporting use, had greater impulse control and were younger and male were more likely to report consistent condom use. Self-efficacy to assert condom use was the most powerful determinant of consistent use. DiClemente *et al* (1996) found self-efficacy to assert condom use to be a key determinant of consistent condom use among adolescents in their study. Adolescents who had high self-efficacy to assert that condoms be used during sexual intercourse were almost 11 times more likely to be consistent condom-users relative to their less assertive peers. This relationship was consistent

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across gender and age. This was substantiated by Kasen *et al* (1992) in a study of tenth grade learners in which deficits in self-efficacy were found to be significantly associated with decreasing likelihood of consistent condom use.

A study by Adih and Alexander (1999) combined constructs from the HBM and SCT to predict condom use of sexually active adolescent and young adult males in Ghana. They found that self-efficacy was the strongest predictor of ever having used a condom. Condom use was also significantly predicted by fewer perceived barriers and high levels of social support. Barriers were found to interact significantly with perceived susceptibility to HIV and with perception of self-efficacy to use condoms. Respondents who perceived themselves to be at high risk for HIV and who perceived low barriers to condom use were significantly more likely to use condoms.

Most of the above studies that attempted to apply the SCT to condom use behaviour, have found that perceived self-efficacy significantly influenced condom use. Self-efficacy is undoubtedly the most important contribution of the SCT to the study of health behaviour and a number of studies have included it as a predictor variable for adolescent condom use behaviour without necessarily including the other components of SCT (Kasen *et al*, 1992; Rosenthal *et al*, 1991). Self-efficacy has also been added to a number of the other models, such as the HBM and TRA to help predict condom use (see Table 3.2) and has been shown to be a significant predictor of condom use in a number of these studies (Basen-Engquist & Parcel, 1992; DiClemente & Horan, 1992; Rotheram-Borus *et al*, 1995; Schaalma *et al*, 1993; St Lawrence, 1993; Wulfert & Wan, 1995).

A few studies, however, found a negative, low or no association between condom use and self-efficacy (see Tables 3.1 and 3.2). Thus Catania *et al* (1989), Orr *et al* (1992), and Murphy *et al* (1998) found no significant relationship between self-efficacy and condom use. In a study with first year students in Australia, Rosenthal *et al* (1991) found that sexual self-efficacy and self-esteem accounted for less than 10% of the variance in condom usage. This could be attributable among other things to a gap between what

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adolescents believe they can do and are physically capable of doing (e.g. actual ability to use a condom) and their behaviour. Thus Murphy *et al* (1998) found that while males and females in their study both had high self-efficacy for the ability to use condoms and could actually demonstrate that they could use a condom, 30 - 50% of their sexual intercourse acts were unprotected in the three months prior to the study. Similarly Rosenthal *et al* (1991) in a study among Australian first year students found that confidence in their ability to take sexual precautions only accounted for a small amount of the variance in sexual risk-taking and related it to the spontaneous nature of sexual activity. They felt that translating confidence in dealing with sexual precautions into actual behaviour is a matter of pre-planning rather than impulsiveness. Abraham, Rubaale and Kipp (1995) found in a study of Ugandan adolescents that women who felt most able to discuss sexual histories with their partners were less likely to intend to use condoms with a new partner. According to Abraham *et al* (1995), this may mean that women are relying on their communication skills to differentiate between 'safe' and 'risky' partners and corresponds with O'Leary *et al*'s (1992) finding that high self-efficacy in relation to the ability to assess partners' risk status through questioning was associated with higher levels of unprotected intercourse among US adolescents.

Breakwell *et al* (1994) found that confidence in handling sexual relationships was negatively related to condom use. The less confidence a person had, the more likely they were to use condoms. They speculate that confidence issues might be separate from control issues when related to condom use and suggest that more research is needed to clarify the nature of self-efficacy related to a behaviour such as condom use.

The influence of self-efficacy has also been found to vary according to gender and/or type of sexual relationship. Thus Murphy *et al* (1998) found that females had higher self-efficacy for making condom use enjoyable and planning to avoid risk situations, but were less comfortable than males when demonstrating condom skills. This was substantiated by Kasen *et al* (1992) who found that girls appeared to be more sure of their ability to refuse sex without a condom than boys. Rosenthal *et al* (1991) found that while males in

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their study had higher levels of self-esteem regarding their ability to assert their sexual needs, they were less confident than females to say no to sexual demands. Perceived sexual self-confidence also differed according to the type of partner, and factors which predicted risk behaviour with a casual partner differed from those which predicted risk with a regular partner. Likewise Marin, Gomez & Tschann (1993) found that self-efficacy to use condoms strongly predicted actual use with a secondary partner, which was in turn strongly predicted by prior use of condoms.

In summary, it appears as if particularly the variable of perceived self-efficacy from the SCT plays an important role both in adolescents' intention to use condoms as well as condom usage in the majority of studies in which it has been included. However, its relative value differs according to gender and/or type of sexual relationship.

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3.6 Studies using the Theory of Reasoned Action and the Theory of Planned Behaviour

A number of studies have attempted to apply the TRA and/or TBP to the prediction of adolescent condom usage (see Table 3.2). Adler *et al* (1990) in a study of sexually active adolescents seeking health care found significant associations between intention to use condoms and their actual use. Intention was significantly related to attitudes and subjective norms. Attitudes were in turn significantly predicted by beliefs as conceived by the TRA. Likewise general norms were significantly related to the summary score of the perceived desires of significant others multiplied by the desire to comply with these. Schaalma *et al* (1993) found that attitudes, subjective norms and self-efficacy expectations were important determinants of intended condom use among a sample of Dutch secondary school pupils. Condom users were more likely to have a positive attitude toward condoms, perceive less negative and/or more positive consequences of use, perceive positive social norms for condom use and/or show confidence in their ability to ensure consistent condom usage in line with the TRA. Likewise Jemmott and Jemmott (1991) found strong support for the TRA in their study of black woman undergraduate students. They found that condom use was significantly associated with

attitudes, subjective norms and intentions. While both attitudes and norms were found to determine intentions to use condoms, attitudes were stronger determinants than perception of normative support among key referents.

A number of studies, however, provide less convincing support for the utility of the TRA and TPB for the prediction of condom use among adolescents. Fisher *et al* (1995) applied the TRA to explore the factors influencing a range of AIDS-preventive behaviours among a convenience sample of 355 ninth grade high school learners using a longitudinal study design. They investigated a number of AIDS-preventive behaviours, which included not having sex at all, always using latex condoms, trying to convince a partner to practice only safe sex and/or refusing to have sex without a condom. Behavioural intentions were found to predict all behaviours except condom use. Intentions to use condoms were found to be a function of both attitudes and subjective norms for girls, but only a function of attitudes for boys. Attitudes toward condom use were significantly correlated with beliefs about the consequences of these acts multiplied by the evaluations of these consequences for girls but not for boys. Subjective norms were significantly correlated with perceptions of salient referents' wishes and motivation to comply with these for both boys and girls. These results appear to question the utility of the TRA as a conceptual framework to understand condom use behaviour but provide support for its use for other AIDS-preventive behaviour among high school learners.

Boldero *et al* (1992) examined the predictive validity of the TRA to assess the effects of situational contextual factors on condom use in a sample of 144 sexually active adolescents. Condom use was predicted by intention, which was in turn predicted by attitudes to condoms. Subjective norms, however, were not found to significantly predict either intention or behaviour. The study found that intention changed over time and that its predictive ability increased the closer it was measured to actual condom use. This study also highlights the importance of variables not included in the TRA for predicting condom use. Thus communication with partners, sexual arousal and condom availability were found to be significant predictors of use. The researchers conclude that the study

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provided only limited support for the TRA in predicting safer sex behaviour with this sample of adolescents (Boldero *et al*, 1992). The importance of behavioural conditions (environmental constraints) was also highlighted by a study using the TRA and TPB to investigate condom usage among Australian undergraduate students (Kashima *et al*, 1993). They found that condom availability and agreement with a partner to use condoms significantly predicted use.

A study that used the TPB to examine factors influencing condom use among high school learners in Canada by Richardson *et al* (1997) also did not find convincing support for this model in predicting adolescent condom use. They found that only negative attitudes toward condoms, female gender and having weaker intentions to use condoms were significant predictors of having sex without a condom. Inconsistent with the TBP, perceived behavioural control was not associated with intention to use condoms or actual condom use and no relationship was found between social normative beliefs and intention or actual condom use.

Reinecke *et al* (1996) used a longitudinal panel design study to determine factors affecting condom use with new sexual partners in a representative sample of German youth. They found that intentions and perceived behavioural control were poor predictors of condom use during the follow-up survey and accounted for only about 10% of the variance in reported condom use. This study showed that increased condom use led to increased perceived ability to use condoms. The study questions both the specified directions of causality in the TPB as well as its sufficiency. Thus past behaviour was found to exert a direct effect on later intentions unmediated by attitudes, subjective norms and perceived behavioural control. They also found that intentions, beliefs and attitudes changed considerably over the one year period of measurement.

A number of other studies provide positive support for the inclusion of intention as a mediating factor between attitudes, beliefs and/or perceived self-efficacy/behavioural control and condom use. Thus, for instance, Adler *et al* (1990), Basen-Engquist (1992)

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and Fisher *et al* (1995) found that intention significantly predicted adolescent condom use. A number of studies also provide support for the hypothesis that adolescents' intention to use condoms is in turn predicted by attitudes and norms (Boldero *et al*, 1992; Fisher *et al*, 1995; Jemmott & Jemmott, 1991). However, it has also been shown that the relative importance of the predictors of intention to use condoms may vary according to both the population group as well as the behaviour being studied (Reinecke *et al*, 1996; Richardson *et al*, 1997). Thus, Fishbein (1990), in a cross-cultural comparative study using the TRA as a framework, found that regular condom use was best predicted by subjective norms for students in the United States, whereas the best predictor for male Mexican students was their attitude toward condom use and for female Mexican students, both subjective norms and attitude.

In summary, the above studies provide conflicting evidence about the usefulness of the TRA and TPB models for predicting adolescent condom usage. Some of the studies (Adler *et al*, 1990; Basen-Engquist & Parcel, 1992; Fisher *et al*, 1995; Schaalma *et al*, 1993; Skinner, 2001) find strong evidence that norms, attitudes and/or perceived self-efficacy influence adolescent decision-making about using condoms. Other studies provide less convincing support and question the validity of both the TRA and TPB for adolescent condom use (Boldero *et al*, 1992; Reinecke *et al*, 1996; Richardson *et al*, 1997). They point to the importance of factors not included in either of the models in explaining a behaviour like condom use. These include situational and contextual factors, such as past condom use, communication with a sexual partner about condoms, sexual arousal, emotional factors, condom availability and gender power relations (Boldero *et al*, 1992; Fisher, 1984; Kashima *et al*, 1993; Reinecke *et al*, 1996). In addition, as shown by the Reinecke *et al* (1996) study, beliefs, attitudes and intentions to use condoms can change over a relatively short period of time. The studies also present conflicting evidence on how exactly the various factors in the model relate to each other and to condom usage. Some studies, for instance, find that attitudes are the strongest predictors of condom use (Reitman *et al*, 1996) whereas others show that attitudes influence usage via intention (Basen-Engquist & Parcel, 1992). Fisher (1984) found that

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emotional and cognitive factors influence condom behaviour independently and that emotional factors do not influence behaviour via intention but directly. These studies, therefore, suggest that it might be useful to use constructs from the TRA and TPB in conjunction with some of these other predictors to account for more variance in condom use behaviour.

In interpreting these results, one once again needs to be cautious about the limitations inherent in many of these studies (see also Chapter 2). It is likely that factors such as the lack of elicitation studies, lack of specificity in relating beliefs, norms and self-efficacy measures to the behaviour under study; large time gaps between the measurement of intent and actual behaviour and/or cross-sectional study design factors could have negatively influenced the results, and thus lessened the predictive power of some these models. A number of studies (Adler *et al*, 1990; Basen-Engquist & Parcel, 1992; Boldero *et al*, 1992; Brown *et al*, 1992; Richard & Van der Pligt, 1991; Richard *et al*, 1991; Schaalma *et al*, 1993) do not report using elicitation studies despite the fact that Ajzen and Fishbein (1980) propose that it is essential to conduct these types of studies to identify salient beliefs and norms.

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3.7 Studies using the Theory of Subjective Culture and Interpersonal Relations

There are only a few studies that use concepts from Triandis' theory to investigate factors influencing adolescent condom usage. Boyd and Wandersman (1991) compared the usefulness of the TRA and a version of Triandis' theory in predicting condom use among a sample of college undergraduates. They wanted to establish whether the Triandis model increased the explanatory power of the TRA to predict condom use and intention. They used a longitudinal study design and the initial data collection was followed after three months by a measure of behaviour, namely, the frequency of condom use in the three month period between initial data collection and the follow-up. The added variable of personal normative beliefs from the Triandis model was found to increase the explanatory power of the normative belief component of the TRA. In addition, perceived

susceptibility, AIDS fear and past condom use behaviour also increased the predictive power of the TRA. Boyd and Wandersman (1991) found that the Triandis model explained almost twice as much variation in condom use as the TRA (53% versus 27% respectively). Much of this increase was, however, due to past condom behaviour in the Triandis model. Godin *et al* (1997) also used factors from Triandis' model together with the TPB to attempt to identify factors predicting intention and condom use among a sample of 152 adolescents in juvenile rehabilitation centres. They found that intention to use condoms was explained by personal principles/norms and the habit of using condoms in the last three months, whereas actual condom use was significantly predicted by the interaction between intention and perceived behavioural control and between habit and perceived behavioural control. Richard and Van der Pligt (1991) also included some of the variables of the Triandis model together with variables from the TPB in their study of determinants of condom usage among Dutch adolescents. They included anticipated affective reactions associated with the use of a condom and also past sexual behaviour in addition to the TPB variables. They found that attitudes toward condom use predicted actual use for adolescents in monogomous relationships but not for those in casual or non-monogomous relationships. Subjective norms were not significant predictors of condom use for either group, whereas both perceived self-efficacy and the use of a condom at first intercourse proved to be significant predictors.

The importance of the influence of past condom use/habit on both adolescent intention to use condoms as well as actual condom use has been substantiated by a number of other studies. Reinecke *et al* (1996) found that past condom use exerted a direct effect on intentions to use condoms that was not mediated by attitudes, subjective norm or perceived behavioural control and Kashima *et al* (1993) found that past condom use directly influenced present condom use. Brown *et al* (1992) in a study among adolescents in Rhode Island found a significant relationship between past condom use behaviour and future intentions. Those adolescents who intended to use condoms were more than four times more likely to have used condoms in the past. DiClemente *et al* (1996) in a prospective study among African-American adolescents found that the best predictor of

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condom use was previous level of consistent condom use. Both studies suggest that when condom usage is established it can be resistant to change. This was further confirmed by another study by Wingood and DiClemente (1998) among young adult African-American women. Richard *et al* (1991) in a study among Dutch adolescents found that previous condom use was related to use of condoms at first intercourse and that anticipated affective reactions also played an important role in frequency of condom use.

All of the above studies show that the additional variables from Triandis' model appear to have explanatory value in predicting condom use among adolescents. Especially an affective component of attitudes toward condoms, habit or past condom use and personal normative beliefs regarding condom use appear to be variables that merit further inclusion in studies of adolescent condom use. The above studies appear to provide support for Triandis suggestion that once behaviour has been initiated it is likely to impact of future intentions and behaviour (Triandis, 1977).

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3.8 Studies using the Construct Availability Model.

According to the CAM, persons who frequently think or talk about condoms are more likely to use them. A number of studies have shown results consistent with this model. Norris and Ford (1995) in a study of urban, low-income African-American and Hispanic youth found that a new construct which they called condom predisposition was strongly related to condom use. "This concept reflects an integration of the TRA and CAM in that it combines measures of attitude and social norms (i.e. partners' attitude toward condom use) with measures of accessibility (i.e. thinking and talking about condoms)" (Norris & Ford 1995:1823). A number of other studies have shown that communication with a partner about condom use is significantly associated with actual use (Biglan *et al*, 1990; Catania *et al*, 1989; Boldero *et al*, 1992; DiClemente, 1991 – see also Table 3.1). Boldero *et al* (1992) in a study of Australian college students found that communication with a partner about using condoms predicted both condom use as well as intention in action. Thus those respondents who had communicated with their partners about condom

use had a stronger intention to use a condom immediately before a sexual encounter and were more likely to use one. These studies appear to substantiate the importance of including construct accessibility variables, such as thinking and/or talking about condoms among potential predictors of condom usage among adolescents.

3.9 Studies using combined models

A number of the studies that investigated adolescent condom usage attempted to combine elements of the various theories included in the current research. Ford and Norris (1995) used constructs from the HBM and TRA to examine factors related to condom use with casual partners among urban African-American and Hispanic young males, Rotheram-Borus *et al* (1995) used health belief, social cognitive, peer support, risk-taking and stress/coping models to examine predictors of safe sex practices among gay and bisexual male adolescents and Basen-Engquist (1992) used variables from social learning theory, health belief model, theory of reasoned action, and theory of cognitive coping style to measure frequency of condom use and discussion of AIDS and past partners with a sexual partner. As can be seen from these examples, many of these studies contain such a wide variety of combinations of concepts and/or theories applied to different groups of adolescents that it becomes very difficult to compare and summarise the findings (see Table 3.2).

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3.10 Summary

There is considerable variation in the social-cognitive constructs used, their definition, populations studied, research methodologies as well as the results of the studies reviewed in this chapter. The studies reviewed show that the theoretical models studied and individual variables tested appear to differ in their applicability based on the type of precautionary HIV behaviour. Thus Reitman *et al* (1996) found that a positive attitude to condom use was the strongest predictor of use in their study. Basen-Engquist (1992) found that perceived susceptibility and barriers from the HBM predicted condom use,

whereas self-efficacy and social support were associated with negotiating safer sex and intention to discuss related issues. Other studies found that self-efficacy was most strongly correlated with condom use (Basen-Engquist & Parcel, 1992; Kasen *et al*, 1992), whereas attitudes and norms were most strongly predictive of number of sexual partners in the past year. Similarly, Reitman *et al* (1996) found that positive attitudes toward condoms was the strongest predictor of actual condom use whereas lower self-efficacy was most strongly related to high-risk sexual practices. According to Reitman *et al* (1996:512), 'the health belief model and the theory of reasoned action may perform better when our objective is to quantify behaviors that are under the control of proximal aspects of the environment and behavior. By contrast, social learning approaches may be required to account for more complex behavior under the control of more distal variables (e.g. political, economic factors)".

The studies reviewed also highlight the importance of differentiating between adolescent subgroups (e.g. according to gender, ethnicity, age) and between types of relationships in attempting to understand the factors that affect adolescent condom usage (Murphy *et al*, 1998; Norris & Ford, 1994-5; Fishbein, 1990; Rosenthal *et al*, 1992). Gender and ethnicity were found to interact and gender differences within ethnic groups did not necessarily represent ethnic differences in general (Norris & Ford, 1994-5). This, therefore, suggests that the core constructs need to be studied separately for ethnic-gender groups.

The studies reviewed, however, also reveal commonalities in the determinants of adolescent condom behaviour and it appears as if each of the theories is capable of explaining at least some of the variance in adolescent condom use. This will, however, probably differ according to ethnic-gender groups. The variance that is found in adolescent condom usage is explained largely by constructs tapping into three core variables that link to the cognitive domain (more specifically the cost-benefit dimension/attitudes/perceived barriers and facilitators), social cognitive domain (subjective norms) and perceived self-efficacy/behavioural control. The relationships

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between these core variables are, however, complex, subject- and context-specific and interactive and often result in a synergistic effect on condom use (Adih & Alexander, 1999). The contribution of these three core variables to explaining variance in adolescent condom usage is substantiated by a study by Wulfert and Wan (1995) in which they compared the HBM, SLT and TRA. They found that the three core concepts, namely, expected consequences of condom use (particularly negative consequences), perceived social support and self-efficacy explained 50% of the variance in condom use. However, it is important to remember that these variables may be only appropriate in the context of consensual sexual encounters. Wulfert and Wan (1995:310) warn that "whether they are useful in circumstances in which sexual behavior is influenced by implicit or explicit coercion, rigidly defined cultural expectations, heavy intoxication, or other factors that may interfere with free choice awaits the outcome of further research". In addition the studies appear to argue for the inclusion of measures of thinking and talking about condoms (CAM factors).

In summary, the above studies highlight the importance of integrating concepts from different health behaviour theories in order to lead to a better explanation of the social-cognitive predictors of adolescent condom use. The urgent need for further research in this area is highlighted by the lack of South African studies, the apparent subject and context-specific nature of the predictor variables, the uncertainty regarding the nature and direction of causality of the core constructs as well as the questionable sufficiency of the core variables to explain adolescent condom behaviour. It is this need in a specific South African context that this research hopes to address.

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CHAPTER FOUR

METHODOLOGY

In this Chapter a description of the sample, variables and methodology used in the study will be presented.

4.1 Sample

The study population comprised grade 11 learners attending public schools in the Cape Town metropolitan area. A three-stage sample was used. Schools were stratified by postal code groupings and 38 schools were selected such that the proportion of selected schools in a selected stratum was directly proportional to the number of students in that stratum. Within each stratum, the selection probability of a school was proportional to the number of students in that school. Within each selected school, 40 students were randomly selected from the combined class lists of two randomly selected grade 11 classes. In order, however, to have a large enough sub-sample of Black[1] learners, the number of Black learners was over-sampled.

Four of the original schools selected were not willing or unable to participate in the study. Two felt that the questionnaire was too sensitive for their learners and the other two were unable to administer it due to exam pressure. These schools were each replaced by another randomly selected school in the same postal code area. Two of these replacement schools, however, were again unable to participate in the study due to exam and timetabling pressure. I decided not to replace these schools as this would increase the possibility of sampling bias. As a result the final sample comprised 36 instead of the original 38 schools.

[1] Under Apartheid, all South Africans were officially classified by 'race' according to the Population Registration Act of 1950. The 'racial' categories that were used were: 'Black', 'Indian', 'White' and 'Coloured'. The Act was repealed in 1991. I acknowledge that using 'racial' labels is problematic, however, these designations continue to influence the schools that pupils attend, the communities they live in, and their socio-economic and health status.

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The total sample size was 1987. Of these, 13 respondents were Asian and were excluded due to their small number. A further 43 questionnaires were discarded due to incomplete responses. The analysis was confined to the remaining 1931 learners.

4.2 Data collection

Permission to conduct the research was given by the Western Cape Education Department (WCED). Schools were approached individually for participation in the research project. Each school was asked to supply the research team with a list of the names of all grade 11 learners in each class. The names of the selected learners were then given to the school. Passive parental consent was obtained by sending letters to all relevant parents explaining the purpose of the research and allowing them the possibility of withdrawing their child from the study. No parents refused to let their children participate in the study. Individual arrangements were then made with each school for the administration of the questionnaire.

A team of trained research assistants administered the anonymous self-report questionnaire. We decided not to involve either the school principal or the teachers in the administration for a number of reasons. Firstly a standardised administration procedure was desirable and this would have been very difficult to attain given the large number of different schools that participated in the study. In addition, by administering the questionnaire ourselves, we increased the probability of gaining access to the schools, as minimal demands were being made on the resources of the schools. Another important reason for excluding principals and teachers from the administration was that learners were less likely to be suspicious of the research and also more likely to give honest answers if they felt that their answers were not accessible to either the education department or their school. This increased the validity of the responses.

Thus the only people present in the classrooms (besides the learners) during the questionnaire administration were members of the research team. At the beginning of each session, a member of the research team drew attention to and elaborated on the rationale for the study and gave instructions on how the questionnaire should be completed. In addition, respondents were reassured that their answers would remain

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anonymous and they were given the chance not to participate in the research. Learners were asked if they had any questions about the questionnaire or research and were encouraged to ask the research team questions during the administration if they did not understand a question. After completion of the questionnaire learners were instructed to place their completed questionnaires in a blank envelope supplied to each learner for this purpose. It was hoped that this would also increase the validity of the responses. No learners refused to complete the questionnaire.

The questionnaire was administered in a similar way to examination papers. Learners were asked not to speak to each other while completing the questionnaire, and not to look at each other's answers. Two research assistants were present in each classroom to help administer the questionnaire and also to clarify questions. We experienced no problems with the administration and learners were very co-operative and willing to participate in the project.

The venues and group sizes varied between the schools. In some cases questionnaires were administered in the classrooms, whereas in others a larger room or school hall was used. There were separate versions of the questionnaire for male and female respondents (see Appendix) and learners were given the questionnaire either in their home language or in the language of their choice.

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4.3 Questionnaire development

The closed theory-based questionnaire used in this study was developed over three stages. Firstly, formative research in the form of an elicitation study was conducted using focus group interviews in order to determine which norms, beliefs, perceived behavioural control beliefs, barriers and facilitators to condom use would be salient for each of the subgroups in this study. A pilot questionnaire was then developed based on the elicitation study, which was then given to key informants, who were asked to comment on the questions based on their expertise in this field. After this two pre-tests of the instrument were conducted. This process will be described in more detail below.

4.3.1 Elicitation study

In research of this nature that attempts to apply theory, it is important that it is both behaviour and population specific. According to Fishbein (2001:137), "...a good behavioral theory requires one to conduct formative research to understand the behaviour being investigated from the perspective of the particular population or culture being studied." In order to elicit the population specific content of key independent variables in this research, a series of open-ended semi-structured focus group interviews were held with grade 11 learners.

A focus group interview is a qualitative research technique in which an interview is held with a small group of people, usually between 6 and 8, about a specific topic in order to obtain in-depth views and feelings about the topic (Basch, 1987; Patton, 1990). The use of focus group interviews is in line with the recommendations made by Fishbein *et al* (1992) and Fishbein and Middlestadt (1989) that it is essential to acknowledge the population-based specificity of the various social-cognitive behavioural predictors. Thus, for instance, Ajzen and Fishbein (1980) maintain that it is critical to identify in open-ended elicitation research, the specific beliefs and referents associated with the behaviour one is measuring.

In line with suggestions by Fishbein *et al* (1992), an elicitation study using open-ended semi-structured focus group interviews was thus used to identify four classes of independent variables, namely:

1. perceived outcomes of using condoms (behavioural beliefs)
2. relevant referents (subjective norms)
3. perceived facilitators of and barriers to condom use (behavioural beliefs)
4. characteristics, qualities and attributes of people who do and do not use condoms (self-standards)

The question guidelines used for the focus groups are in the Appendix. These were based on suggestions made by Fishbein *et al* (1992). Probe and follow-up questions were used throughout the interviews in order to encourage discussion.

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Focus group interviews

Focus group interviews were used to collect the data for the elicitation study, as they have a number of advantages in this type of research. These include the fact that adolescents are often more responsive and spontaneous in semi-structured group settings, and that they allow the views and opinions of a number of respondents to be expressed in a short period of time. In addition considerable interaction occurs between group members, which encourages the expression of a range of views. Interaction also allows participants to ask each other questions and to re-evaluate and reconsider their own understanding of their experiences and views (Kitzinger, 1995; Shedlin & Schreiber, 1995). These interviews are also particularly appropriate for facilitating discussion on difficult and taboo topics as the less inhibited members often break the ice for shy participants (Kitzinger, 1995). In addition, focus group interviews are also very useful for studying dominant cultural values, which in this case relate to sexuality (Kitzinger, 1995). A further advantage is that "focus group interviews provide some quality controls on data collection in that participants tend to provide checks and balances on each other that weed out false or extreme views" (Patton 1990: 335-6).

Focus groups are, however, sometimes criticised in that they may silence the voices of individuals who do not appear to agree with the dominant group norms. Some participants might feel that the group situation compromises confidentiality, particularly in a sensitive area such as condom use (Kitzinger, 1995). In order to address these issues, participants were not asked about their own personal behaviour regarding condoms and sex, but rather to express what they thought other adolescents like themselves were doing and thinking. In addition, I made an effort to stress that there was no one correct view, that all views were acceptable and tried to create a non-judgemental and trusting atmosphere. I also tried to make sure that nobody dominated the group discussion and that every group member was given a chance to express views on every question asked in order to encourage the participation of the shyer group members.

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Participants

The sample used for the elicitation study was chosen from the same pool of learners that were used for the research and to represent a range of the total study population. They were, however, not used again in the main sample. The participants comprised a non-probability purposive sample of grade 11 adolescents chosen to represent both genders from the main ethnic groups found in the Cape Town metropolitan area. Ten focus group interviews (with between 5 and 8 learners each) were held with grade 11 adolescents aged between 16 and 19 years. In total 62 learners were interviewed. Focus group interviews were held at 5 different schools, which were chosen based on easy accessibility and to include the various ethnic groups targeted by the study.

Table 4.1: Sample characteristics of focus groups

	Male	Female
White	8	7
Coloured	10	12
Black	15	10
TOTAL	33	29

Data collection

Permission to conduct the study was given by the Western Cape Education Department (WCED). Groups were arranged by the guidance teacher in each school, who also selected the learners for the groups. They were requested to select learners whom they thought would represent a range of opinions about condoms. Participation in the focus groups was entirely voluntary and anonymity and confidentiality of responses was guaranteed to the participants. Passive parental consent was obtained by sending letters explaining the nature of the study to all the relevant parents.

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Two focus group interviews were held in each school. Separate groups were held for males and females as it was felt that same-sex groups would allow for a less inhibited discussion of the topics concerned. All group interviews were conducted by the researcher, who has considerable experience with focus group work. They were each held in a separate, private room and a non-threatening supportive atmosphere was created to enable participants to express their views as freely as possible. All interviews were conducted in English. The interviews were audio-taped with the consent of the participants and then transcribed verbatim. Each focus group interview lasted between one and one and a half hours and was semi-structured in terms of the main independent variables (see Appendix A for a list of the guiding questions for the focus group interviews).

Data analysis

The purpose of the analysis reported on here was solely to obtain relevant content for the instrument used in the study. Content analysis was used to develop the relevant categories/themes for inclusion in the questionnaire (Weber, 1990).

The verbatim transcripts of the focus group interviews were analysed using thematic coding and analysis (Knodel, 1994). This was done by a master's student trained in qualitative coding techniques and myself. The initial thematic codes used were based on the focus group discussion guidelines, which were in turn based on the main constructs in the proposed model underpinning this research (see Chapter 2).

Summary analyses were conducted in which statements were placed under the following headings:

1. positive beliefs and negative beliefs about condom usage
2. people/groups thought to encourage and discourage condom use
3. factors/situations that make it easier or more difficult to use condoms
4. qualities of people perceived to use condoms and qualities of those perceived not to use condoms

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Once this was done, statements were organised into key themes/characteristics and then used to design questions for the questionnaire.

I used an independent coder to code random sections of each transcript. We found that we agreed on most of the coding. Where there were differences, we discussed these and agreed on a common coding strategy.

4.3.2 The questionnaire

The self-completion questionnaire used in this study included items pertaining to the demographic characteristics of the learners (gender, age and race classification), sexual experience and condom use as well as items that measure the potential correlates of condom usage that pertain to the model being tested in this study.

The content of the questions was derived from the literature, particularly on suggestions made in the Fishbein *et al* (1992) paper, the most frequently mentioned statements/characteristics mentioned in the elicitation study described above and expert advice[2].

The questionnaire was originally developed in English and then translated into Afrikaans and Xhosa, the other two main languages spoken in Cape Town. It was then back-translated by other experts who spoke these languages as home language in order to ensure face validity.

Two different versions of the questionnaire were developed, one for males and one for females. The two questionnaires differed in the wording of the questions relating to condom use. In the male version of the questionnaire, questions were asked about actual condom use. In the female version, questions were asked about making sure that the respondent's sexual partner always used a condom during sex (see Appendix B for the male and female versions of the questionnaire).

[2] Feedback on the questionnaire was obtained from Prof. Alan Flisher , University of Cape Town; Prof Sandy Lazarus, University of the Western Cape, Dr. De Wet Schutte of the Human Sciences Research Council; Dr Jackie Green and Dr Keith Tomes, Leeds Metropolitan University.

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Piloting of the questionnaire

Each language and gender version (i.e. English, Afrikaans and Xhosa) of the instrument was piloted among the corresponding group of ten grade 11 learners, who were not included in the final sample. After completing the questionnaire, each group was asked to comment on it for readability and comprehension and adjustments were then made.

After analyses of the pilot questionnaires, and consultation with other experts in the field, I decided to change the original semantic differential questions used to measure attitude and affect, as many learners had difficulty understanding how to answer this type of question. This appears to be consistent with other studies conducted in South Africa with adolescents (De Wet Schutte, personal communication; Skinner, 2001). These questions were changed to questions in which respondents had to respond to each item based on a three point scale, namely agree, unsure, disagree. This version of the questionnaire was then again piloted. After analyses of the results of the second pilot study, it still appeared as if respondents had difficulty with these questions and seemed to be giving what would appear to be desired answers. In order to try and avoid this and encourage respondents to respond to the negative items, questions were rephrased and a reversed response format for some of the questions was used in the final questionnaire (see questions 35 to 38 in questionnaire in Appendix B).

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4.4 Measures

4.4.1 Independent variables

Twelve constructs were included in the model as potential correlates of condom use behaviour, namely: intention, self-standards, self-efficacy, affect, attitude, beliefs, norms, condom availability, health concern, worry about AIDS, construct availability and condom availability. Items for each of these measures were developed on the basis of the elicitation research, relevant literature and expert advice.

The measures used in the model were constructed by selecting the questionnaire items that corresponded to each construct. The internal consistency of each scale was assessed using the Cronbach's alpha test (Cortina, 1993) (see Table 4.4). Cronbach's alpha measures how well a set of items/variables measures a single uni-dimensional construct, which means it is a coefficient of reliability. This measure of internal consistency is generally used for measures where participants respond to items on a scale (Cortina, 1993). If a scale has an alpha of above 0.60 it is usually considered to be internally consistent (http://spsp.clarion.edu/mm/RDE3/ c3/C3Handout32.html). Cronbach's alpha for the model variables used in this study varied from between 0.63 for construct availability to 0.80 for affect.

The optimal set of variables for each measure was retained and used in subsequent analyses. To facilitate interpretation, the scales were transformed so that a high score consistently indicated a more positive attitude/belief[3]. The highest value (code) was allocated to the most positive answer to the question. Thus all measures were coded so that the higher the score, the greater or more positive the strength of belief, emotion, intention, attitude, subjective norm, self-efficacy, AIDS worry, perceived susceptibility and health care.

Details about each independent variable are presented below and summarised in Tables 4.2 – 4.4.

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Affect

Affect related to condom use was assessed by asking respondents to respond to nine adjectives related to feelings about using condoms, which emerged from the elicitation study. Respondents were asked to respond to each item on a three-point Likert scale (agree, unsure, disagree). An index of affect toward using condoms was compiled by adding the responses. The higher the score the more positive the affect toward condoms. This measure had an acceptable Cronbach's alpha of 0.83. The

[3] Variation in the direction of some of the scales was introduced to reduce response bias – see copy of questionnaire in the Appendix.

adjectives used for this item were those most frequently mentioned in the elicitation study in response to the question " If you think about condoms, how does using a condom make you feel?"

AIDS worry

This was assessed by one item, namely, "How often do you worry about getting AIDS?" with a five-point Likert scale response format ranging from 'very often' to 'never'.

Attitude

Attitude toward using condoms was measured by using the sum of the responses to nine adjectives describing condoms. The adjectives were derived from the most frequently mentioned adjectives describing condom use in the elicitation study (see Table below for details). Each adjective was responded to on a three-point Likert scale ranging from agree to disagree. The scores for the response to each item were added to create an attitude score. These ranged from 9 to 27. The internal consistency for this variable as measured by Cronbach's alpha was 0.78.

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As already mentioned, in the pilot study I attempted to use semantic differential 7 point bipolar scales as suggested by Fishbein *et al* (1992), but found that the learners were unable to respond appropriately to such scales. Even reducing them to 5-point scales still resulted in most participants answering in a fixed pattern. Eventually we decided to use a three-point Likert scale and to get participants to only respond to one of the pairs of adjectives. In most cases I used the negative adjective as pilot studies showed that respondents tended to favour only the positive adjectives.

Beliefs

Behavioural beliefs were assessed by 9 items that measured the perceived consequences of using condoms, each of which were responded to on a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree' (see Table 4.2). In addition, for each item, respondents had to indicate the importance that they attached

to the specific belief, namely, the outcome evaluation. The belief and outcome evaluation items were multiplied by each other as suggested by Ajzen and Fishbein (1980). These scores were then added to create a single measure of behavioural beliefs. Cronbach's alpha for this measure was 0.66. The content for these questions was derived from the most frequently mentioned beliefs in the elicitation study.

Condom availability

Condom availability was measured by the item, "Do you have a condom available so that you can use it when you have sex". This was answered in a 'yes' 'no' format.

Construct availability

Construct availability was measured by two items that assessed the frequency that respondents thought about and discussed condoms with their sexual partners. Each item was measured on a five-point Likert scale with responses ranging from 'every time' to 'never'. For this measure, Cronbach's alpha was 0.62.

Health importance

Concern about health was measured by a single item assessed on a five-point Likert scale. Respondents indicated their degree of agreement with the item: "I think it is important to care for my health".

Intention

This was a composite variable measured by two items, both with 5-point response formats ranging from 'always' to 'never'. This is in line with Fishbein *et al's* (1992) recommendation that intention should be a continuous variable. The items were: 'In future, I will make sure that I use a condom if I have sex" and "If you have sex in future, how often will you use a condom?" Responses from these two items were scored and added giving a potential range of scores from 1 – 10 with 10 indicating the greatest intention to use condoms. Cronbach's alpha for this measure was 0.70.

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Norms

Relevant referents for the population under study were elicited from the focus group interviews. The most frequently mentioned referents in these groups were friends, parents, culture, girlfriend/boyfriend and religion. To assess subjective norms, respondents were asked to respond to 6 questions about what they thought important others thought about their using condoms. These included the five groups of referents mentioned above and a general question relating to 'most people who are important to me'. Each was measured on a five-point Likert scale which ranged from strongly agree to strongly disagree. For each item respondents were also asked to indicate the extent to which they were motivated to comply with what they thought the specific referent's beliefs regarding condom usage were. To provide a measure of subjective norms, the normative belief items and the motivation to comply were combined in a manner suggested by Ajzen and Madden (1986) and Fishbein *et al* (1992). Thus the beliefs about each specific referent group were multiplied by the motivation to comply with their perceived wishes. The measures were then added to create a single measure of subjective norms, which was found to have adequate reliability (Cronbach's alpha = 0.75).

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Perceived susceptibility to HIV/AIDS

This was measured by one item measured on a 5-point scale: "How likely do you think it is that you could get AIDS from having sex without using a condom?". Responses ranged from 'very likely' to 'very unlikely'.

Self-efficacy

As indicated in Chapter 2, self-efficacy refers to a person's belief that he/she has the necessary skills to carry out a given behaviour. In this case the behaviour was using a condom or getting their partner to use a condom every-time they had sex. Self-efficacy was a composite variable comprising 13 items, each rated on a 5-point Likert scale with responses ranging from 'strongly agree' to 'strongly disagree'. Items related to perceived ability to use a condom under a range of different circumstances (e.g. after having drunk alcohol or taken drugs, if partner does not want a condom to

be used, ability to delay sex if a condom is not available or sexually aroused, fetching condoms at a clinic, buying condoms, discussing condom use with a sexual partner, perceived ability to put on a condom – see Table 4.2). The content for these items was derived from the most frequently mentioned items in the elicitation study. For this measure, Cronbach's alpha was 0.68.

Self-standard

Self-standard was measured by a single item: "I am the kind of person who will use a condom if I have sex". Responses were measured on a 5-point Likert scale ranging from 'strongly agree' to 'strongly disagree'.

4.4.2 Dependent variable

The dependent variable was condom use on the last coital episode. This was measured by a single item, " Did you use a condom the last time you had sex?" with a yes/no response format.

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Table 4.2: Measures used in the study

Variable	Questions/measures	Response format
Condom use behaviour	Did you use a condom the last time you had sex?	Yes/No
Affect	When I think about using a condom, I feel: Stupid Bad Scared Not caring Not loving Unhealthy Embarrassed Tense Dirty	Agree, uncertain, disagree (3-pt scale)
AIDS worry	How often do you worry about getting AIDS?	Very often – never (5-pt scale)
Attitude	If I would use a condom, it would be: Stupid Difficult Dangerous Not enjoyable Embarrassing Wrong Unhealthy Not macho Selfish	Agree, uncertain, disagree (3-pt scale)
Beliefs	If I would use a condom, I would feel less during sex. I do not mind if I feel less during sex. If I would use a condom, my sexual partner would think that I do not really love her. I do not mind if my sexual partner would feel that I do not really love her. If I would use a condom, my sexual partner would think I have been sleeping around. I do not mind if my sexual partner would think I have been sleeping around. If I would use a condom, my sexual partner would think I have a sexually transmitted disease or AIDS. I do not mind if my sexual partner would think I have a sexually transmitted disease or AIDS. If I would use a condom, it would feel like I am not a real man. I do not mind if I would feel that I am not a real man. If I would use a condom, my friends would laugh at me. I do not mind if my friends would laugh at me. If I would use a condom, it would prevent me from getting AIDS. It is unnecessary to prevent myself from getting AIDS. If I would use a condom, it would prevent my sexual partner from getting AIDS It is unnecessary to prevent my sexual partner from getting AIDS. If I would use a condom for sex, it would prevent my sexual partner from becoming pregnant. It is not important to prevent my sexual partner from becoming pregnant.	Strongly agree – strongly disagree (5-pt scale)
Condom availability	Do you have a condom available so that you can use it when you have sex?	Yes/no
Construct availability	How often do you discuss using condoms when you are with somebody that you have a sexual relationship with? How often do you think about condoms when you are with somebody that you are having sex with?	Every time – never (5-pt scale)
Health importance	I think it is very important to care for my health.	Strongly agree – strongly disagree (5-pt scale)

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Variable	Questions/measures	Response format
Intention	In future, I will make sure that I use a condom if I have sex. If you have sex in future, how often will you use a condom?	Strongly agree – strongly disagree (5-pt scale) Always – never (5-pt scale)
Norms	Most of my friends think I should not use a condom. When it comes to using condoms, I want to do what most of my friends think I should do. Most people who are important to me think I should not use condoms. When it comes to using condoms, I want to do what most people who are important to me think I should do. My parents think I should not use condoms. When it comes to using condoms, I want to do what my parents think I should do. My culture says: I should not use condoms. When it comes to using condoms, I want to do what my culture says I should do. My girlfriend thinks I should not use a condom. When it comes to using condoms, I want to do what my girlfriend thinks I should do.	Strongly agree – strongly disagree (5-pt scale)
Perceived susceptibility	How likely do you think it is that you could get AIDS from having sex without using a condom?	Very likely – very unlikely (5-pt scale)
Self-efficacy	I know exactly how to use a condom. I will find it difficult to put on a condom. I feel that I do not quite know how to put on a condom. I would not be able to use a condom after I have drunk alcohol or taken drugs. I would not be able to use a condom if my partner does not want me to use one. I would not be able to delay having sex if I do not have a condom. I would stop to use a condom no matter how sexually aroused I am. I would find it very difficult to go to the clinic to fetch condoms. I would be able to go to the pharmacy to buy condoms. I would not refuse to have sex if my sexual partner does not want me to use a condom. I would not be able to use a condom without spoiling the mood. I would not be able to discuss using a condom with my sexual partner. For me to use a condom if I have sex, would be:	Strongly agree – strongly disagree (5-pt scale) Very easy – very difficult (5-pt scale)
Self standard	I am the kind of person who will use a condom if I have sex.	Strongly agree – strongly disagree (5-pt scale)

(note: only the male version questions are included in the above table. For details of the female version of these questions see questionnaire in Appendix B)

Table 4.3: Cronbach's alpha of model variables

Variables	Cronbach's alpha
Affect	0.83
Attitude	0.78
Beliefs	0.66
Construct availability	0.62
Intention	0.70
Norms	0.75
Self-efficacy	0.68

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Table 4.4: Minimum and maximum values for independent variables

Variable	Minimum	Maximum
Affect	9.0	27.0
AIDS worry	1.0	5.0
Attitude	14.0	27.0
Beliefs	43.0	215.0
Condom availability	0.0	1.0
Construct availability	2.0	10.0
Health importance	1.0	5.0
Intention	2.0	10.0
Norms	19.0	125.0
Perceived susceptibility	1.0	5.0
Self-efficacy	20.0	55.0
Self standard	1.0	5.0

4.5 Data analysis

The main purpose of this study was to examine the extent to which a combination of variables from the theories discussed in Chapter 2 could explain condom use intention and behaviour. I was therefore interested not only in the correlates of condom use on last coital episode (behaviour) but also in those of intention to use condoms. This is due to the fact that intention is viewed as the immediate antecedent of behaviour by the SLT, TRA/TPB and as one of the immediate precursors to behaviour in the TSC (see Chapter 2). I therefore wanted to test whether the model variables used in this study influenced behaviour via intention as posited by most of these theories or whether they had a direct influence on behaviour.

The original questionnaire data were read into the SAS programme (SAS Institute Inc., 2000) and then cleaned to assure the most valid results for analyses and model building. Cross tabulations were done to find inconsistent answers (for example the answers to the question on whether or not they had ever had sex were cross-tabulated with condom use at last coital episode). Thus 46 questionnaires in which respondents said that they had had sex and then in later questions said that they had never had sex were deleted from the study. This left a total of 1931 questionnaires.

As this study focused on factors influencing condom usage, only the sexually active group were included in the analyses. All analyses were stratified by race and gender.

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This is in line with recommendations by a number of other studies that HIV preventive behaviour (such as condom use) should be studied separately for young men and women and also according to race (Abraham *et al*, 1992; Campbell, Peplau & DeBro, 1992; DeBro, Campbell & Peplau, 1994; Doyal, 2002; Norris & Ford, 1995; Sheeran & Abraham, 1996; Quirk, Godkin & Schwenzfeir, 1993). Thus gender and race were used to create subsamples for separate investigation in this study.

Missing values were replaced with the mode in the case of categorical variables and with the median in the case of continuous variables. This was done to ensure that individual cases were not deleted due to missing values in the model building calculations.

Prevalence rates and means with 95% confidence intervals were calculated, taking the multistage stratified design into account. A weighting procedure was applied to compensate for sample disproportionality. Data were weighted based on a sample plan developed by the Medical Research Council using SAS and the Survey Data Analysis Programme (SUDAAN). SUDAAN was used for the weighting procedure (Shah, Barnwell & Bieler, 1997). The design stages included were postal code area and school. Sampling weights were computed using the number of learners in the school, the number of learners in the grade (in a specific school) and the number of learners sampled from the grade.

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The dependent variable was condom use on the last coital episode. This was compared to all the independent variables using chi-square tests for the categorical variables and t-tests for the continuous variables.

Of the total sample (n = 1931), 48% reported having had sexual intercourse. Only the sub-samples of sexually active Black and Coloured groups were large enough to allow for statistical model building. The group of sexually active male and female White respondents comprised only 91 respondents, which was too small for model building. This group was therefore excluded. All further data analysis and discussions will therefore be confined to the sexually active Black and Coloured sub-samples. The sexually active Coloured and Black group (n = 928) were then divided on the basis of having used a condom the last time they had had sexual intercourse.

Statistical analysis comprised a number of sequential steps. First the association between the potential correlates of intention to use a condom as well as condom use at last coital episode were assessed using contingency table analyses. The chi-square statistic and its corresponding probability level, rate ratio and 95% confidence limits were computed to assess the significance and size of these bivariate associations.

Next, variables identified as significantly associated with intention to use a condom and condom use on last coital episode were entered into multivariate logistic and multiple regression models to identify the contribution of each independent variable while adjusting for the effects of the other variables in the model.

Because intention was measured on a scale indicating varying degrees of intention, I used multiple linear regression analysis to determine the best possible linear relationship between the independent variables and intention to use a condom. This model involved only one step in which the variables health value, self-standards, behavioural beliefs, subjective norms, general attitude, emotional reaction, self-efficacy, AIDS worry, perceived susceptibility, construct availability, condom availability and age were entered simultaneously into the equation as independent variables. The same variables were entered into the logistic regression analysis to predict behaviour. In all, two sets of regression analyses were performed, one for the prediction of intention and one for the prediction of behaviour (condom use on last coital episode).

Logistic regression was used for the prediction of condom use because condom use is a binary response variable. Logistic regression can be used when the independent variables do not satisfy the assumption of multivariate normality (Sharma, 1996). As the independent variables/predictors used in this study comprise a mixture of categorical and continuous variables (see section 4.3.4 on measures in this Chapter), the multivariate normality assumption would not hold. Therefore, logistic regression is an appropriate procedure to develop a model to predict the probability of condom use.

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The SAS LOGISTIC procedure (version 8.01) was used (SAS Institute Inc, 2000). The SAS procedure finds the 'best fitting' equation using what is called a maximum likelihood method, which maximises the probability of getting the observed results given the fitted regression coefficients (SAS Institute Inc, 2000). This procedure estimates the effect of one or more independent variables on a dichotomous dependent variable (in this case condom use on last coital episode). Of interest is the size of the regression coefficient for each variable relative to the value of the standard error.

All the independent variables and age were entered simultaneously into all the logistic regression analyses. Separate analyses were conducted for each race and gender group. As a second step, the stepwise variable selection procedure was used for the same data set to identify those variables that added to the prediction of behaviour in a statistically significant way (Sharma, 1995). Variables that did not have significant regression coefficients were eliminated from the equation. The stepwise procedure used starts with forward selection but after each addition of a new variable to the equation, all previously entered variables are checked to see whether they maintain their level of significance (Dawson-Saunders & Trapp, 1994). The PROC LOGISTIC programme in SAS was used for the stepwise procedure (SAS Institute Inc., 1989).

The chi square statistic tested the overall statistical significance of the model and adjusted odds ratios and their corresponding 95% confidence limits were calculated to assess the association between the independent variables and condom use on last coital episode.

The next step involved creating path diagrams for each of the subsamples. Coefficients for the path diagrams were the standardised beta weights from the multiple and logistic regression equations. In addition age was included in the predictors for each equation. Only the beta weights that were significant were included in the path diagrams.

Finally data mining techniques using decision trees was used to find the best independent variables and to generate a set of rules to predict condom use for each group (Berry & Linoff, 1997). The SAS Enterprise Miner for Windows Release 4.0 programme was used for these calculations (SAS Institute Inc., 2000). The automatic

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mode was used, which automatically ranks the input variables based on the strength of their input to the tree (SAS Inc., 2000). The Chi-square test was used for evaluating the split at each node.

Decision trees are widely used for predictive modelling. The advantages of decision trees are that they can generate rules that allow a relatively straightforward prediction of a particular variable (Berry & Linoff, 1997). These rules can be used to generate predictions for a new data set (SAS Institute Inc., 2000). Thus in the case of condom use they allow one to predict the factors (variables) that will determine condom use. In this case they allow us to see the path taken in the decision to use condoms by the various subsamples in this study. They also have the ability to handle both continuous and categorical variables, the ability to model complex input associations, the ability to automatically handle variables with missing information and also clearly indicate the best predictors (Berry & Linoff, 1997; SAS Institute Inc., 2000). According, to Berry and Linoff (2000: 285) decision trees are "a good choice when the data mining task is classification of records or prediction of outcomes."

For the calculation of each of the tree diagrams, the data were divided into a training (70% of the data) and validation (30% of the data) data set for each race gender subsample. The training data set was used to build/train the initial tree and the validation data set was used to test the validity of the tree diagram. Thus 30% of the data was not used during the modelling procedure and was only used afterwards to test the accuracy of the model.

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CHAPTER FIVE

RESULTS

5.1 Introduction

As discussed in Chapter 4, I will analyse and present all data separately for the four sub-samples, namely, Black males, Coloured males, Black females and Coloured females. First, preliminary analyses that include descriptive data relating to the nature and frequency of respondents' sexual behaviour according to race gender sub-samples will be provided. Then the means and standard deviations for the independent variables according to these sub-samples will be compared. Secondly, I will present bivariate analyses in which condom users are compared with non-users for each independent variable using *t*-tests and chi-square tests. In addition, the intercorrelations between the independent variables and intention for each group will be depicted. Thirdly, I will present multivariate analyses in which multiple linear and logistic regression procedures are used to assess the contributions of the independent variables to intention to use a condom as well as actual condom use behaviour. I will then summarise and depict the results of these in path diagrams. Finally I will use tree diagrams to depict the best set of rules to predict condom use for each group.

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5.2 Preliminary analyses

Before presenting the results regarding the factors that correlate with intention to use condoms as well as actual condom use, descriptive information will be provided for the key variables. These are presented separately for each race-gender subgroup in Table 5.1.

The four subgroups differ with regard to their sexual behaviour. Thus of the total sample, 93% of the Black male respondents reported being sexually active, compared to 53% of the Coloured males, 82% of the Black females and 26% of the Coloured females. As can be seen from Table 5.1, for Black males the mean age of first sexual

intercourse was 13.5 years[1]. This is almost a year earlier than was the case for Coloured males, whose mean age was 14.6 years ($t = 3.95$ $p < 0.01$).

Table 5.1: Nature and frequency of sexual behaviour stratified by race and gender - sexually active respondents (weighted) (N = 928)

Variable	Black males	Coloured males	Black females	Coloured females
Age of sexually active group:	(n = 220)	(n = 202)	(n = 378)	(n = 128)
Mean (SE[2])	18.7(.14)	17.3 (.08)	18.4 (.10)	16.9 (.07)
CI	18.53 – 19.07	17.10 – 17.41	18.25 – 18.63	17.78 – 17.08
Median	19.0	17.0	18.0	17.0
IQR	17.0 – 20.0	16.0 – 18.0	17.0 – 19.0	16.0 – 17.0
Age of first sex (years):	(n = 204)	(n = 193)	(n = 371)	(n = 125)
Mean (SE)	13.54 (.26)	14.64 (.13)	16.03 (.09)	15.58 (.11)
CI	13.03 - 14.05	14.38 - 14.89	15.85 - 16.21	15.36 - 15.79
Median	15.32	15.17	15.57	15.36
IQR	14.12 - 16.4	13.96 - 15.87	14.70 - 16.51	14.47 - 15.92
Number of sexual partners:	(n = 178)	(n = 182)	(n = 378)	(n = 128)
Mean (SE)	4.30 (.21)	3.61 (.29)	2.21 (.10)	1.73 (.13)
CI	3.87 – 4.70	3.04 - 4.18	2.02 - 2.42	1.48 - 1.98
Median	3.27	2.09	2.0	1.52
IQR	1.53 - 7.15	0.0 - 5.10	1.0 – 3.0	1.0 – 2.0
Use of condom on 1st coital episode:	(n = 220)	(n = 202)	(n = 378)	(n = 128)
Yes (%)	13.3	39.4	29.7	52.7
CI	8.81 – 17.78	32.66 – 46.13	25.09 – 30.31	44.05 – 61.35
Use of condom on last coital episode:	(n = 220)	(n = 202)	(n = 378)	(n = 128)
Yes (%)	34.4	61.9	42.7	44.1
CI	28.12 – 40.68	55.20 – 68.60	37.71 – 47.69	35.50 – 52.70
Condom availability:	(n = 220)	(n = 202)	(n = 378)	(n = 128)
Yes (%)	77.0	74.0	62.0	52.0
CI	0.72 – 0.83	0.68 – 0.80	0.57 – 0.67	0.44 – 0.61

Females of both groups became sexually active at a later age than the males. The mean age at which Black females became sexually active was 16 years and Coloured females 15.6 years ($t = 3.13$; $p < 0.01$). Black males were the group that reported the

[1] Only the means will be reported on in the text as the means and medians are very similar – see Table 5.1.

[2] SE = Standard Error; IQR = Interquartile Range; CI = Confidence Interval

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largest number of sexual partners with a mean of 4.3 partners. For Coloured males the figure was 3.6 partners ($t = 2.71$; $p < 0.01$). Female respondents reported having significantly fewer partners than the males; with Black females having a mean of 2.2 compared to Coloured females 1.7 sexual partners ($t = 3.48$; $p < 0.01$).

Regarding condom usage, a significantly smaller percentage of Black males reported using a condom on their first coital episode compared to Coloured males (13.3% compared to 39.4%; $\chi^2 = 309.3$; $p < .01$). The same pattern was reflected among the female respondents with 29.7% of the Black female respondents reporting using a condom on their first coital episode, compared to 52.7% of the Coloured females ($\chi^2 = 230.6$; $p < .01$). More females than males reported condom usage on their first coital episode than males. Reported condom use on the most recent coital episode had increased to 34.4% for Black males and 61.9% for Coloured males ($\chi^2 = 299.3$; $p < .01$). Condom use on the last coital episode had increased to 42.7% for Black females but had decreased to 44.1% for Coloured females (there was no significant difference between these two groups).

Table 5.2 shows the means and standard deviations for the independent variables tested in the model. Most of the respondents across all gender-race subgroups had formed strong intentions to use condoms. There were, however, no significant differences in intention to use condoms between the different groups. There were no significant differences when comparing the means of the different sub-sample groups for four of the independent variables, namely, health importance, intention to use condoms, general attitude to condoms and affect towards condoms. There were, however, significant differences in the means of the belief score between Black males and females, with females showing more negative beliefs about condoms than males ($t = 2.43$, $p = .0155$). The differences in the mean scores for normative beliefs were significant between all groups, that is, between Black males and females ($t = -3.24$; $p = .0013$), Coloured males and females ($t = 4.24$; $p < .0001$). Coloured females perceived the highest level of normative support for using condoms and Black females the least support.

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Table 5.2: Means and standard deviations for independent variables stratified by race and gender

Independent Variable	Black males (n = 215)		Coloured males (n = 199)		Black females (n = 364)		Coloured females (n = 126)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Affect	24.3	3.5	24.4	3.3	24.3	3.5	24.2	3.2
AIDS worry	2.4	1.5	3.6	1.3	2.0	1.4	3.5	1.4
Attitude	24.3	3.5	24.0	3.1	24.2	3.4	24.6	2.6
Beliefs	103.6	30.6	106.9	30.6	110.1	32.2	108.7	28.5
Condom availability	0.8	0.4	0.7	0.4	0.6	0.5	0.5	0.5
Construct availability	7.3	2.2	6.5	2.2	7.4	2.2	7.1	2.3
Health importance	4.6	.75	4.5	0.8	4.6	.62	4.6	.77
Intention	8.4	1.9	8.5	1.7	8.6	1.7	8.7	1.7
Norms	62.1	22.0	67.5	26.0	55.8	24.0	81.5	27.3
Perceived susceptibility	3.9	1.6	4.3	1.0	4.1	1.3	4.3	1.0
Self-efficacy	40.0	6.7	40.1	6.6	39.8	6.5	38.4	6.9
Self-standard	3.9	1.1	4.0	1.1	4.1	1.1	3.9	1.3

With regard to perceived self-efficacy to use or insist on condom usage, Coloured females were significantly less likely to feel that they are able to insist on usage than Coloured males (t = -2.25; p = .0225). There were no significant differences between Black males and females regarding perceived self-efficacy.

Coloured males were significantly more likely to feel that they are vulnerable to HIV infection if they do not use a condom than Black males (χ^2 = 55.86; p <.0001). However, Black males were significantly more likely to worry about HIV infection than Black females (χ^2 = 7.92; p = .0191) and significantly less likely to worry about AIDS than Coloured males (χ^2 = 50.24; p <.0001). Coloured females were also more likely to worry about HIV infection than Black females (χ^2 = 74.57; p <.0001). Black males were more likely to think and/or talk about condoms when with a sexual partner than Coloured males (t = 3.57; p = .0004). Coloured females were also significantly more likely to think and/or talk about condoms than Coloured males (t = 3.57; p = .0204). Coloured males were the group least likely to think and/or talk about condoms.

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Both Coloured and Black males were significantly more likely to have a condom available than their female counterparts ($\chi^2 = 15.90$; $p < .0001$ and $\chi^2 = 14.99$; $p = .0001$ respectively).

5.3 Bivariate analyses

In this section respondents who used a condom on their last coital episode were compared with those who did not use a condom for each of the independent variables. Table 5.3 shows that the differences in the mean scores of the continuous independent variables according to condom use versus non-use on the last coital episode were all in the predicted direction. All of the means of the independent variables were higher in the case of those respondents who used condoms compared to those who did not use condoms. These were significant in most cases, except for beliefs and norms in the case of Black males and intention, beliefs and affect in the case of Coloured females.

Table 5.3: Bivariate relationships between continuous independent variables and condom use on last coital episode stratified by race and gender[3]

	Black males			Coloured males			Black females			Coloured females		
Independent Variable	Condom use yes	no	*p*	Condom use yes	no	*p*	Condom use yes	no	*p*	Condom use yes	no	*p*
Age	18.57	18.73	.5676	17.10	17.20	.5258	18.52	18.34	.1492	16.71	16.84	.4093
Affect	25.1	23.8	.0054*	25.0	23.7	.0069*	24.8	23.8	.0065*	24.8	23.9	.0875
Attitude	25.3	23.7	.0016*	24.8	23.0	.0001*	24.8	23.7	.0015*	25.4	24.1	.0023*
Beliefs	108.7	100.9	.0741	112.5	100.9	.0069*	116.3	105.3	.0010*	110.2	107.7	.6190
Construct availability	8.3	6.7	.0000*	7.3	5.7	.0000*	8.5	6.6	.0001*	8.3	6.3	.0000*
Intention	9.3	8.0	.0001*	8.9	8.0	.0001*	9.2	8.1	.0001*	9.0	8.5	.0663
Norms	65.6	60.2	.0813	72.2	62.3	.0065*	59.3	53.1	.0130*	88.1	77.1	.0244*
Self-efficacy	42.7	38.6	.0000*	42.2	37.7	.0000*	41.9	38.2	.0000*	40.3	37.0	.0073*

(* = $p < 0.05$)

To examine the bivariate relationships between the independent variables in the model and condom use, *t*-test and chi-square tests were performed. The non-parametric equivalent Mann-Whitney *U* tests (Dawson-Saunders & Trapp, 1994) were also

[3] all scores are mean scores

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calculated and confirmed the *t*-test results. Tables 5.4 and 5.5 show the relationship between each of the independent variables and condom use versus non-use.

In the case of Black and Coloured females, a significantly higher intention score was measured for those learners who had used a condom during their last coital episode than those who had not. In the case of behavioural beliefs, there were only significant differences in the means of condom users versus non-users for Coloured males and Black females. General attitude, condom availability, construct availability, self-efficacy and self-standard scores showed significant differences between users and non-users for all of the race-gender groups. Subjective norms were significantly different for Coloured males and females as well as Black females, but not for Black males. There were no significant differences in either the ages, importance attached to health or perceived susceptibility to HIV/AIDS of those who used a condom on their last coital episode versus those who did not use a condom for any of the groups. Worry about AIDS only differed significantly for users versus non-users of condoms on last coital episode for Black males.

Table 5.4: *t*-tests of all continuous model variables with behaviour (condom use on last coital episode) stratified by race and gender

Independent variables	Black males		Coloured males		Black females		Coloured females	
	t	*p*	*t*	*p*	*t*	*p*	*t*	*p*
Age	0.57	.5676	0.64	.5258	1.45	.1492	0.83	.4093
Affect	2.81	.0054*	2.74	.0069*	2.73	.0065*	1.72	.0875
Attitude	3.20	.0016*	4.31	.0001*	3.19	.0015*	3.12	.0023*
Beliefs	1.79	.0741	2.73	.0069*	3.31	.0010*	0.50	.6190
Construct availability	5.22	.0000*	5.64	.0000*	8.88	.0001*	5.46	.0000*
Intention	5.72	.0001*	3.95	.0001*	6.67	.0001*	1.85	.0663
Norms	1.75	.0813	2.75	.0065*	2.50	.0130*	2.28	.0244*
Self-efficacy	4.53	.0000*	5.13	.0000*	5.66	.0000*	2.73	.0073*

(* = significant < .05)

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Table 5.5: Chi-square tests of categorical model variables with behaviour (condom use on last coital episode) stratified by race and gender

Independent variables	Black males		Coloured males		Black females		Coloured females	
	χ^2	p	χ^2	p	χ^2	p	χ^2	p
AIDS worry	8.41	0.015*	0.89	0.642	0.16	0.922	0.16	0.913
Condom availability	9.40	0.002*	7.96	0.005*	23.83	0.001*	5.97	0.015*
Health importance	3.43	0.18	0.19	0.912	1.71	0.426	1.25	0.535
Perceived susceptibility	3.30	0.192	4.59	0.101	0.87	0.648	3.51	0.173
Self-standard	14.52	0.001*	16.67	0.001*	19.38	0.001*	8.78	0.012*

(* = significant < .05)

5.3.1 Inter-correlations among independent variables

The Spearman rank order correlations of the independent variables stratified by race and gender group are presented in Tables 5.6 to 5.9. The significant correlations among the variables ranged from .15 to .50 for Black males, from .14 to .51 for Coloured males, from .11 to .43 for Black females and from .18 to .56 for Coloured females. Most of these inter-correlations, although significant, are of modest magnitude and it can therefore be argued that these measures are not highly correlated.

For Black males, the highest significant correlations were between self-standards and intent (.50), intent and construct availability (.44), self-efficacy and beliefs (.41), norms (.41) and self-standards (.43). For Coloured males, the highest significant correlations were between intention and beliefs (.40) and self-efficacy (.42), self-efficacy and beliefs (.41) and norms (.44) and between affect and attitude (.51). As was the case for Black males, most of these values are of moderate magnitude. For Black females, the highest significant correlations were between self-standards and intention (.43), and behavioural beliefs and self-efficacy (.43). For Coloured females the highest significant correlations were between self-standards and intention (.56), self-standards and norms (.46), self-efficacy and norms (.41) and self-standards (.41) and between AIDS worry and perceived susceptibility to HIV/AIDS (.43).

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Table 5.6: Spearman rank correlation coefficients for main independent variables – Black Males

	1	2	3	4	5	6	7	8	9	10	11
1.	1.00										
2	.06	1.00									
3.	.38***	-.08	1.00								
4.	.20**	-.14**	.25**	1.00							
5.	.24**	-.01	.20**	.15**	1.00						
6.	.15*	-.07	.23**	.18**	.20*	1.00					
7.	.04	-.06	.04	.12	-.03	-.00	1.00				
8.	.23***	-.05	.33***	.27***	.28***	.44***	.11	1.00			
9.	.25**	-,04	.31***	.19**	.13	.28***	.03	.09	1.00		
10	.32***	-.13	.40***	.41***	.25**	.37***	.16*	.35***	.41***	1.00	
11	.22**	.04	.31***	.27***	.24**	.34***	.17*	.50***	.15*	.43***	1.00
12	.11	.07	.13*	.14*	-.04	.18**	.14*	.08	.19**	.23**	.01

(p: * < .05; ** < .01; *** < .0001)
(1 = Affect, 2 = AIDS worry, 3 = Attitude, 4 =Beliefs, 5 =Condom availability, 6 = Construct availability, 7 = Health importance, 8 = Intention, 9 = Norms, 10 = Self-efficacy, 11 = Self-standards, 12 = Susceptibility)

Table 5.7: Spearman rank correlation coefficients for main independent variables – Coloured Males

	1	2	3	4	5	6	7	8	9	10	11
1.	1.00										
2	.02	1.00									
3.	.51***	.05	1.00								
4.	.22**	.14*	.30***	1.00							
5.	.29***	.07	.28***	.27***	1.00						
6.	.21**	.02	.32***	.27***	.24**	1.00					
7.	.08	.02	.14	.27***	.07	.17*	1.00				
8.	.28***	.14*	.26**	.41***	.13	.38***	.28***	1.00			
9.	.25**	.03	.26**	.25**	.15*	.24**	.10	.31***	1.00		
10	.39***	.09	.50***	.40***	.31***	.34***	.26**	.46***	.44***	1.00	
11	.33***	.20**	.35***	.30***	.01	.21**	.12	.37***	.27***	.37***	1.00
12	.20**	.21**	.21**	.29***	.15*	.15*	.11	.30***	.18*	.17*	.25**

(p: * < .05; ** < .01; *** < .0001)
(1 = Affect, 2 = AIDS worry, 3 = Attitude, 4 =Beliefs, 5 =Condom availability, 6 = Construct availability, 7 = Health importance, 8 = Intention, 9 = Norms, 10 = Self-efficacy, 11 = Self-standards, 12 = Susceptibility)

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Table 5.8: Spearman rank correlation coefficients for main independent variables– Black Females

	1	2	3	4	5	6	7	8	9	10	11
1.	1.00										
2	-.09	1.00									
3.	.34***	-.11*	1.00								
4.	.19**	-.04	.27***	1.00							
5.	.15**	-.06	.10	.02	1.00						
6.	.24***	-.12*	.19**	.20***	.17**	1.00					
7.	.09	-.09	.06	.22***	.10*	.05	1.00				
8.	.16**	-.14**	.21***	.27***	.11*	.30***	.27***	1.00			
9.	.18**	.15**	.17**	.24***	-.01	.00	.04	.13*	1.00		
10	.25***	-.14**	.39***	.43***	.16**	.29***	.12*	.28***	.36***	1.00	
11	.20***	-.15**	.23***	.38***	.14**	.27***	.21***	.43***	.12*	.34***	1.00
12	.04	-.11*	.16**	.17**	.01	.08	.17**	.17**	.04	.24***	.26***

(p: * < .05; ** < .01; *** < .0001)
(1 = Affect, 2 = AIDS worry, 3 = Attitude, 4 =Beliefs, 5 =Condom availability, 6 = Construct availability, 7 = Health importance, 8 = Intention, 9 = Norms, 10 = Self-efficacy, 11 = Self-standards, 12 = Susceptibility)

Table 5.9: Spearman product-moment correlation coefficients for main independent variables – Coloured Females

	1	2	3	4	5	6	7	8	9	10	11
1.	1.00										
2	.06	1.00									
3.	.51***	-.03	1.00								
4.	.26**	-.09	.25**	1.00							
5.	.14	.18*	-.02	.02	1.00						
6.	.07	.16	.19*	.18*	.17	1.00					
7.	.00	-.02	.19*	.22*	-.00	.15	1.00				
8.	.14	.30**	.19*	.20*	.11	.33**	.06	1.00			
9.	.29**	.05	.27**	.29**	.04	.32**	.06	.31**	1.00		
10	.36***	.15	.39***	.29**	.18*	.32**	.16	.30**	.41***	1.00	
11	.22*	.27**	.28**	.26**	.11	.39**	.09	.56***	.46***	.41***	1.00
12	.05	.43***	.04	.10	.15	.21*	-.06	.35***	.22	.17	.28**

(p: * < .05; ** < .01; *** < .0001)
(1 = Affect, 2 = AIDS worry, 3 = Attitude, 4 =Beliefs, 5 =Condom availability, 6 = Construct availability, 7 = Health importance, 8 = Intention, 9 = Norms, 10 = Self-efficacy, 11 = Self-standards, 12 = Susceptibility)

If one examines the relationship between intention to use condoms and the other variables, it is apparent that although most of the variables showed significant correlations with intention these were not very high and ranged from .08 to .56. Thus self-standards, general attitudes to condoms, affect, self-efficacy and construct

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availability were significantly correlated with intention to use condoms for all four groups. Norms as well as perceived susceptibility to AIDS were significantly correlated with intention for Coloured males and females and Black females, but not for Black males. Condom availability was significantly correlated with intention to use condoms for Black males and females but not for Coloured males and females

The correlations between attitudes and beliefs, although significant, range from .25 to .30, which is not very high. This means that the set of beliefs does not reflect all the affective aspects of direct attitude toward condom use. This is substantiated by low correlations between cognitive beliefs and affect. The attitude measure appears more closely linked to affect than beliefs.

The *t*-tests, chi-square tests and correlation analyses provide preliminary support for the model proposed in this study in that they show that the independent variables are significantly related with intention to use condoms as well as actual condom use. These, however, cannot explain the underlying structural relationships between the key constructs. To test this, logistic and multiple regression were used.

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5.4 Multivariate analyses: Estimation and assessment of the proposed model

The analysis of the relationship between the independent variables and condom use was done in two stages. Because most of the theories used in the model being tested hypothesise that intention is the immediate precursor of condom use behaviour and that most of the model independent variables thus affect behaviour via intention (see Chapter 2), the first step was to investigate the relationship between these variables and intention. The next step was then to investigate the direct relationship between all the independent variables (including intention) and behaviour (condom use).

5.4.1 Correlates of intention

To assess the correlates of intention[4], multiple linear regression was used to determine whether a model including health importance, behavioural beliefs, subjective normative beliefs, general attitudes to condoms, self-standards, affect about condoms,

[4] Intention was measured by two questions: "In future, I will make sure that I use a condom if I have sex" and "If your have sex in future, how often will you use a condom" (see chapter 4)

perceived self-efficacy to use condoms, worry about AIDS, perceived susceptibility to AIDS, construct availability and condom availability was associated with intention to use condoms. This model involved only one step in which all the independent variables were entered simultaneously into the equation[5]. Separate analyses were conducted for each gender-race group.

Table 5.10: Multiple regression of intention on model independent variables stratified by gender and race (weighted)

Variable	Black males		Coloured males		Black females		Coloured females	
	β	p	β	p	β	p	β	p
Intercept	.11	.9121	.81	.4233	1.99	.0165	3.68	.0257*
Affect	.06	.1115	-.01	.7186	-.07	.0084*	-.00	.9484
AIDS worry	.003	.9554	.01	.9365	-.05	.3562	.01	.9070
Attitude	.08	.0179*	.13	.7720	.09	.0016*	.03	.6711
Beliefs	.01	.0699	.01	.1257	-.00	.8163	.00	.3578
Condom availability	.82	.0016*	-.03	.8953	.57	.0007*	.29	.3012
Construct availability	.18	.0012*	.15	.0024*	.18	.0001*	.13	.0450*
Health importance	.003	.9785	.37	.0021*	.66	.0001*	-.20	.3167
Norms	-.01	.0755	.01	.0816	.01	.0321*	.00	.8413
Perceived susceptibility	.08	.2918	.26	.0094*	.09	.1069	.34	.0141*
Self-efficacy	.02	.3087	.06	.0087*	-.02	.2717	.02	.4019
Self-standards	.46	.0001*	.19	.0630	.35	.0001*	.36	.0027*
R-square	.41		.43		.32		.31	
Adjusted R-square	.38		.39		.30		.25	
F-value	12.74		12.59		15.01		4.71	
Probability	.0001		.0001		.0001		.0001	

(* = significant <.05)[6]

Table 5.10 shows the parameter estimate (standard beta weight), unique contribution of each independent variable to the explained variance in intention to use condoms and the significance level of each variable according to race-gender group. The full

[5] Because the weighted behavioural beliefs were only moderately correlated with attitude, I decided to enter all variables simultaneously into the regression equation.

[6] Age was entered into the multiple regression equation, but was only significant in the case of Black male learners. It however reduced the adjusted R square value to 0.21 and was therefore left out of further analyses.

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set of independent variables yielded a significant relationship with intention to use condoms for each of the groups.

In the case of Black males, the independent variables in the model accounted for 41% of the variance in intention (F = 12.75; p = .0001). Of these, only 4 of the 11 independent variables, namely, self-standards, general attitude, construct availability and condom availability were independent significant correlates of intention to use condoms for this group. Self-standards (β = .46) and condom availability (β = .82) showed the strongest relationship to intention to use condoms for Black males. All other independent variables made non-significant unique contributions to the variance in intention to use condoms for this group. Thus for Black males, stronger intention to use a condom was associated with a stronger feeling that they were the kind of person to use condoms (self-standards), a stronger positive attitude towards condoms, a higher construct availability score and having condoms available. Health importance, beliefs, norms, affect, self-efficacy, AIDS worry and perceived susceptibility to AIDS did not show a significant relationship with intention to use condoms for this group.

Similarly, for Coloured males the independent variables showed a significant relationship with intention and accounted for 43% of the variance in intention (F = 12.59, p = .0001). However, only health importance, self-efficacy, perceived susceptibility to AIDS and construct availability were significant independent predictors of intention to use condoms for this group. Health importance (β = .37) showed the strongest relationship with intention to use condoms for this group. Thus Coloured male learners were more likely to intend to use condoms if they attached greater importance to their health, perceived themselves to be vulnerable to HIV infection and had a higher construct availability score (i.e. they were more likely to discuss or think about condoms when with a sexual partner). Self-standards, beliefs, norms, attitudes, affect, AIDS worry and condom availability were not significantly related to intention to use condoms for this group.

For Black females, a larger number of independent variables proved to be significant independent predictors of intention. The model, although significant, however,

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accounted for only 32% of the variance in intention for this group (F = 15.01; p = .0001). Health care (β = .66), condom availability (β = .57) and self-standards (β = .35) showed the strongest relationship with intention to use condoms. Norms, attitude, affect, and construct availability were also significant independent predictors of intention to use condoms for Black female learners, but showed low beta values. Thus, Black female learners were most likely to insist on their partners' using a condom if they placed a higher value on their health, saw themselves as the kind of person who used condoms, and/or had a condom available. Beliefs about condoms, perceived self-efficacy to insist on condom usage, AIDS worry and perceived susceptibility to AIDS were not significantly related to intention to use condoms for this group.

Similar to the case of Black female learners, the set of independent variables accounted for 31% of the variance in intention to use condoms for Coloured females (R-square = .31; F-value = 4.71; p = .0001). However, for this group only three of the independent variables were found to be significant independent predictors of intention. These were self-standards (β = .36), perceived susceptibility (β = .34) and construct availability (β = .13). Thus female Coloured learners were more likely to intend to insist that their partner used a condom if they felt that they were the kind of person to insist on condom usage, perceived that they would be susceptible to contracting HIV/AIDS without a condom and discussed and thought about condoms when they were with a sexual partner. All other independent variables were not significantly related to intention to use condoms for this group.

Tables 5.11 to 5.14 present the results of stepwise multiple regression analyses of intent on the model independent variables including the variable age for each race-gender group.

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Table 5.11: Stepwise multiple regression of intention on model independent variables and age: Black males (weighted)

Step	Predictor variable	Estimate (95% confidence interval)	Pr > F	Partial R-square	Model R-square
	Intercept	0.40 (-1.39 – 2.2)			
1	Self-standards	0.47 (.27 - .67)	<.0001	.21	.21
2	Construct availability	0.19 (.08 - .29)	<.0001	.08	.29
3	Condom availability	0.82 (.33 – 1.3)	.0003	.04	.33
4	Attitude	.0.08 (.01 - .14)	.0006	.04	.37
5	Beliefs	.01 (.001 - .02)	.0107	.02	.39
6	Affect	.06 (-.01 - .13)	.0761	,01	.40

Table 5.12: Stepwise multiple regression of intention on model independent variables and age: Coloured males (weighted)

Step	Predictor variable	Estimate (95% confidence interval)	Pr > F	Partial R-square	Model R-square
	Intercept	0.78 (-.77 – 2.32)			
1	Self-efficacy	0.06 (.02 - .09)	<.0001	.23	.23
2	Beliefs	0.01 (-.001 - .01)	<.0001	.07	.30
3	Construct availability	0.15 (.05 - .24)	.0013	.04	.34
4	Perceived susceptibility	0.26 (.07 - .45)	.0025	.03	.37
5	Health importance	0.37 (.14 - .61)	.0017	.03	.40
6	Self-standards	0.19 (.01 - .38)	.0202	.02	.42
7	Norms	0.01 (-.001 - .01)	.0804	.01	.42

Table 5.13: Stepwise multiple regression of intention on model independent variables and age: Black females (weighted)

Step	Predictor variable	Estimate (95% confidence interval)	Pr > F	Partial R-square	Model R-square
	Intercept	1.62 (.12 – 3.11)			
1	Self-standards	0.34 (.18 - .50)	<.0001	.13	.13
2	Health importance	0.66 (.44 - .87)	<.0001	.08	.21
3	Construct availability	0.17 (.10 - .24)	<.0001	.05	36
4	Condom availability	0.54(.22 - .86)	.0016	.02	.28
5	Attitudes	0.08 (.03 -.13)	.0128	.01	.29
6	Affect	-0.07 (-.11 - .02)	.0170	.01	.30
7	Norms	0.01 (-.001 - .01)	.0917	.01	.31
8	Perceived susceptibility	0.09 (-.02 - .20)	.1158	.01	.32

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Table 5.14: Stepwise multiple regression of intention on model independent variables and age: Coloured females (weighted)

Step	Predictor variable	Estimate (95% confidence interval)	Pr > F	Partial R-square	Model R-square
	Intercept	4.32 (2.9 – 5.7)			
1	Self-standards	0.42 (.24 - .63)	<.0001	.17	.17
2	Perceived susceptibility	0.40 (.14 - .66)	.0011	.07	.24
3	Construct availability	0.16 (.04 - .27)	.0109	.04	.28

The stepwise multiple regression procedure selected 6 of the independent variables for Black males. The procedure selected self-standards, construct availability, attitudes, beliefs, condom availability and affect. All of these variables, except affect, are significant at $p \leq .05$. The most influential variable was self-standards, which predicted 21% of the variance in intention to use condoms. The six variables selected explained 40% of the variance in intention to use condoms.

A different set of variables was selected by the stepwise multiple regression procedure for Coloured males, namely, self-efficacy, beliefs, construct availability, perceived susceptibility to AIDS, health importance, self-standards and norms. The most influential variable for intention to use condoms for Coloured males was self-efficacy (23%), followed by beliefs (7%). The seven variables selected explained 42% of the variance in intention to use condoms for this group.

The stepwise procedure selected 8 variables for Black females, namely, self-standards, health importance, construct availability, condom availability, attitudes, affect, norms and perceived susceptibility. Only the first 6 were significant at below .05. The variables selected were very similar to those for Black males, except that in the case of Black females intention to use condoms was significantly influenced by health importance and not by beliefs as was the case for Black males. Eight of the variables selected explained 32% of the variance in intention to use condoms for this group.

For Coloured females, only three variables were selected, namely, self-standards, perceived susceptibility to HIV/AIDS and condom availability. They explained 28% of the variance in intention. As was the case for Black males and females, self-

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standards made the largest contribution to explaining the variance in intention, namely 17%. The model showed a poor predictive value, suggesting that a number of factors not included in the model influenced intention to use condoms for this group.

5.4.2 Correlates of condom use

In order to determine the influence of the independent variables on condom use, several analyses were conducted. First, logistic regression was used to determine the correlates of condoms use. All of the independent variables, including intention and age were entered in one step. The combination of these variables accounted for 45.1% of the total variance in condom usage for Black males, 51.8% for Coloured males, 48.6% for Black females and 45.2% for Coloured females (see Tables 5.15 – 5.18).

Table 5.15: Logistic regression of behaviour on model independent variables and age: Black males (weighted)

Variable	β	p	Odds ratio (confidence interval)
Intercept	-9.05	<.0001*	
Affect	-.02	.3904	0.98 (0.93 – 1.03)
Age	-.18	<.0001*	0.84 (0.78 - 0.90)
AIDS worry	.25	<.0001*	1.28 (1.18 - 1.39)
Attitude	.08	.0006*	1.09 (1.04 – 1.14)
Beliefs	-.002	.3934	1.00 (0.99 – 1.00)
Condom availability	.62	.0008*	1.87 (1.29 – 2.69)
Construct availability	.26	<.0001*	1.30 (1.20 – 1.40)
Health importance	.19	.0386*	1.21 (1.01 – 1.44)
Intention	.10	.0945	1.11 (0.98 – 1.25)
Norms	-.004	.2255	1.00 (0.99 – 1.00)
Perceived susceptibility	-.03	.5396	0.97 (0.89 – 1.07)
Self-efficacy	.19	<.0001*	1.13 (1.09 – 1.16)
Self-standards	.27	.0005*	1.31 (1.13 – 1.52)

Predicted probability: Concordant: 79.1%; Correct classification: 45.1%

(* = significant: $p < .05$)

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For Black males, the logistic regression analysis of behaviour on the model independent variables, had a χ^2 value of 339.302 with 12 *df*, which is statistically significant ($p \leq .0001$). This suggests that there is a relationship between the independent variables and condom use for this group. The variables of health importance, self-standards, general attitude, self-efficacy, AIDS worry, construct availability, condom availability and age were all significant at $\leq .01$ levels. The parameter estimates suggest that the effects of health care, self-standards, general attitude, self-efficacy, AIDS worry, construct availability and condom availability were positive whereas the effect of age was negative. Intention to use condoms did not have a significant relationship with condom use for this group. Thus Black males were more likely to use condoms if they value their health, saw themselves as the type of person who uses condoms and/or havd a generally positive attitude to condoms. In addition, they were more likely to use condoms if they worried about getting AIDS, thought and/or talked about condoms with their sexual partner and had a condom available. Beliefs about condoms and perceived norms were negatively related to use, although the relationship was not significant.

In the case of Coloured males, the χ^2 value of 653.5809 with 9 *df* was statistically significant ($p \leq .0001$) suggesting that there is a relationship between the independent variables and condom use/non-use. The variables of intention, self-standards, subjective norms, general attitude, self-efficacy, AIDS worry, perceived susceptibility to HIV/AIDS, construct availability and age were all significant at $\leq .01$ levels. The parameter estimates suggest that the effects of intention, self-standards, subjective norms, general attitude, self-efficacy, construct availability and age were positive whereas the effects of AIDS worry and perceived susceptibility to AIDS were negative. Thus Coloured males who worried about AIDS and believed that they could get HIV/AIDS if they did not use a condom, were less likely to have used condoms on their last coital episode.

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Table 5.16: Logistic regression of behaviour on model independent variables and age: Coloured males (weighted)

Variable	β	p	Odds ratio (confidence interval)
Intercept	-10.71	<.0001*	
Affect	.03	.1633	1.03 (0.99 – 1.07)
Age	.16	.0001*	1.18 (1.08 – 1.28)
AIDS worry	-.20	<.0001*	0.82 (0.76 – 0.88)
Attitude	.14	<.0001*	1.15 (1.10 – 1.20)
Beliefs	.00	.8008	1.00 (1.00 – 1.00)
Condom availability	-.15	.2091	0.86 (0.67 – 1.09)
Construct availability	.30	<.0001*	1.35 (1.29 – 1.42)
Health importance	-.04	.4671	0.96 (0.86 – 1.07)
Intention	.09	.0137*	1.09 (1.02 – 1.17)
Norms	.01	.0103*	1.01 (1.00 – 1.01)
Perceived susceptibility	-.16	.0013*	0.85 (0.77 – 0.94)
Self-efficacy	.05	<.0001*	1.05 (1.03 – 1.07)
Self-standards	.21	<.0001*	1.23 (1.12 – 1.35)
Predicted probability: Concordant: 75.2%; Correct classification: 51.8%			

(* = significant: $p<.05$)

Table 5.17: Logistic regression of behaviour on model independent variables and age: Black females (weighted)

Variable	β	p	Odds ratio (confidence interval)
Intercept	-8.61	<.0001*	
Affect	-.04	.0185*	0.96 (0.93 – 0.99)
Age	.15	<.0001*	1.17 (1.10 – 1.24)
AIDS worry	-.05	.1338	0.95 (0.89 – 1.02)
Attitude	.06	.0004*	1.07 (1.03 – 1.11)
Beliefs	.01	.0036*	1.01 (1.00 – 1.01)
Condom availability	.66	<.0001*	1.93 (1.55 – 2.40)
Construct availability	.33	<.0001*	1.39 (1.32 – 1.67)
Health importance	-.56	<.0001*	0.57 (0.48 – 0.67)
Intention	.27	<.0001*	1.31 (1.21 – 1.43)
Norms	.01	.0319*	1.01 (1.00 – 1.01)
Perceived susceptibility	-.05	.1728	0.95 (0.88 – 1.02)
Self-efficacy	.02	.0229*	1.02 (1.00 – 1.04)
Self-standards	.14	.0127*	1.15 (1.03 – 1.28)
Predicted probability: Concordant: 78.5%; Correct classification: 48.6%			

(* = significant: $p<.05$)

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Table 5.18: Logistic regression of behaviour on model independent variables and age: Coloured females (weighted)

Variable	β	p	Odds ratio (confidence interval)
Intercept	-14.92	<.0001*	
Affect	.02	.3728	1.02 (0.97 – 1.07)
Age	.31	<.0001*	1.37 (1.20 – 1.56)
AIDS worry	-.17	.0001*	0.85 (0.78 – 0.92)
Attitude	.23	<.0001*	1.25 (1.18 – 1.33)
Beliefs	-.02	<.0001*	0.98 (0.98 – 0.99)
Condom availability	.90	<.0001*	2.47 (1.96 – 3.11)
Construct availability	.40	<.0001*	1.49 (1.40 – 1.58)
Health importance	-.07	.3859	0.93 (0.80 – 1.09)
Intention	.09	.0300*	1.10 (1.01 – 1.19)
Norms	.02	<.0001*	1.02 (1.01 – 1.03)
Perceived susceptibility	.15	.0184*	1.17 (1.03 – 1.33)
Self-efficacy	-.02	.0557	0.98 (0.96 – 1.00)
Self-standards	.10	.0406*	1.11 (1.00 – 1.22)

Predicted probability: Concordant: 78.4%; Correct classification: 45.2%

(* = significant: $p < .05$)

For Black females all the variables except AIDS worry and perceived susceptibility to HIV/AIDS were significant at ≤ .01 levels. All of these variables had a positive relationship to condom use, except for health importance, which was negatively related to condom use. Thus Black females who attached greater general importance to their health were less likely to insist that their partners used condoms.

For Coloured females, the variables of intention, self-standards, behavioural beliefs, subjective norms, general attitude, AIDS worry, perceived susceptibility to HIV/AIDS, construct availability, condom availability and age were significantly related to condom use at ≤ .01 levels. Of these, behavioural beliefs and AIDS worry were negatively related to behaviour. Female Coloured respondents who had more positive beliefs about condoms and/or worried about getting AIDS were less likely to insist on condom use. In the case of both Coloured and Black males, self-efficacy was an important correlate of condom use, whereas it appears to have been less important for female respondents of both races.

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Tables 5.19 to 5.22 present the results of stepwise logistic regression analyses that were conducted to determine the significant independent variables for condom use. Separate analyses were conducted for each race-gender group.

Table 5.19: Stepwise logistic regression analysis of behaviour on independent variables including age: Black males (weighted)

Step	Variable	Estimate (95% confidence interval)	Pr >χ^2	Odds ratio (95% confidence interval)
	Intercept	-9.20 (-11.4 - -7.1)	<.0001	
1	Self-efficacy	.11 (.08 - .13)	<.0001	1.11 (1.09 - 1.14)
2	Construct availability	.28 (.21 - .36)	<.0001	1.33 (1.23 – 1.43)
3	AIDS worry	.25 (.17 - .35)	<.0001	1.28 (1.18 – 1.39)
4	Self-standards	.30 (.15 - .44)	<.0001	1.34 (1.16 – 1.55)
5	Age	-.17 (-.24 - -.10)	<.0001	0.84 (.79 - .90)
6	Condom availability	.70 (.34 – 1.06)	<.0001	2.00 (1.40 – 2.86)
7	Attitude	.08 (.03 - .13)	.0009	1.08 (1.03 – 1.13)
8	Health importance	.19 (.02 - .38)	.0365	1.21 (1.01 – 1.45)
Correct classification: 65.1%				

The stepwise procedure selected 8 of the independent variables for Black males. The χ^2 of 355.35 with 8 *df* is significant (p <.0001) suggesting that there is a relationship between the independent variables selected and condom usage. All the variables selected were significant at $p \leq .05$. The parameter estimates suggest that the influence of self-efficacy, AIDS worry, construct availability, self-standards, condom availability, attitude and health importance was positive, whereas the influence of age was negative. The most influential variable for condom usage was condom availability. The odds ratio of 2.00 implies that a Black male respondent who used a condom was twice as likely to have a condom available than those who did not use a condom. This was followed by self-standards and construct availability (odds ratios of 1.34 and 1.33 respectively). The classification rate of 65.1% suggests that the model has moderate to high predictive validity for this group. The classification rate of 65.1% is substantially greater than the naïve prediction rate of 34.9% (i.e. 75/215)[7].

[7] 75 = crude estimate; 215 = number in group

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For Coloured males, the stepwise procedure selected 9 of the independent variables. The χ^2 of 72.14 with 9 *df* is significant (p <.0001). All the variables selected are significant at $p \leq .05$. The parameter estimates suggest that the influence of self-efficacy, construct availability, attitude, self-standards, age, norms and intention were positive for condom usage, whereas the influence of AIDS worry and perceived susceptibility to AIDS were negative. The most influential variable for condom usage was construct availability. Thus a Coloured male respondent who used condoms was 1.35 times more likely to have spoken or thought about condoms prior to having sexual intercourse than a respondent who did not use a condom. The classification rate of 49.2% suggests however that the model has low predictive validity and this figure is less than the naïve prediction rate of 51.2% (103/199).

Table 5.20: Stepwise logistic regression analysis of behaviour on independent variables including age: Coloured males (weighted)

Step	Variable	Estimate (95% confidence interval)	Pr > χ^2	Odds ratio (95% confidence interval)
	Intercept	-10.5 (-12.2 - -8.8)	<.0001	
1	Self-efficacy	.05 (.03 - .07)	<.0001	1.05 (1.03 – 1.09)
2	Construct availability	.30 (.26 - .35)	<.0001	1.35 (1.29 – 1.42)
3	Attitude	.15 (.11 - .19)	<.0001	1.16 (1.11 – 1.20)
4	Self-standards	.22 (.13 - .31)	<.0001	1.25 (1.14 – 1.37)
5	AIDS worry	-.21 (-.28 - -.13)	<.0001	0.81 (.75 - .89)
6	Age	.17 (.09 - .25)	<.0001	1.18 (1.09 – 1.28)
7	Norms	.01 (.001 - .009)	.0073	1.01 (1.001 – 1.009)
8	Perceived susceptibility	-.16 (-.25 - -.06)	.0085	0.86 (.78 - .94)
9	Intention	.09 (.02 - .16)	.0096	1.09 (1.02 – 1.17)
Correct classification: 49.2%				

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Table 5.21: Stepwise logistic regression analysis of behaviour on independent variables including age: Black females (weighted)

Step	Variable	Estimate (95% confidence interval)	Pr > χ^2	Odds ratio (95% confidence interval)
	Intercept	-8.9 (-10.54 - -7.22)	<.0001	
1	Construct availability	.33 (.28 - .38)	<.0001	1.39 (1.32 – 1.46)
2	Condom availability	.65 (.43 - .87)	<.0001	1.91 (1.54 – 2.38)
3	Intention	.27 (.19 - .36)	<.0001	1.32 (1.21 – 1.43)
4	Health importance	-.57 (-.74 - -.40)	<.0001	0.57 (.48 - .67)
5	Beliefs	.01 (.002 - .01)	<.0001	1.01 (1.00 – 1.01)
6	Age	.15 (.09 - .21)	<.0001	1.16 (1.10 – 1.23)
7	Self-efficacy	.03 (.01 - .05)	<.0001	1.03 (1.01 – 1.05)
8	Attitude	.06 (.03 - .10)	<.0001	1.07 (1.03 – 1.10)
9	Self-standards	.13 (.02 - .23)	.0404	1.13 (1.02 – 1.26)
10	Affect	-.03 (-.07 - -.002)	.0357	0.97 (.94 – 1.00)
Correct classification: 56.9%				

Table 5.22: Stepwise logistic regression analysis of behaviour on independent variables including age: Coloured females (weighted)

Step	Variable	Estimate (95% confidence interval)	Pr > χ^2	Odds Ratio (95% confidence interval)
	Intercept	-14.7 (-17.58 - -11.9)	<.0001	
1	Construct availability	.39 (.33 - .44)	<.0001	1.47 (1.39 – 1.56)
2	Attitude	.24 (.19 - .29)	<.0001	1.27 (1.21 – 1.33)
3	Beliefs	-.02 (-.04 - -.001)	<.0001	0.98 (.98 - .99)
4	Norms	.02 (.01 - .03)	<.0001	1.02 (1.01 – 1.03)
5	Condom availability	.92 (.69 – 1.15)	<.0001	2.5 (2.0 – 3.16)
6	Age	.30 (.17 - .43)	<.0001	1.35 (1.18 – 1.53)
7	Intention	.09 (.01 - .18)	.0021	1.10 (1.01 – 1.19)
8	AIDS worry	-.16 (-.25 - -.08)	.0006	1.16 (1.02 – 1.32)
9	Perceived susceptibility	.15 (.02 - .28)	.0341	0.85 (.78 - .92)
10	Self-efficacy	-.02 (-.04 - -.001)	.0491	0.98 (.96 – 1.0)
11	Self-standards	.10 (.01 - .18)	.0478	1.10 (1.00 – 1.21)
Correct classification: 59.5%				

In the case of Black female respondents, the stepwise procedure selected 10 variables. The χ^2 of 547.10 with 10 *df* is significant (p <.0001). The parameter estimates show that the effects of construct availability, condom availability, intention, beliefs, age,

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self-efficacy, attitude and self-standards were positively associated with condom usage, whereas health importance and affect showed a negative association. The most influential variable for this group was condom availability. The classification rate of 56.9% suggests that the model has a moderate predictive validity for this group. This classification rate is higher than the naïve prediction rate of 43.4% (158/364).

The stepwise procedure selected 11 variables for Coloured females. The χ^2 of 584.26 with 11 *df* is statistically significant (p <.0001). Construct availability, attitude, norms, condom availability, age, intention, perceived susceptibility to AIDS and self-standards had a positive influence on condom usage (see parameter estimates – Table 5.18). Beliefs, AIDS worry and self-efficacy on the other hand had a negative influence on condom usage for this group. The most influential variable was condom availability. Thus a Coloured female respondent was two and a half times more likely to insist that her partner used a condom if she had a condom available. The classification rate of 59.5% is higher than the naïve prediction rate of 40.5% (51/126) and shows that the model has moderate predictive validity for this group.

The following path diagrams depict and summarise the results of the logistic and multiple regressions for the different groups. Only the significant paths are depicted (see Figures 5.1 – 5.4).

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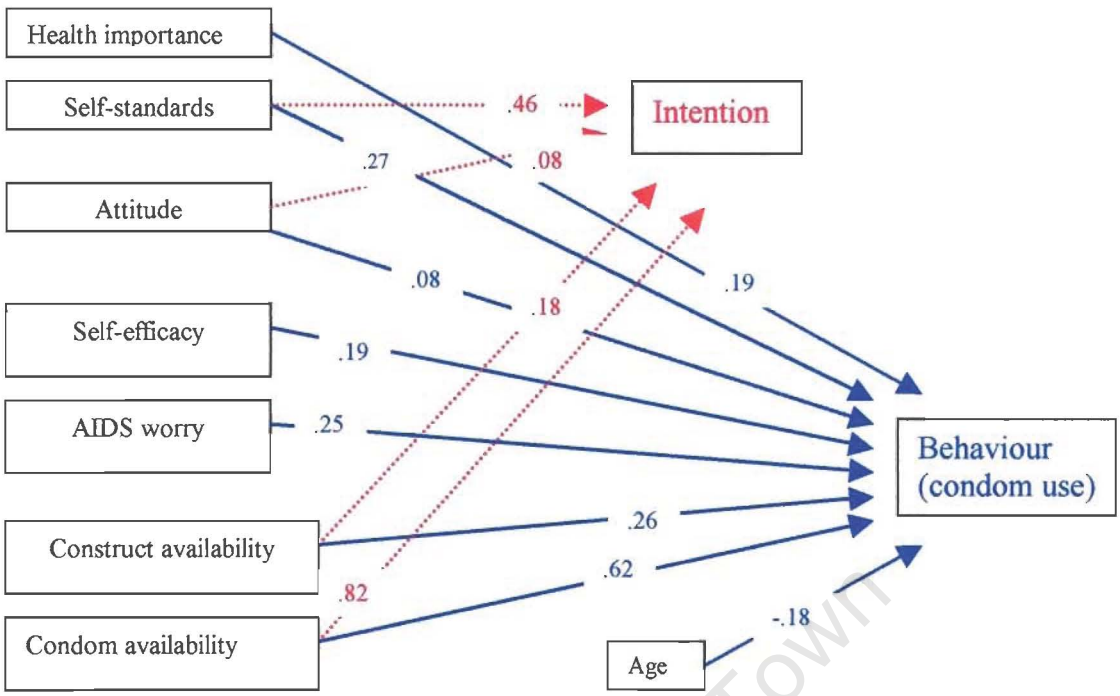

Figure 5.1: **Predicted and obtained influences on intention and condom use: Black males.** [8]

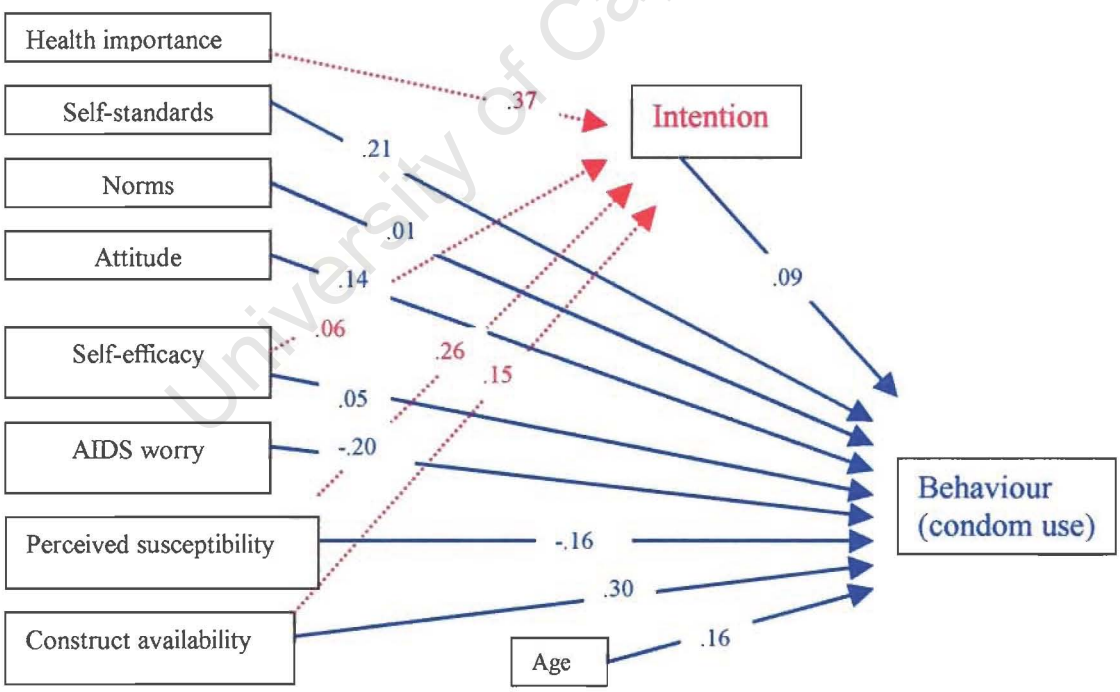

Figure 5.2: **Predicted and obtained influences on intention and condom use: Coloured males.**

[8] Coefficients for the prediction of intention are beta weights and coefficients for the prediction of behaviour are regression coefficients from logistic regression. Only significant coefficients are portrayed on the diagrams (p <.05).

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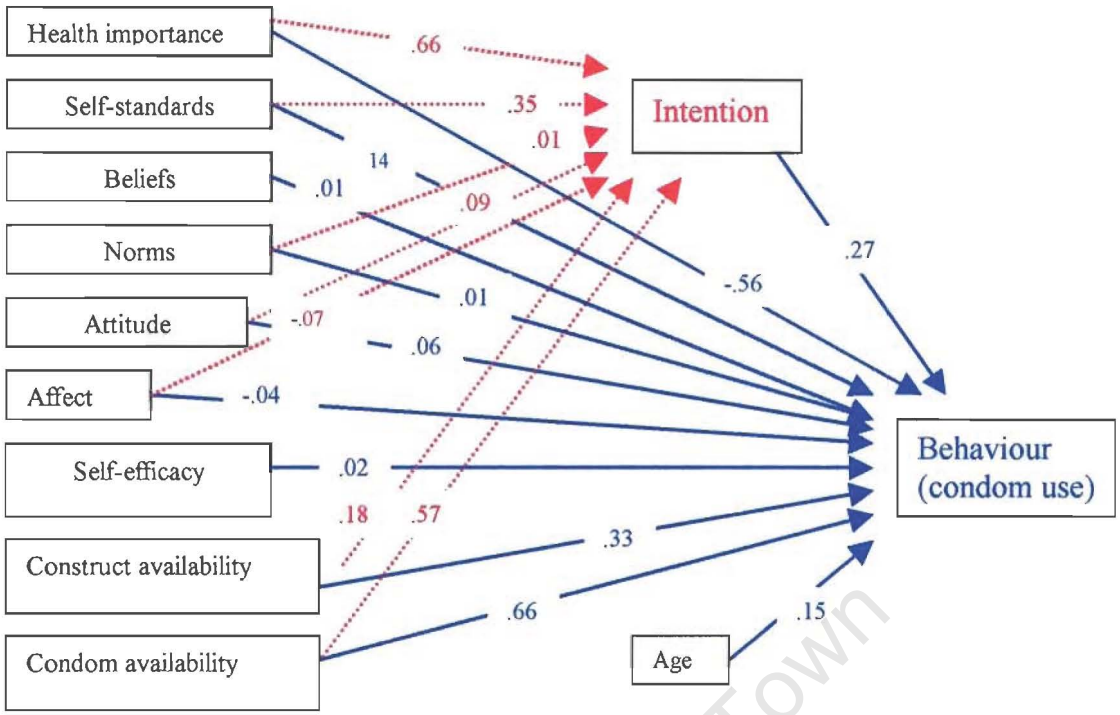

Figure 5.3: **Predicted and obtained influences on intention and condom use: Black females.** [4]

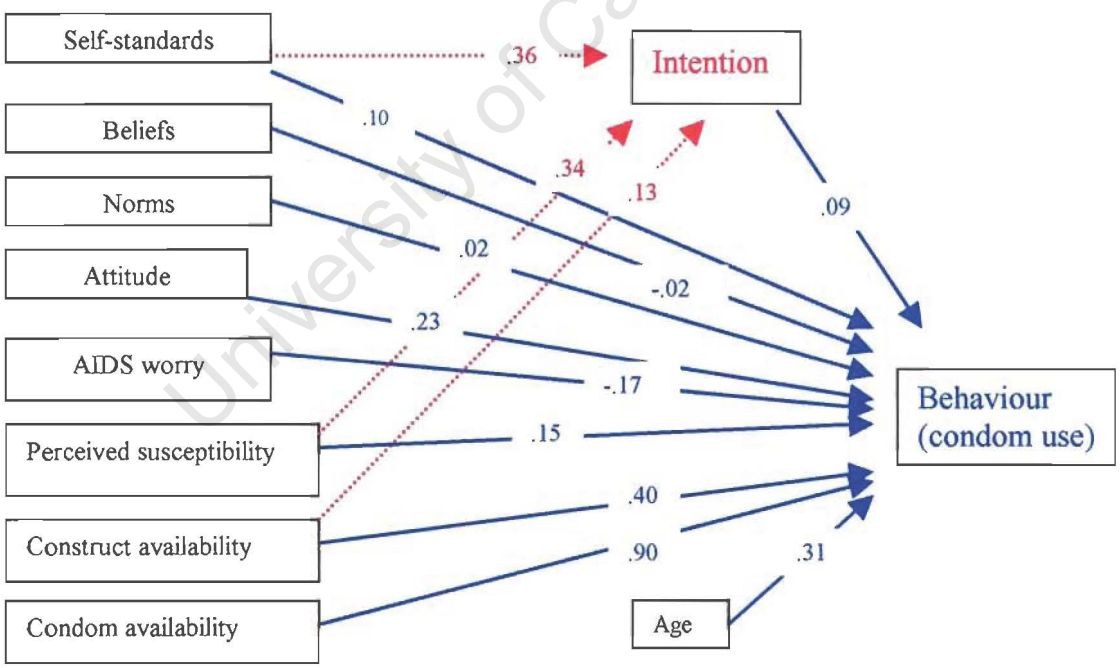

Figure 5.4: **Predicted and obtained influences on intention and condom use: Coloured females.** [4]

[4] Coefficients for the prediction of intention are beta weights and coefficients for the prediction of behaviour are regression coefficients from logistic regression. Only the significant coefficients are portrayed on the diagrams (p <.05).

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5.4.3 Data mining: tree diagrams

Finally, the influence of the independent variables on condom use were analysed using the tree diagram routine of the SAS Enterprise Miner program (SAS Inc., 2000). The colours of the terminal nodes (leaves) indicate the percentage of condom users versus non-users. The red shades indicate a high percentage of non-users and the green shades indicate a high percentage of condom users. Thus, the redder the node, the more non-users and the greener the node, the more condom users. A yellow colouring is an in-between group, were condom use is uncertain. The data were divided into two sections namely: a training and a validation data set. The training data set (70%) was used to construct the tree diagram. The validation data set (30%) was used to test the tree algorithm obtained on the validation data.

The tree diagrams revealed that construct availability distinguished best between condom users and non-users for all race gender groups (see Figures 5.5 – 5.8). The second level factors, however, differed for each group. For Black males, when a construct availability score of 10 was measured, condoms were used by 69.2% of the learners (as shown by the validation information data set information). If construct availability was less or equal to 9, the self-standard score had to be 5 and a normative score had to be high (>54.5) to increase condom usage. Thus Black males were most likely to use condoms with a high construct availability score, or if they had a low construct availability score but a high self-standard and norm score. The tree diagram for this group produced a good model with an accuracy of 75.76% when classifying information from the validation data set using the tree constructed on the training data set (see Figure 5.5)

Coloured male condom users were most likely to have a high construct availability score, a high self-efficacy score and positive affect towards condoms. Condom non-users were more likely to have a low construct availability score (see Figure 5.6). For this group this tree model produced a model with an accuracy of 67.21% when classifying the information from the validation data set.

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As was the case for both male groups, construct availability was also the independent variable that distinguished best between Black female condom users and non-users (see Figure 5.7). Condom users in this group were most likely to have a high construct availability score, followed by a high self-efficacy score. For this group this tree model produced a model with an accuracy of 67.26% when classifying the information from the validation data set.

Finally, for Coloured females condom use is also influenced by a high construct availability score, which is in turn influenced by a stronger positive general attitude towards condoms (see Figure 5.8). Condom non-users were most likely to be characterised either by a low construct availability score and a positive belief about condoms. For this group this tree model produced a model with an accuracy of 73.68% when classifying the information from the validation data set.

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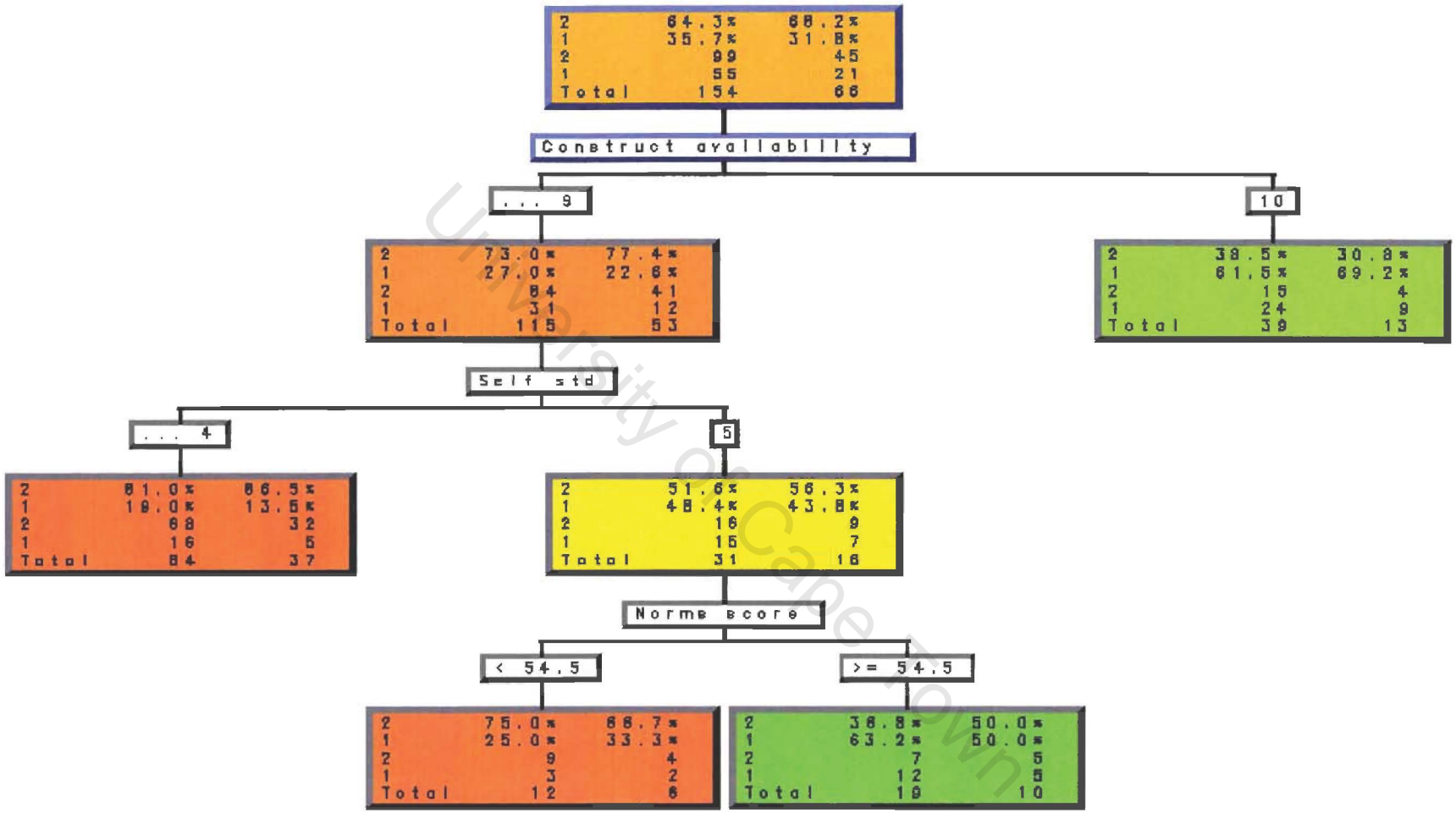

***Figure 5.5*: Tree diagram: Black males**
(tree accuracy = 75.76%) (1 = condom use; 2 = condom non-use)

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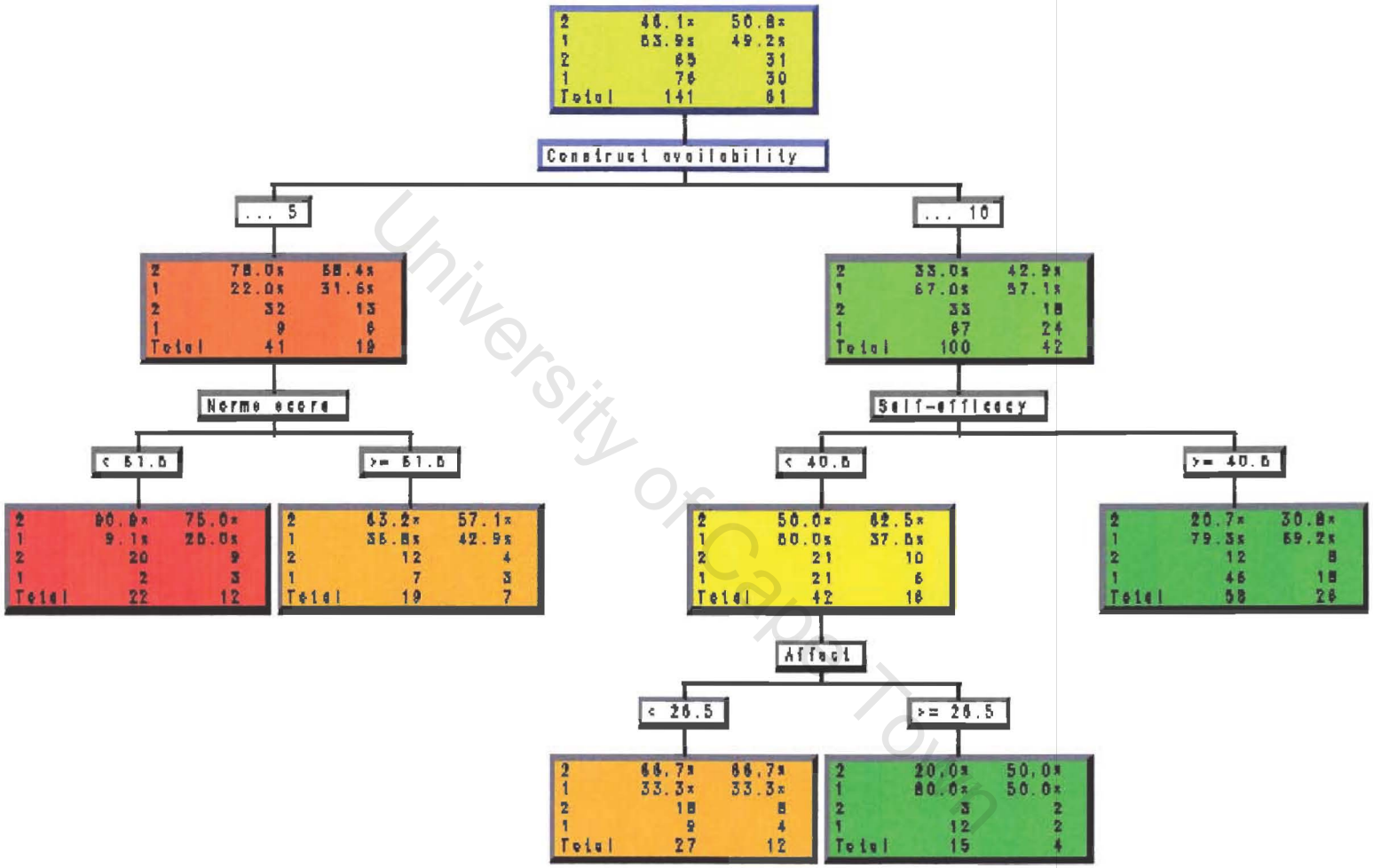

***Figure 5.6*: Tree diagram: Coloured males**
(tree accuracy = 67.21%) (1 = condom use; 2 = condom non-use)

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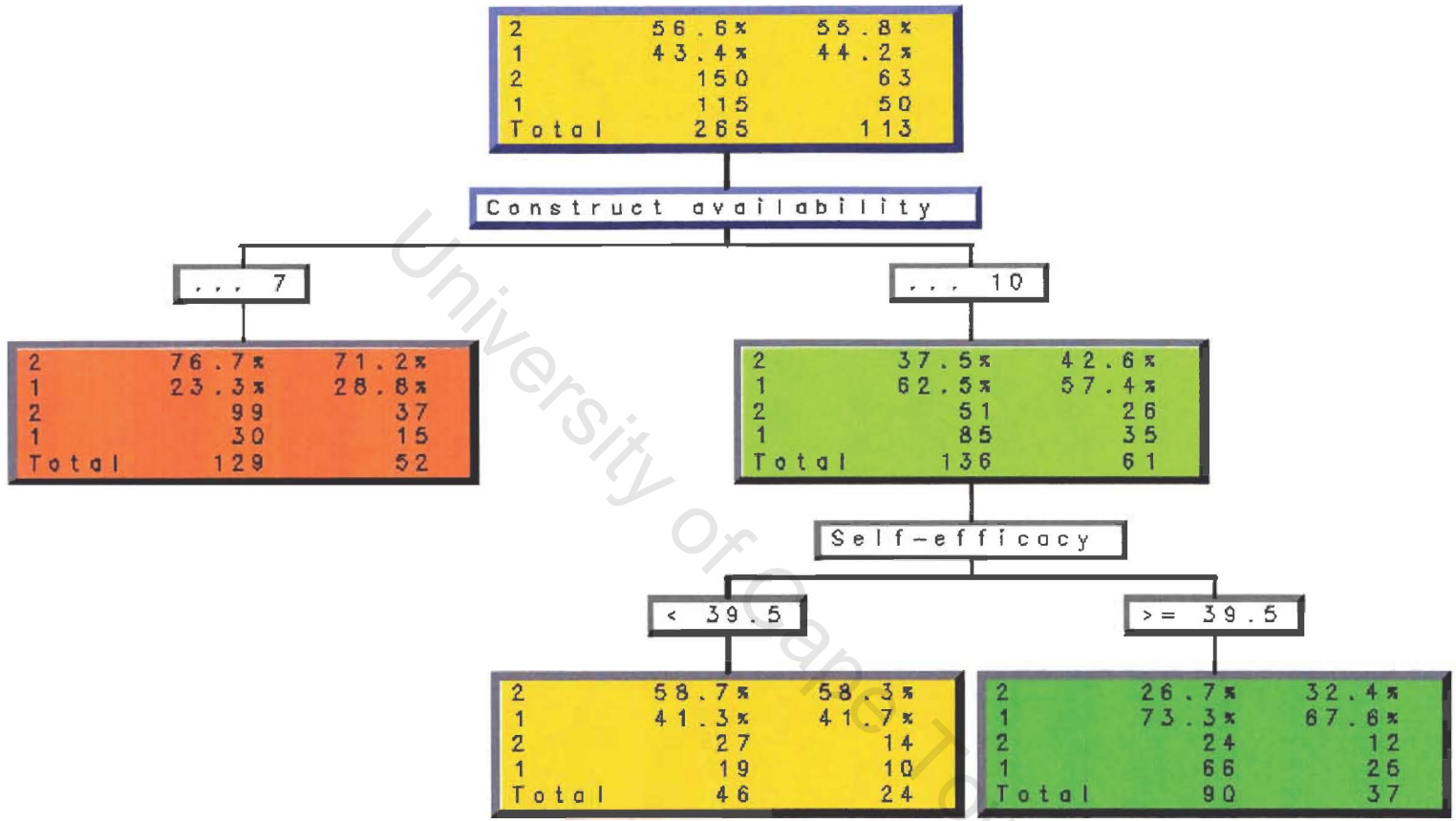

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***Figure 5.7*: Tree diagram: Black females**
(tree accuracy = 67.26%) (1 = condom use; 2 = condom non-use)

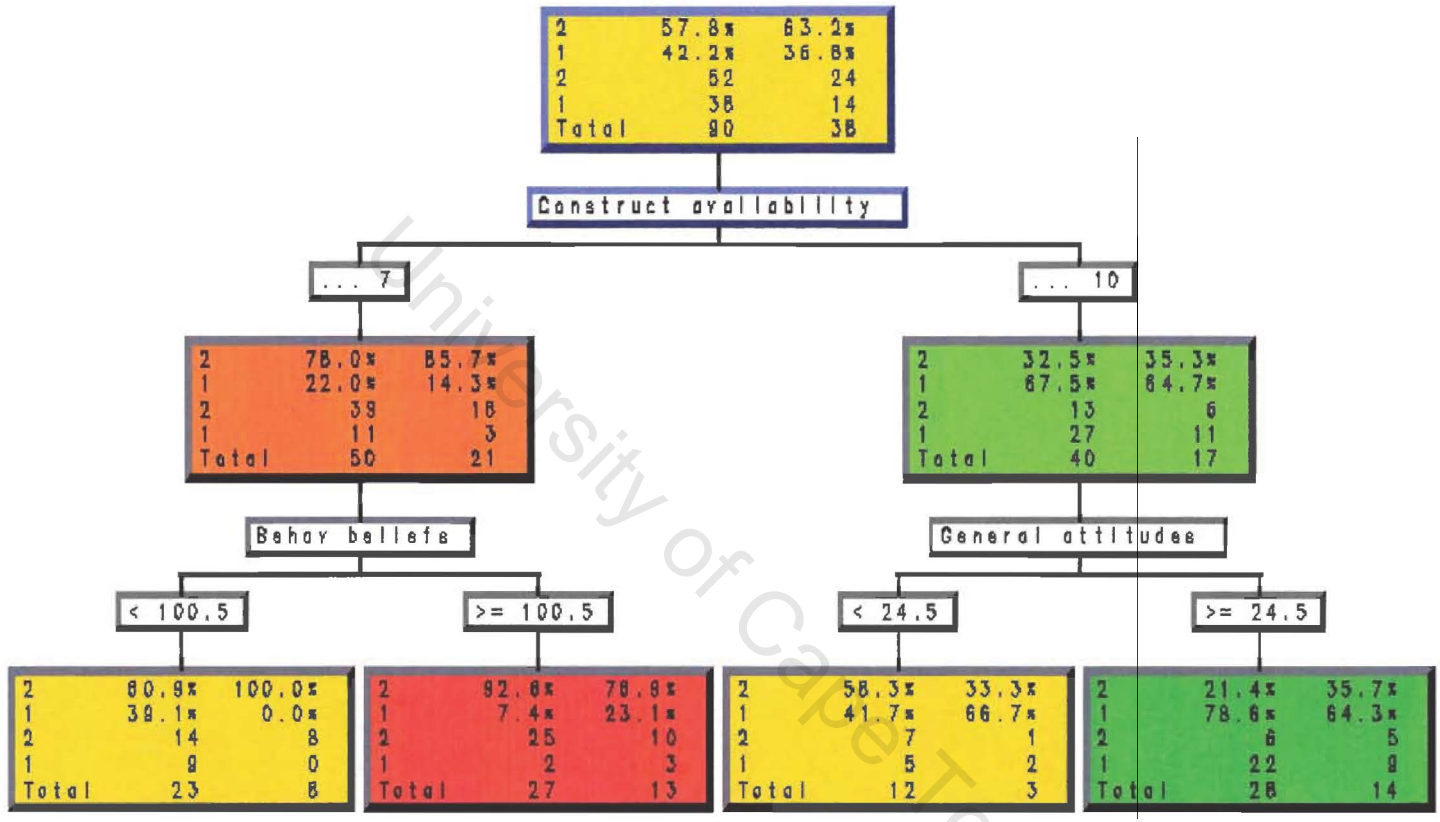

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***Figure 5.8*: Tree diagram: Coloured females**
(tree accuracy = 73.68%) (1 = condom use; 2 = condom non-use)

5.5 Summary

The following table (Table 5.23) presents a summary of the relationship between the independent variables and intention to use a condom as well as condom use on the last coital episode stratified by gender and race. The data reveal both similarities and differences in the way that the independent variables correlated with condom use based on gender and race. For Black males, multiple regression analysis showed that the significant correlates of intention to use condoms were attitude toward condoms, self-standards, condom availability and construct availability. The logistic regression showed that same four independent variables also appear to be correlates of condom use. In addition, general importance attached to health, perceived self-efficacy, worry about contracting AIDS correlated positively and age negatively with condom use. The logistic regression analysis, however, showed no significant link between intention to use condoms and actual condom use for this group. Stepwise logistic regression revealed that the most significant influence on condom use for this group was condom availability. The tree diagram indicated how the independent variables influenced condom use versus non-use. The tree diagram showed that Black male condom users were most likely to have a high construct availability score, and non-users a low construct availability score. If they had a low construct availability score, then a high self-standard and norm score were more likely to result in condom usage.

For Coloured male respondents, the multiple regression analysis showed that construct availability, health importance, self-efficacy and perceived susceptibility to HIV/AIDS were significant correlates of intention to use condoms. Logistic regression analyses showed that intention to use condoms, norms, attitude, self-efficacy, construct availability, self-standards, AIDS worry and age significantly influenced condom usage. Stepwise logistic regression showed that the most significant independent variable was construct availability. The tree diagram confirmed this and showed that construct availability was the most important variable that distinguished users from non-users. Condom users had high construct availability, self-efficacy and affect scores, whereas non-users had low construct availability and norms scores.

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For Black female respondents, the multiple regression analysis showed that a larger number of independent variables significantly influenced intention to use condoms than was the case for the previous two groups. Thus, norms, attitude, affect, construct availability, health importance, self-standards and construct availability were shown to influence the intention to use condoms. Condom use behaviour was influenced by all of the independent variables, except perceived susceptibility and AIDS worry. The stepwise logistic regression analysis chose health importance as the most important variable for this group and the tree diagram showed that construct availability, followed by high a self-efficacy score were the most influential factors for condom usage for this group.

The multiple regression analysis showed that intention to use condoms was only influenced by three independent variables for Coloured females; namely, construct availability, self-standards and perceived susceptibility to HIV/AIDS. Condom use behaviour on the other hand was significantly influenced by all of the independent variables except affect, health importance and self-efficacy. The tree diagram showed that Coloured females who used condoms had a high construct availability score followed by a positive attitude toward condoms. Those who did not use condoms were most likely to have a low construct availability score and a positive belief score.

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Table 5.23: Summary of correlates of intention to use a condom and condom use on last coital episode stratified by race and gender.

Independent variables	Intention								Condom use							
	Pearson correlation coefficient				Multiple regression				t-test/χ^2				Logistic regression			
	BM	CM	BF	CF	BM	CM	BF	CF	BM	CM	BF	CF	BM	CM	BF	CF
Intention	/	/	/	/	/	/	/	/	√	√	√	×	×	√	√	√
Beliefs	√	√	√	√	×	×	×	×	×	√	√	×	×	×	√	√
Norms	×	√	√	√	×	×	√	×	×	√	√	√	×	√	√	√
Attitude	√	√	√	√	√	×	√	×	√	√	√	√	√	√	√	√
Affect	√	√	√	×	×	×	√	×	√	√	√	×	×	×	√	×
Self-efficacy	√	√	√	√	×	√	×	×	√	√	√	√	√	√	√	×
Construct availability	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Health importance	×	√	√	×	×	√	√	×	×	×	×	×	√	×	√	×
Self-standards	√	√	√	√	√	×	√	√	√	√	√	√	√	√	√	√
Perceived susceptibility	×	√	√	√	×	√	×	√	×	×	×	×	×	√	×	√
AIDS worry	×	√	√	√	×	×	×	×	√	×	×	×	√	√	×	√
Condom availability	√	×	√	×	√	×	√	×	√	√	√	√	√	×	√	√
Age					*								√	√	√	√

(√ = significant; × = not significant; BM = Black males; CM = Coloured males; BF = Black females; CF = Coloured females

* see footnote no.6, p.138

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CHAPTER SIX

DISCUSSION AND RECOMMENDATIONS

6.1 Introduction

The aim of this research was to contribute toward an increased understanding of condom usage among adolescents in a South African context, by exploring the effects of a range of variables derived from five social-cognitive theories of behaviour as well as the construct availability model (see Chapter 2). In this final chapter, I will attempt to draw together the findings of this study and make recommendations for enhancing condom use among adolescents, as well as highlight aspects for future research.

6.2 Strengths of study

Against a background of largely ineffective interventions, there is a growing acknowledgement of the importance of basing interventions aimed at increasing condom usage on a firm theoretical foundation. Those that are based on social cognitive models are showing particularly promising results (Abraham *et al,* 1998; Fishbein, 2001; Fisher & Fisher, 1992a & b; Kirby *et al,* 1994; National Institute of Health, 1997; Schaalma *et al,* 2002). According to Abraham *et al* (1998:307), "these social cognitive models are the most valuable theoretical tools available to health promotion in the area of HIV/AIDS". Thus a key strength of this research is that it is based on social cognitive theory (see Chapter 2). In addition, the conceptual model underpinning the research contains most of the constructs identified as key determinants of behaviour and behaviour change in the NIMH sponsored theorist's workshop (see Chapter 1) (Fishbein *et al,* 1992). Very few of the sexual health interventions aimed at increasing healthy sexual behaviour thus far have this theoretical base (Fisher & Fisher, 1992a; Oakley, Fullerton, Holland, Arnold, France-Dawson, Kelley & McGrellis, 1995; Schaalma *et al,* 2002). The research thus makes an important contribution to the theoretically driven knowledge base of studies on adolescent condom usage.

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A further strength of the study is that it contributes to the local knowledge base on HIV risk behaviour. Only very fragmented information about adolescent condom usage in South Africa is currently available and there are no other published studies that attempt to understand adolescent condom usage in a South African setting using a similar integrative conceptual framework (Eaton *et al*, 2003; Kaaya, Flisher, Mbwambo, Schaalma, Aaro & Klepp, 2002). This study helps identify variables that influence condom usage in a South African context among school-going adolescents that are based on a firm theoretical framework. The findings can thus be used to guide school-based interventions aimed at improving condom usage as well as to stimulate further research using other samples and also prospective study designs.

This research also makes an important international contribution in that it contributes to the database of studies using integrative theoretical approaches to studying adolescent condom usage (see Chapter 3). Very few of these studies have been conducted in a non-western setting and particularly in Africa. This study therefore helps address the argument that 'Western' models and theories such as the TRA, TPB and HBM do not apply to other cultures or populations (Fishbein, 2001).

An additional strength of this research lies in its methodology and design. According to Flisher *et al* (1999), most South African studies of adolescent sexual behaviour are limited by methodological factors such as small unrepresentative samples and a failure to address the sampling strategy in the statistical analysis. This study addresses both of these shortcomings. Firstly, it is based on a representative sample of high-school students in the Cape Town Metropolitan area. A sophisticated multi-stage sampling strategy was used to increase the probability that the sample would be representative. Thus, for instance, the first stage was stratified by postal code, which is a proxy for social class. Secondly, the data were weighted using the SUDAAN programme (see Chapter 4), which enabled the complex sampling procedure to be taken into account during the data analyses.

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The methodology used has the advantage of using a combination of qualitative and quantitative methods and illustrates how theory is used in the development of the questionnaire. In order to apply the theoretical model that underpins this research properly, it is important to conduct formative research in the target population to identify salient referents, barriers, facilitators and outcomes (Fishbein *et al*, 1992; Montano, Kasprzyk, von Haeften & Fishbein, 2001). To meet this requirement, a qualitative elicitation study was used to establish the salient population based content. The theoretical framework served as the basis for the design of the focus group interviews used in the elicitation study. The questionnaire was then carefully constructed using the results of the elicitation study, literature survey, expert opinion and piloting with different language and gender groups. No similar documented studies on adolescent condom usage in a South African context could be traced that have used this methodological approach.

A further strength of this study is that the relationship of the core constructs to both intention to use condoms and actual condom use was investigated. This was done because of the conflicting evidence regarding the relationship between intention to use condoms and condom use among adolescent populations (see Chapter 3 and also discussion below). Although due to the cross-sectional study design, causality cannot be established, the findings indicate which variables appear to play an important role in condom use and also throw some light on the relationship between intention and condom use.

Since one of the goals of the study is to improve school-based interventions to increase condom usage among adolescents, it is important to determine whether similar factors influence condom usage for different race and gender groups. These factors can be expected to vary among different subgroups of adolescents and interventions are likely to be ineffective if they do not take into account these differences (see Montano *et al*, 2001). In fact condom use is often viewed as a behaviour for men and a goal for women

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(Breakwell *et al*, 1991; Fishbein, 2000, Maxwell & Boyle, 1995, Von Haeften & Kenski, 2001). It is thus likely that different theoretical determinants will influence usage for males and females. In addition, a large number of studies point to differences in factors affecting condom usage according to race/ethnicity (Anderson *et al,* 1990; Brown *et al,* 1992a, 1992b; Hingson *et al*, 1990a; DiClemente, 1999). In order to investigate the extent to which these differences apply in this study, the data were stratified according to race and gender and not just adjusted for these variables. This enabled the specificities for each race gender group to be documented and the results indicate considerable variation in the importance and significance of the constructs used in the model according to these subgroups. This has implications for the design of messages targeting condom usage in these target audiences, which will be discussed in more detail below.

6.3 Limitations of the study

Before proceeding to discuss the results and focus on the implications of this study for practice, theory and future research, it is important to acknowledge its limitations. These include, the validity and reliability of self-report data such as those used in this study, the cross-sectional study design and the problem of post-diction, the limited generalisability of the results, the fact that a number of possibly important explanatory variables were excluded from the study, the measures used, and problems relating to relationships between the variables. Each of these issues will be discussed in more detail below.

6.3.1 Cross-sectional design

The cross-sectional design of this study allows conjecture about future behaviour only from past behaviour and independent variables measured in the present (see Chapter 2). It thus attempts to 'predict' past behaviour with social-cognitive constructs measured after the behaviour has actually occurred. As a result, the data reveals whether variables are correlated, but not the direction of causation. This is derived from theory and remains speculative (Albarracin, Fishbein, Johnson & Muellerleihe, 2001; Basen-Engquist, 1992; DiClemente *et al* 1996). In addition, factors predicting future condom use might well

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differ from the correlates of condom use measured cross-sectionally (Montano & Kasprzyk, 2002). It could be argued that this study postdicts reports of past behaviour rather than predicts future behaviour. This compromises the internal validity of the study since it assumes that past behaviour is a consequence of attitudes, beliefs, norms and other independent variables measured in the present (Albarracin *et al*, 1998; 2001). According to Albarracin *et al* (1998), the problem is made worse by the fact that past condom use may actually be a determinant of intention and also future condom use. According to the TRA, however, the influence of past behaviour should be largely mediated through attitude and norms. Albarracin *et al* (2001) in a meta-analysis of studies using the TRA and TPB to predict condom use found a very small direct influence of past behaviour on future behaviour. A possible reason for the small size of this relationship could be due to the often unstable context of condom use, which might prevent this behaviour from becoming habitual or automatic (Albarracin *et al*, 2001; Ouelette & Wood, 1998).

This is one of the few large studies of this kind in South Africa, indicating that this field of research is still relatively immature in this country. Thus despite the problem of postdiction which arises from the cross-sectional design of this study, I agree with Basen-Engquist (1992: 130-1) that "... the importance of gaining some information about the association between these variables and actual behaviour was important enough for this logical inconsistency to be tolerated."

The present study investigated the effect of the independent variables on intention to use condoms and on condom use. It did not measure causality between beliefs about the consequences of using condoms and general attitude toward condoms as indicated in the TRA and TPB (see Figures 2.3 and 2.4). It also did not presume that the various independent variables influenced condom usage via intention, but tested the possibility that they could also influence behaviour directly. The extent to which the various independent variables influenced each other was investigated using correlation analyses. However, the directionality of causality in which the various independent variables

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influence each other will need to be investigated in future studies using a longitudinal design.

There were a number of very practical reasons for using a cross-sectional instead of the preferable longitudinal study design. Due to time and financial constraints, data for this study could only be collected at one point in time. To do a follow-up longitudinal study in which behaviour was measured at a later stage would have involved considerably more time and expense, which was beyond the scope of this study. The results must, however, be interpreted with caution. In order to address the problem of postdiction, additional studies using a prospective cohort design are needed to establish causality and the consistency and stability of these variables to influence condom usage over time.

6.3.2 Generalisability of the results

This study focused on a specific sub-group of school students, namely those residing in the Cape Town metropolitan area. Data analyses were confined to sexually active Black and Coloured adolescents and omitted white learners due to the smaller number who were sexually active. Asian learners were omitted altogether due to the small number in the total sample. It is not known therefore whether these findings can be generalised to white and Asian adolescents, and to adolescents living in other areas. Further research is needed to explore the applicability of these constructs to condom usage in these groups.

A further group excluded from the sample were school drop-outs. This is an important high-risk target group that need to be investigated in future research, as it is possible that different factors will relate to condom usage versus non-usage for this group (Flisher & Chalton, 1995). This research was however aimed at informing school-based interventions. Data from drop-outs are less relevant for this aim.

A further group excluded from the sample were absentees on the day of the research. According to Guttmacher, Weitzman, Kapadia and Weinberg (2002), efforts to capture

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absent students in classroom-based studies are not warranted by the small improvements that they produce in risk behaviour estimates. They found that weighting the data marginally improved the estimates. As this study was done in New York it is not known to what extent this also applies in a South African situation. However, the fact that the data in this study were weighted marginally corrected for absenteeism. Based on the Guttmacher *et al* (2002) study, it is unlikely that those absent on the day of the research had much influence on the generalisability of the findings.

6.3.4 Reliability and validity

A further methodological concern relates to the reliability and validity of the type of self-report data used in this research. The question of validity becomes particularly pertinent in the case of self-report data pertaining to sexual behaviour, which is usually embarrassing to talk about, very personal and often judged as being inappropriate or wrong for young people. This increases the possibility of respondents giving what they perceive to be desired responses to these type of questions.

A number of researchers question the validity and reliability of self-report measures of sexual behaviour in terms of accuracy, honesty of recall, and/or willingness to report socially disapproved behaviour (Catania, Gibson *et al*, 1990; DiClemente *et al,* 1996; Rosenthal *et al*, 1991; Zenilman, Weisman, Rompalo, Ellish, Upchurch, Hook & Celentano, 1995). However, other researchers have established that self-reports of sexual behaviour show high validity by comparing the inter-partner reports (Coates, Soskolne, Calzavara, Read, Fanning, Shephard, Klein & Johnson, 1986; Gerrard, Breda & Gibbons, 1989) and also the associations between reported condom use and sero-conversion (Winkelstein *et al*, 1987 cited in Albarracin *et al*, 2001). If one looks more specifically at condom usage, Sheeran and Orbell (1998:246) feel that the reliability and validity of this type of data should not be seen as a serious problem "because test-retest reliability analyses and validation of self-reports against reports of sexual partners indicate that self-report measures of condom use do have satisfactory reliability and validity". This is

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substantiated by other researchers, who have found that reliabilities of self-reports of condom use are in the range of .70 and .80 (Blake, Sharp and Temoshok, 1992; Catania, Gibson *et al*, 1990; Sheeran & Abraham, 1994).

In this study, I attempted to improve the reliability and validity of the responses pertaining to self-reported sexual behaviour by assuring respondents of anonymity and confidentiality. I stressed that I was not interested in their individual answers but rather those of the group as a whole, and highlighted that the study would contribute to help combating the spread of HIV/AIDS in South Africa. Teachers were not present during the administration of the questionnaire in the hope that this would motivate respondents to give honest responses.

The questionnaire also contained a number of questions that allowed the cross checking of the accuracy of responses. All questionnaires that showed contradictory responses to key questions (e.g. if a respondent said that they had never had sex, but then responded positively to the question on whether they had used condoms the last time they had sex) were omitted from the final analysis (see Chapter 4).

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One indicator of validity is to compare rates of reported sexual activity in this study with those reported in other studies among adolescents in South Africa. The rates of reported sexual activity, average age of sexual activity and reported rates of condom usage found in this study are reasonably consistent with other studies done in South Africa and in Cape Town (Flisher *et al*, 1993; 1999; Kelly, 2000) so that the data collected in this study can be viewed as reasonably valid.

Most of the items used in the questionnaire required responses to rating scales. Nickerson (1990) discusses an important shortcoming of using this type of item to assess variables that could influence condom usage. He points out that items may have what he calls 'demand characteristics', which result in respondents giving what they consider socially desirable responses to items. In addition "rating scale items are very prone to certain response sets such as 'yea-saying'" (Nickerson 1990:1174) and could result in an

inflation of attitudes and beliefs relating to the importance of using condoms relative to their actual value and importance. These concerns need to be taken seriously in this study. I tried to address them in the questionnaire design by making item wording multi-directional as opposed to uni-directional (see Chapter 4). One way of judging the effect of 'demand characteristics' is by the mean values and standard deviations for each item. According to Nickerson (1990), if the means are high and SDs low then it is unlikely that the responses to the items truly reflect personal values and attitudes. It appears as if particularly attitude, health importance and intention could have strong demand characteristics in this research, judging by their high mean values and low SDs (see Chapter 5). On the other hand, the high means and low SDs for these variables could also reflect homogeneous personal values and attitudes. Further research using a range of different measures is necessary to establish whether this is the case rather than the influence of demand characteristics.

Concurrent validity was assessed by testing the hypotheses about the relationship between the independent variables and condom use versus non-use. I hypothesised that condom users would score higher that non-users on all the independent variables. The univariate analyses were significant for most variables (see Tables 5.3 and 5.4) suggesting that the independent variables differentiated between condom users versus non-users. Thus condom users were more likely to have more positive affect, attitudes and beliefs towards condoms, perceived that social norms were more positive toward condom use, were more able to discuss condom use with a sexual partner, had a higher self-efficacy score, were more likely to intend to use condoms and have a higher self-standard score.

The Cronbach alpha values of the scales used in this study were reasonable and varied between .62 and .83 (see Table 4.3), indicating that the scales showed reasonable internal consistency.

No test-retest data is available for the measures used in this study and the reliability of these measures will need to be established in further research. In the only study that

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documents test-retest reliability of self-reported adolescent risk behaviours, including sexual behaviour, in a South African context, Flisher, Evans, Muller and Lombard (*in press)* reported a substantial test-retest reliability for the item on whether respondents had ever experienced heterosexual intercourse (Cohen's kappa = .80, 95% confidence interval = .70 - .90) (Flisher *et al*, in press). The test-retest reliability and validity of the current measures need to be examined in further research.

6.3.5 The measurement of independent and dependent variables

Condom use

There are a number of possible problems related to the measures of both the dependent and independent variables used in this study. Firstly, the measurement of condom use is problematic. Condom use is often not a single behaviour but a behavioural category that involves a series of choices made by one or both partners. These choices are interactive and depend on negotiation between the partners and can differ according to type of sexual partner casual versus regular), stage of relationship, type of sexual intercourse (vaginal, anal or oral) and stage of behavioural change toward condom use (Bauman & Berman, 2002; Fishbein, Douglas, Rhodes, Hananel & Napolitano, 1993; Freimuth *et al* 1992; Grimley & Lee, 1997; Grimley, Prochaska & Prochaska, 1997; Grimley, Prochaska, Velicer & Prochaska, 1995; Montano *et al,* 2001; Schnell, Galavotti, Fishbein & Chan, 1996). Montano *et al* (2001) identified 12 different types of condom use behaviours in their longitudinal study to identify determinants of consistent condom use in high-risk populations.

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The analyses in this study, in line with suggestions made by Fishbein *et al* (1992), were limited to a single behavioural alternative, namely condom use on the last coital episode. However, according to Nickerson (1990), a person engaged in decision-making never considers a single alternative, but always considers at least two. He argues therefore that one should consider beliefs, values and intentions at least for use **and non-use** of

condoms in a study of this nature. "An individual's overall attitude toward any alternative is composed of his or her beliefs and values toward the multiple consequences of that alternative. This implies that even if an individual's overall attitude toward one alternative (e.g. use of the condom) is quite positive, he or she may opt for some other alternative if his/her attitude toward the other alternative is as positive or even more positive" (Nickerson 1990:1176).

This limitation is further substantiated by Kashima and Gallois (1993), who stress that although a person may have a strong intention to perform a behaviour, they may have an even stronger intention to perform an alternative behaviour. Therefore it is important to compare intentions for several behavioural alternatives for an individual in order to predict behaviour (within-subject comparison). There are further problems related to the use of a single item measure for behaviour. According to Norman and Conner (1996:203), "Perfomance of a behaviour on a specific occasion may be open to a whole range of idiosyncratic influences, which may mean that the observed behaviour is atypical. This will therefore tend to underestimate the strength of the relationship between social cognitive variables and behaviour". This study, however, in line with much of the other research in this area, only compares intentions for a single behaviour (condom use with a partner every time you have sex) with actual behaviour across subjects and does not measure intentions for different variations of condom use behaviour.

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Although these appear to be valid concerns, to address them would necessitate a much larger study. Thus to measure condom usage versus non-usage and all the other alternatives to condom usage, all of the questions asked in the questionnaire would have to be duplicated for every relevant behaviour in order to be in line with the suggestions made by Fishbein *et al* (1992). This is not only beyond the scope of a study of this nature, but it is doubtful to what extent adolescents would be prepared to answer a much longer questionnaire than the one used in this study. Nevertheless cognisance should be taken of these points in planning interventions to increase condom use. This suggests that

more research is needed taking into account both the stages of use as well as different condom use behaviours and alternatives to condom use within the specific cultural and social-cognitive contexts in South Africa

A further limitation is that questions for the independent variables were asked relating to condom usage every time they have sex, whereas the dependent variable was condom use on last coital episode. Cognitive variables may produce low correlation between predictor and dependent variables if the levels of measurement do not match (Lugoe, 1996). It is recommended therefore that predictors and dependent variables, especially those related to attitudes, intentions and behaviour be stated at the same level of generality or specificity. Thus for example all questions could be asked about "condom usage on next coital episode" or all questions could be asked about "using a condom every time you have sex with a regular partner". According to Fishbein (1967), it is important that there is a large degree of correspondence between measures of attitude, intention and behaviour in terms of action, target context and time. This presents a problem in this research that could have contributed to lower correlations between independent variables and condom usage. One way of addressing this would have been to have asked all questions relating to 'next time you plan to have sex". However the Western Cape Education Department did not want me to ask questions that assumed learners were sexually active and insisted that they be formulated more tentatively. Another way of tackling this problem would have been to make the dependent variable "how often do you use condoms". This variable is however also problematic as it raises issues of comparability, recall and accuracy. On the other hand, a number of researchers have found that there is a high correlation between different measures of condom use (for example, condom use on last coital episode and consistency of condom use), suggesting that the measure of condom use used in this study is likely to be reliable (Abraham *et al,* 1996; Herold, 1981; Weisman, Plichta, Nathanson, Ensminger & Robinson, 1991).

A further limitation of the measure of condom use used in the study is that I did not specify the type of partner (steady versus casual) or stage of relationship. These might have led to different responses. Sheeran and Orbell (1998) for example found in their

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meta-analysis of studies pertaining to the relationship between intentions and condom use, that the link between condom use and intention differed according to the type of partner. Once again it was beyond the scope of this study to ask all the questions for different types of sexual partner. This should form the focus of future research.

Intention

The measurement of intention to use condoms presents a further problem. The sporadic nature of adolescent intercourse, particularly in the early and middle teen years, suggests that the decision to use condoms may be made situationally rather than in advance; thus behavioural intentions to use condoms assessed well in advance of intercourse may not have much validity (Nickerson, 1990). This is substantiated by Morrison (1985), who says that the assumption that adolescents can and do plan ahead in the same way adults do regarding contraception is questionable. Adolescent sexual activity is often infrequent, irregular and unanticipated, making theories that emphasise planned behaviour (such as the TRA) questionable in their application to this kind of behaviour. This criticism is partially addressed by the TPB by the inclusion of perceived behavioural control (self-efficacy) (see Chapter 2).

A further problem with intention is that the relative importance of the determinants of intention can be expected to vary according to factors such as type of sexual partner (occasional versus regular), stage of the relationship, population and gender (Kasprzyk *et al,* 1998; Montano *et al,* 2001; Sheeran & Orbell, 1998). In this research I tried attempted to address this by analysing the data according to both race and gender.

A further important limitation relates to the asking of hypothetical questions about hypothetical behaviour, such as was the case in this study (Maibach & Murphy, 1995, Nickerson, 1990). Nickerson (1990) stresses that if, for instance, the belief and value questions are answered from a role-playing perspective (i.e. as if the respondents were going to use condoms), but the behavioural intention questions assess what the

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respondent actually plans to do in the future, then it is very possible that observed attitude/behaviour discrepancies could have resulted from a change in contexts. In addition, the TRA recommends that attitudes to condoms and subjective norms should be assessed in relation to a very specific and clearly outlined behaviour (e.g. using condoms on the next sexual encounter) rather than more generally (see Chapter 2). Some proponents of this theory might feel that the behaviour measured in this study (namely using a condom every time you have sex/insisting on your partner using a condom every time you have sex) is not specific enough. We were not able to use more specific wording in this study due to the fact that the education department wanted the questions to be tentative so as not to exclude or offend learners who were not yet sexually active. However, it is possible that greater specificity of these measures could have increased their predictive power.

6.3.6 The role of other possible explanatory variables

The model used in this study does not take into account every possible relationship between the independent variables and also does not take into account feedback loops between these variables. It also leaves out the influence of a number of possible explanatory variables that have been shown by other studies to be important in predicting condom usage. These include individual personality factors, family and other social factors, behavioural indices such as drug and alcohol use, type of sexual activity and partner as well as other psychosocial measures (Brook, Brook, Whiteman *et al,* 1998; Bunton, Murphy & Bennet, 1991; DiClemente, 1991). The focus on individual versus collective decision-making may also be criticised. As stated in Chapter 1, the focus of this study is however on social-cognitive theory and the purpose is to attempt to integrate existing theory-based approaches to condom use and to point to directions for future research. The existence of other important correlates is acknowledged (see Chapters 2 and 3).

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A criticism sometimes levied at the type of social cognitive theory underpinning this research is that they are too individually focused and ignore the social foundations of cognitions (Joffe, 1996). We need to recognise that individual elements of beliefs, values, attitudes and intention exist and are constructed, maintained or changed in interaction with the social environment. Thus the cognitions measured in this study are in fact social regarding their content and origin (Abraham *et al*, 1998; Leydens & Codol, 1988). Social aspects pertaining to condom usage were incorporated to the extent that factors such as significant others, culture, and religion have been taken into account in the measure of social norms. Some of the social context has also been taken into account in the beliefs and perceived behavioural control/self-efficacy measures. However, further research needs to focus more on the community and its influence on condom usage as well as on the interactive and dynamic aspects of condom use behaviour.

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6.4 Discussion of Findings

In the following section, I will first comment on the sexual behaviour of the respondents and then discuss each of the independent variables separately. In the case of each variable, I will briefly summarise the literature, present the current findings, comment and relate them to the literature and then discuss recommendations for promoting condom use based on the current findings. This will be followed by a discussion of the conceptual model used in this study.

6.4.1 Sexual behaviour

Over 80% of the Black females and more than 90% of the Black males in this study reported being sexually active. Significantly less of the Coloured respondents were sexually active, with 53% of the Coloured males and only 26% of the Coloured females reporting that they were sexually active. This pattern concurs with the findings of studies reviewed by Eaton *et al* (2003) that indicate that Black youth are more likely to start sexual activity in their teens than other ethnic groups. In the current study a significantly

larger percentage of males of both race groups were sexually active than females, confirming trends found in other South African studies (Mathews *et al*, 1990; Flisher *et al*, 1999) but contradicting a study conducted among high-school dropouts in Cape Town by Flisher and Chalton (1995).

The findings of this study indicate that the majority of sexually active respondents were sexually active by the age of 15. This concurs with the findings of a review of studies on unsafe sexual behaviour of South African youth by Eaton *et al* (2003) in which they found that at least 50% of young people are sexually active by age 16, and probably 80% by age 20. In the current study Black males reported earlier sexual debut than Coloured males, but Coloured females on the other hand reported earlier debut than Black females. This is difficult to explain and needs merits further research.

Confirming studies in other countries, male respondents reported having more lifetime sexual partners than female respondents (Moreau-Gruet *et al*, 1996). Males in this study reported an average of 3 – 4 lifetime sexual partners compared to 2 for females. Black males and females reported a higher number of lifetime sexual partners than their Coloured counterparts. It is difficult to compare these figures with other South African studies due to the variability in the ages of the samples studied and the questions asked (e.g. lifetime sexual partners compared to partners over the last 12 months). The findings of this study are, however, similar to those of Goliath (1995) among grade 10-12 learners in the Eastern Cape and Van Aswegan (1995) among grade 8-12 learners in Gauteng. Both of these studies report that three quarters of the respondents had had more than two lifetime sexual partners, which is very similar to the findings of this study.

Regarding condom usage, only 34% of Black male and 43% of Black and 44% of Coloured female respondents reported using a condom on their last coital episode. This is in contrast to the Coloured male respondents who report a much higher level of condom usage on the last coital episode (62%). The most recent Nelson Mandela/HSRC study on HIV/AIDS found that 57% of males and 46% of females aged 15-24 reported

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using a condom at last intercourse (Human Sciences Research Council, 2002). The figures for female respondents are thus very similar to those found in this study. The figures for male condom use are somewhat higher than those found in this study. This could be due to the fact that their sample included all race groups and/or due to the fact that the HSRC study was conducted at a later date than this study. The finding that most respondents in this study had not used a condom on their last coital episode also corresponds to other South African data (Eaton *et al*, 2003; Adolescent Health Programme, 1997; Kelly, 2000; National Population Unit, 2000; National Progressive Primary Health Care Network, 1995; Richter, 1996; Wood *et al*, 1996). It is worrying to note that condom non-usage occurred despite over 70% of male and between 50% and 60% of female respondents reporting that they have a condom available, and that many respondents claimed to have had multiple sexual partners (see Table 5.1).

Contrary to other studies that report that males were more likely than females to use a condom the last time they had sex (Buysse & Van Oost, 1997; Donald *et al*, 1995), in this study this was the case for the Coloured respondents but not for the Black respondents. In the case of Black respondents, more females report condom usage on last coital episode than males. It is difficult to understand these differences and patterns. The findings in the case of Coloured respondents appear to confirm that providing condoms is a role expected of males, which gives them more control over the interpersonal processes involved in usage (Sacco, Rickman, Thompson, Levine & Reed, 1993). However the case of Black respondents is puzzling. Many of the studies conducted in a South African setting show that there are huge power imbalances in sexual relationships between men and women, with coercion and violence a common characteristic of these relationships (Jewkes *et al*, 1999; Varga, 1997; Wood & Jewkes, 1997). Violence related to condom use is common and the desire to use condoms is viewed with mistrust and perceived as a sign of infidelity and/or disease (Lurie, Harrison, Wilkinson & Abdool-Karim, 1997; Varga, 1997). These factors can be expected to be particularly powerful among adolescent females, many of whom have older sexual partners, who would be more likely to be in control of the relationship. It could thus be expected that adolescent women

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would be less likely to be able to implement condom usage than their male counterparts. Buysse and Van Oost (1997) found in their research that in the case of females the chance of succeeding in implementing safer sex was dependent on their overall relational power. Females who perceived that their partner had more power in the relationship were less likely to be able to insist on condom use. The discussion below of the various independent variables studied in this research should shed more light on some of the potential factors that could account for these differences.

6.4.2 Independent variables

In the following section the influence of each of the independent variables on condom use will be discussed separately. For each variable I will briefly summarise relevant literature, present the current findings, comment on them in the light of the literature and make relevant recommendations. This will be followed by a discussion of the conceptual model used in the study.

Age

In the current study there were no significant differences in the *t*-test results when comparing the mean ages of those who used a condom versus those who did not use a condom on their last coital episode. However, the logistic regression analyses of behaviour on the independent variables showed that older learners were more likely to use condoms in the case of Coloured males and Black and Coloured females. The reverse was true for Black males. The stepwise regression analyses selected age fifth for Black males and sixth for all the other gender race groups. Age thus moderately influenced behaviour.

The finding that older learners were more likely to use condoms than younger learners for most of the groups, contradicts many of the Western-based studies which have found that older adolescents are less likely to use condoms consistently (Abraham *et al*, 1996;

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Breakwell *et al*, 1994; DiClemente, 1992; DiClemente *et al,* 1996; Moreau-Gruet *et al,* 1996; Romer *et al*, 1994; Sheeran & Abraham, 1996; Sheeran, Abraham & Orbell, 1999; Wingood & DiClemente, 1998; see also Table 3.1). Sheeran *et al* (1999) confirm that being older was associated with less condom use in both the cross-sectional as well as longitudinal studies that they reviewed. A possible reason for the contradictory findings in the present research could lie in the difficulties that particularly younger learners have in accessing condoms at clinics and other health facilities in South Africa, as well as greater embarrassment about buying them (Adih & Alexander, 1999; Abdool-Karim, S.S.; Q. *et al,* 1992; Abdool-Karim, Preston-Whyte *et al,* 1992). This is substantiated by the fact that almost 50% of the total sample in this study either agreed that they would find it difficult to fetch condoms at a clinic or were unsure about their ability to do this.

The fact that younger Black males in this study, in contrast with the other subgroups, were more likely to use condoms is difficult to explain. This finding contradicts a study done by Adih and Alexander (1999) among male youth in Ghana in which they found that older respondents were more likely to have used a condom. The finding however is supported by a number of other studies that have shown that older adolescents are less likely to use condoms (Abraham *et al,* 1996; Breakwell *et al,* 1994; Kraft & Rise, 1991; Romer *et al*, 1994; Pleck, 1989; Sheeran *et al,* 1999). A possible reason could be that the average age of the Black males in the current study was older than for the other groups and that their age range was larger (see Table 5.1). Other possible explanations could lie in the fact that older males are more likely to have steady relationships, which they regard as not being as risky, cultural factors that apply to perceptions of men as not using condoms, and/or beliefs that they interfere with sexual pleasure. Another possible explanation offered by Breakwell *et al* (1994) is that as adolescents get older there is a heightened sense of independence and a greater inclination to take health risks. This, however, does not explain why this should be the case for Black males and not for the other subgroups in this study and merits further research.

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Affect

In this study it is hypothesised that anticipated feelings (affect) associated with using condoms may also be an important determinant of condom usage. According to the Theory of Interpersonal Behaviour described in Chapter 2, affect (the emotions elicited by thinking about a specific behaviour) is hypothesised to influence health behaviour. Similar to the TRA and TPB, this influence is thought to occur via intention rather than directly. According to De Wit *et al* (1997:15-16), "Many health related behaviors elicit positive beliefs but negative affect...Ignoring affective factors leads to an erroneous picture of the general attitude." They found that cognitive responses to condom use appeared to be generally favourable whereas affective responses indicated a slight aversion to condom use (De Wit *et al*, 1997). They attributed this negative affect to the reduction of pleasure beliefs, and found that the negative affect only related to intention to use condoms with a regular rather than a casual partner. Richard *et al* (1995) found that adding affect as a variable increased the predictive ability of the TBP for adolescent sexual behaviour and Chan and Fishbein (1993) found that affect was an important predictor of intention to use condoms (see Chapter 2).

In this study, affect was significantly related to intention and behaviour only in the case of Black females. It did not show any significant relationship with either intention to use condoms or condom use for Coloured males and females and Black males. However the logistic regression analyses indicate that affect showed a significant negative relationship with both intention to use condoms and condom behaviour for Black females, and a negative non-significant relationship with condom use for Black males. It showed a non-significant positive relationship with condom use for both Coloured males and females. The tree diagrams, however, do not select affect as a significant branch of the tree for any of the sub-populations. For the stepwise logistic regression procedure, affect was only selected in the Black female group as contributing to distinguish between condom users and non-users. However, affect was the variable added last by the selection procedure and therefore not an important variable to influence behaviour.

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These findings contradict what one would expect from the Triandis model (1977) that hypothesises that affect should influence behaviour via intention. In the case of three of the groups, there was no significant relationship with either intention or behaviour and in the case of Black females affect significantly negatively influenced both intention and behaviour. In other words, for this group positive affect was associated with non-use of condoms.

When considering the bivariate analysis (Table 5.3) those who used condoms had a significantly higher affect score compared to those who did not use condoms but in the multivariate analyses this variable is not selected as an important variable to influence behaviour. It thus appears as if adding affect to the model in this study did not enhance the power of the model. Affect does not appear to be an important factor influencing condom usage and does not appear to merit special targeting in programmes aimed at enhancing adolescent condom usage.

Conner and Norman (1996) argue that instead of using a separate measure, affect can be incorporated into behavioural belief measures. The bivariate analyses show that there is a moderately strong relationship between affect and attitude and between affect and beliefs and that this is stronger for Coloured than Black respondents. Further research is needed to investigate both the measure of affect used in this study as well as the relationship between affect and attitude and behavioural beliefs. The measure for affect used in this study is also questionable. As discussed in Chapter 4, respondents found difficulty responding to semantic differential scales for pairs of adjectives depicting affect toward condoms and there is evidence of response sets in the replies. The development of a more appropriate measure of affect might lead to different results.

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AIDS worry

A potential factor that influences condom usage is an individual's worry about getting AIDS. It is hypothesized that the more a person is concerned about contracting HIV/AIDS, the more likely they would be to use a condom. Worry about contracting a disease is viewed as one of the cues to action in the HBM, part of risk perception in the SCT, a component of beliefs in the TRA and TPB and part of the motivation to perform a specific health behaviour in the TIR (see Chapter 2).

The results of this research present a very mixed picture regarding the influence of AIDS worry. This variable appears to have a different pattern of influence on intention to use condoms and actual condom use for each race-gender group. AIDS worry showed a significant correlation with intention to use condoms for Coloured males and females and a negative significant relationship with intention for Black females. However AIDS worry was not significant for any of the groups in the multiple regression analyses of intention on the model variables.

The results however show that AIDS worry has a significant direct influence on condom usage. The logistic regression analyses indicated that AIDS worry contributed independently to condom use for all groups except Black females. In the case of Coloured males and females, AIDS worry shows a negative relationship with condom usage, whereas in the case of Black males it is positive. The stepwise logistic regression analyses show that this variable is most important for Black males, where it was selected as the third most important variable. In the case of Black females, worry about AIDS has no direct significant relationship to condom use. The different patterns of influence for this variable are difficult to explain and merit further research. Particularly puzzling is the significant negative relationship with behaviour for Coloured respondents, suggesting that the more worried these respondents are about contracting HIV, the less likely they are to use condoms. The findings of this study contradict those of a number of other studies that found no significant relationship between AIDS worry and adolescent condom usage

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(Breakwell *et al*, 1994; Brown *et al*, 1991, 1992a; Catania *et al*, 1989; Norris & Ford, 1995; Petosa & Wessinger, 1990; Wilson *et al*, 1994). Cochran and Peplau (1991), Hingson *et al* (1990) and Pleck *et al* (1991) on the other hand found significant positive relationships between AIDS worry and condom use. No other studies document significant negative relationships between these two variables as was found for Coloured males and females in this study.

From the results of this study it appears as if school-based life orientation/lifeskills programmes need to make sure that adolescents not only know the facts about HIV transmission, but also personalise their risk. They need to know and internalise that they are at risk for HIV if they practice risky sexual behaviour. The negative relationship between AIDS worry and condom use found among the Coloured respondents merits further investigation.

Attitude

Attitude is assumed to be a key variable influencing behaviour in both the TRA and TPB (see Chapter 2). According to the TRA and TPB, a person's attitude (their positive or negative feelings towards performing a specific behaviour) has an important influence on behaviour. It is a general construct determined by specific beliefs about behavioural outcomes. Attitude is thus viewed as a function of a person's salient expectations about the consequences of a specific behaviour multiplied by the evaluation of these consequences (De Vries *et al*, 1988). According to Fishbein *et al* (1992), it is necessary to measure attitude directly in addition to measuring beliefs. In the TIR attitude is assumed to form part of the cognitive factors that affect behaviour via intention.

A number of studies pertaining to adolescent condom use have found that positive and negative attitudes to condoms influence condom use via intention to use condoms (Boldero *et al,* 1992; Boyd & Wandersman, 1990; Fisher, Fisher & Rye, 1995). Fisher *et al* (1995) in a study that tested the applicability of the TRA and TPB to condom use

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amongst adolescents, found that intentions to use condoms were solely influenced by attitudes in the case of boys and under the influence of both attitudes and norms in the case of girls. However Godin *et al* (1997) and DiClemente, Lanier, Horan & Lodico (1991) found that attitude did not make a significant contribution to explaining variance in intention to use condoms in their studies.

In many of the studies reviewed in Chapter 3, there is no clear distinction between attitudes and beliefs and in some of them there is no separate general measure of attitude and the attitude measure comprises what in other studies is labelled beliefs. Basen-Engquist and Parcel (1992) found that attitude (which was conceptualised as beliefs) affected condom use indirectly via its relationship to intention to use condoms. Similarly Boldero *et al* (1992) also found that found that positive beliefs about condoms were directly related to condom use whereas negative beliefs influenced condom use indirectly via intention.

As already stated, the TRA, TPB and TIR assume a causal chain that links behavioural beliefs to intention via attitude (see Chapter 2; Montano & Kasprzyk, 2002). If this is correct, then the direct measure of attitude in this study should be more strongly associated with intention and behaviour than the more indirect measure of behavioural beliefs (Montano & Kasprzyk, 2002:). This does not appear to be the case in this study.

In this research, attitudes were significantly positively correlated with both condom use as well as intention to use condoms for all groups. The magnitude of the correlations were slightly higher for males than females but were generally of moderate to low size (see Chapter 5). This confirms findings of other studies in a South African context (Akande, 2001). Sheeran *et al* (1999) in their meta-analysis of social-cognitive correlates of heterosexual condom use found the average correlation of attitudes to condom use was positive and of medium magnitude (r = .32) and that positive attitudes were a reliable predictor of condom use. The regression analyses in the current study however showed that attitude was only significantly related to intention for Black males and females but

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with behaviour for all groups. This variable was better able to distinguish between condom users and non-users for Coloured respondents than Black respondents and appears to be most important for Coloured females, where it had a higher value in the stepwise logistic regression analyses and was selected as the second most important variable.

It thus appears from the current study that attitude influences behaviour directly rather than via intention, which contradicts many other studies showing that adolescents' attitudes towards condoms are predictive of their intentions to use them and influence condom use behaviour via intention rather than directly (Boldero *et al*, 1992; Boyd & Wandersman, 1991; Richard & Van der Pligt, 1991; Schaalma *et al*, 1993). The finding, however, partially concurs with Godin *et al* (1997) and DiClemente *et al* (1991b) that attitude does not contribute to intention to use condoms.

The findings relating to the contribution of attitude in the current study however need to be interpreted with caution. Because of the cross-sectional study design and the problems of direction of causality associated with the cross-sectional study design, it is possible that using a condom could have contributed to more positive attitudes towards condoms rather than vice versa.

One reason for the possibly low size of these correlations in this study could be attributed to problems with the measurement of attitude and to what Nickerson (1990) calls the 'demand characteristics' of the rating scale items used to measure attitudes (see above). According to Nickerson (1990) these 'demand characteristics' result in respondents giving response sets to items in which they tend to provide positive answers to nearly every item, regardless of their true attitudes. The pilot study clearly showed that respondents tended to give what may be considered socially desirable responses to the semantic differential attributes originally used to assess attitudes towards condoms. In order to address this, respondents were forced to respond to the negative words regarding condom use. Despite this, it is still likely that a strong element of 'demand

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characteristics' might have affected attitudinal responses to condom usage in this study. This is reflected in the high mean values for this variable and the relatively small SD values (see chapter 5). It thus appears that despite the high Cronbach alpha value obtained for this variable, there is a need to develop more appropriate measures of attitude for adolescents in these communities. One possible way to address this in future research could be to get respondents to both rate and rank the semantic differential items used to measure attitude to condoms.

Beliefs

Beliefs are an evaluation of the perceived benefits of a specific health behaviour versus the perceived barriers (potential negative aspects of the behaviour). All of the theories underpinning this research agree that a person considers the possible outcomes of performing a specific behaviour. Both the TRA and TPB assume that a cost-benefit analysis of behaviour occurs, in which an individual weighs up the potential benefits of a behaviour versus the potential costs of the behaviour and that this then influences a general attitude toward behaviour, which in turn influences intention (see TRA and TPB). In the case of condom usage, beliefs refer to an individual's assessment that using condoms will likely lead to a positively or negatively evaluated outcome. The studies reviewed in Chapter 3 show that the measures of beliefs differ considerably depending on the theoretical approach on which the study is based. Thus those studies based on an HBM framework measure perceived barriers and benefits of condom usage without weighting them by the importance attributed to each belief (see for instance Edem & Harvey, 1994-5). Studies using the TRA and TPB, on the other hand, use expectancy outcome evaluations of beliefs and some of them also include a general measure of attitude (Godin *et al,* 1997). Others do not include a general attitude measure and view attitude as the sum of the individual beliefs multiplied by their value. This makes comparison with the measures used in the current study very difficult.

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A number of the studies reviewed found a positive relationship between beliefs and intention to use a condom. Thus Kegeles *et al* (1989) found that specific beliefs about using a condom are important predictors of condom use intention among young adults. DiClemente *et al* (1992), Basen-Engquist (1992) and Edem and Harvey (1994-5) found that perceived barriers/costs associated with condom use were significantly related to use. Adolescents reporting lower perceived costs of condom use were more likely to use condoms and those reporting higher costs were less likely to use condoms. Boldero *et al* (1992) using an expectancy-value measure of beliefs, found that perceived disadvantages of condom use were directly related to condom use whereas positive beliefs related to use via intention. Basen-Engquist and Parcel (1992) using a similar measure of beliefs found that they were significantly related to intention to use condoms and not directly to condom use. Adler *et al* (1990) found that beliefs were related to attitude, which in turn significantly predicted condom use. Some studies, however, did not find a significant relationship between beliefs and condom use. Thus Abraham *et al* (1996) found no relationship between perceived offensiveness and attractiveness of condoms and condom use among adolescents in the United Kingdom.

On average, respondents in the current study showed moderately positive beliefs towards condoms and more positive beliefs were associated with condom usage for all groups. Thus respondents who expected fewer negative outcomes of condom use are more likely to use a condom. The *t*-tests were however only significant for Coloured males and Black females, but not for the other two groups.

In examining the relationship between beliefs and the other independent variables, the bivariate analyses show that they were significantly associated with all the other independent variables, except for health importance in the case of Black males, condom availability in the case of female respondents and perceived susceptibility in the case of Coloured females. The strongest significant association was between beliefs and self-efficacy for all of the groups. This association was however of moderate size. This might

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indicate that there is an overlap between some of the underlying constructs measured by beliefs and self-efficacy in this study.

According to the TRA and TPB, there should be a strong relationship between beliefs and attitudes, which was not the case in this study. Although significant for all groups, correlations between beliefs and attitudes only ranged between .25 and .30, which are moderate compared to other studies (Montano *et al*, 2001).

Both the TRA and TPB posit that beliefs should affect behaviour via attitude and intention. The bivariate analyses show that beliefs correlated significantly with intention for all subgroups. These effects are however obscured in the multivariate analyses. Thus the multiple regression analyses indicate that beliefs made no significant independent contribution to intention for any of the subgroups (see Table 5.10). However, in the stepwise multiple regression analyses, beliefs were selected second for Coloured males and made a significant independent contribution to intention. They were selected fifth for Black males in the stepwise multiple regression analyses, but the relationship was non-significant.

In the case of female respondents, beliefs made a significant independent contribution to condom use, with this variable selected fifth for Black females and third for Coloured females in the stepwise logistic regression analyses. The relationship with behaviour was positive for Black females and negative for Coloured females. It is difficult to explain the differences between the two race groups in this regard and further research into the influence of the individual items comprising this variable and their relationship with behaviour might help explain this discrepancy. The tree diagrammes show that in the case of Coloured females those who did not use condoms, were more likely to have a low construct availability score and a positive belief score. It thus appears as if Coloured females might not be using condoms despite having positive beliefs about them. The tree diagrammes indicate that the ability to discuss condoms with a partner appears to be the intervening variable in this case.

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The results of this study show that beliefs influence condom use differently for males and females. They do not appear to be a very important variable for males and influence intention rather than condom use directly. This could be due to the fact that in the case of males, condom use is determined more by situational than attitudinal factors and that if the opportunity for sex arises, they may engage in this behaviour irrespective of attitudes and beliefs regarding condom use. In the case of female respondents, beliefs appear to play a more important role and influence condom use directly rather than via intention. This could be due to the fact that condom use is a goal rather than a behaviour for females, as discussed previously. This might offer a partial explanation for the greater role of beliefs for female respondents. This research suggests that beliefs need to be targeted in interventions to increase condom usage especially for female respondents. However more research is needed to identify the most salient beliefs for these groups.

Condom availability

Having a condom available is viewed as an important cue to action in the HBM and as a facilitating condition for actual condom use in the TIR (see Chapter 2). Kashima *et al* (1993) argue that condom availability is one of the behavioural conditions necessary for condom usage and it forms part of behavioural control (see Chapter 2). According to Boldero *et al* (1992) condom availability could be indicative of intention to use condoms. Studies have shown that women are less likely to buy and carry condoms than men (Sacco *et al,* 1993) and that one of the reasons is the perception that carrying condoms is a sign of promiscuity and planned sexual activity (Hynie & Lydon, 1995; Moore & Rosenthal, 1991c; Sheeran *et al,* 1999).

In this study I hypothesised that the availability of a condom would positively affect both the intention to use a condom as well as actual condom usage. The results show that condom availability correlated significantly with intention to use condoms for Black but not for Coloured respondents. This is difficult to explain as one would expect that if a

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person has a condom available they would intend to use it (Boldero *et al*, 1992). One of the reasons could lie in the measurement of intention (see discussion above). The differences between the two racial groups are also difficult to explain and need further research. These findings are confirmed by the multiple regression analyses, which indicate that condom availability only had a significant relationship with intention for Black, but not for Coloured respondents. In the stepwise analyses of intention on the model variables, condom availability was selected third for Black males and fourth for Black females.

It appears that in this study condom availability affects behaviour directly rather than via intention for all groups except Coloured males, where this variable did not show a significant relationship with condom usage. For the other three groups, the logistic regression analyses of behaviour on the independent variables indicate that condom availability has the highest beta and odds ratio values of all the independent variables. The stepwise logistic regression analyses selected condom availability as the sixth most important variable for Black males, second most important variable for Black females and fifth most important variable for Coloured females. These results confirm that condom availability is an important factor influencing condom usage for all groups except Coloured males.

It is interesting that this variable appears to be equally important for females and males in this research. This is contrary to the findings of other studies that women are less likely to buy and carry condoms than men and also that many women may feel that it is unacceptable for them to carry condoms as it is a signal of promiscuity, planned sexual behaviour and/or a lack of trust in their partner (Hynie & Lydon, 1995; Moore & Rosenthal, 1991c; Moreau-Gruet *et al,* 1996; Sacco *et al,* 1993; Sheeran *et al,* 1999; Varga & Makubalo, 1996). One would have expected that particularly in a South African context where sexual encounters are male dominated and often characterised by violence (Jewkes & Lewin, 2000; Jewkes *et al,* 1999; Varga, 1999; Varga & Makubalo, 1996), female adolescents would be less likely to have condoms available.

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These results suggest that making condoms available is a necessary condition and core strategy for increasing usage among adolescents and highlights the importance of teaching the skills to access condoms to both genders. At present condoms are not readily available, particularly to young people, in South Africa. Access to free condoms is further complicated by the perceived negative attitudes of clinic staff, perceived lack of confidentiality, or by clinics running out of supplies (Abdool-Karim, S.S.; Q. *et al,* 1992; Abdool-Karim, Preston-Whyte *et al,* 1992; HSDU, 1997; Preston-Whyte, 1999). This highlights the need for a more youth friendly adolescent health service, where they can access condoms and other reproductive health services. Schools are another obvious venue for condom distribution. The government should make it mandatory that condoms are made available in high schools.

It is however not only sufficient to provide condoms in easily accessible and friendly places for young people, they also need to be taught the skills to overcome embarrassment so that they can purchase condoms, discuss and negotiate their use, and use them correctly. This is confirmed by the importance of the construct availability variable in this research, which will be discussed in more detail below.

One would expect that having a condom available would be highly correlated with self-efficacy. The bivariate analyses revealed that condom availability was significantly correlated with self-efficacy for all race gender groups, but that the relationship was stronger for males than females. This indicates that self-efficacy enhances the ability to access condoms particularly in the case of male respondents. More research into the relationship between these two variables appears merited, particularly to establish whether there are different mechanisms that influence the accessing of condoms for male and female adolescents. It is also important to establish whether male and female adolescents are accessing condoms from different sources.

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Construct availability

In this study, construct availability comprised two questions relating to discussing condom use with a sexual partner and thinking about condoms prior to intercourse. It is hypothesised that people who frequently think and/or talk about condoms can be expected to be more likely to use condoms (see Chapter 2). This has been substantiated by a number of studies (Catania *et al,* 1992; Lear, 1995; Norris & Ford, 1992).

This research clearly shows that those adolescents who are able to discuss the use of condoms with a sexual partner are more likely to use condoms. Construct availability was the most important factor affecting condom use for all race gender groups. This finding corroborates findings of a number of other studies investigating condom usage among youth (Boldero *et al,* 1992; DiClemente, 1991; Donald *et al*, 1994; Lowe & Radius,1987; Weisman *et al*, 1989; Wilson *et al*, 1994). A study by Philips, Hendrickx and Avonts (2002) among boys from ethnic minorities in Holland showed that the most relevant determinant of safe sex behaviour was the effectiveness of the communication skill of proposing a condom in a sexual relationship. Similarly DiClemente (1991) found that communicating with a sex partner about AIDS was the most powerful predictor of consistent condom use among a group of high risk adolescents in the United States. The crucial influence of communicating about condom use with a sexual partner has also been found in studies that include adult populations. Thus for example a study by Reddy, Meyer-Weitz, Van den Borne and Kok (2000) on determinants of condom use among STD clinic attenders in South Africa. found that communication was the variable most strongly associated with regular condom use. In their meta-analysis of psycho-social correlates of condom use, Sheeran *et al* (1999) found that communication about condoms had the largest effect size of any of the variables included in their study.

In the present research, construct availability proved to be an important correlate of both intention to use condoms as well as condom use for all gender race groups. The tree diagrams revealed that construct availability was the factor that contributed the most to

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distinguishing between condom users and non-users for all subgroups. Thus those respondents who communicated with their sexual partners about condoms and/or thought about condoms before having sex were more likely to use condoms and also more likely to intend to use condoms. This confirms research conducted by Boldero *et al* (1992) among Australian adolescents that found that communication with a partner about condom use was an important predictor of condom use as well as intention to use condoms.

One would have expected a strongly significant association between the ability to talk to a partner and the measure of self-efficacy used in this study. One could hypothesise that the ability to discuss condom use with a sexual partner implies a high level of perceived self-efficacy and that these two variables should be strongly correlated. It could also be expected that due to the gender-specific nature of sexual decision-making, the ability to discuss condoms with a sexual partner would be influenced by overall relational power imbalances (Buysse & Van Oost, 1997; Kline & Van Landingham, 1994). Thus women could be expected to find it more difficult to discuss condom usage with a partner than men.

The intercorrelations between self efficacy and construct availability are indeed moderately strong for all groups. The tree diagrammes indicate that for Coloured males and Black females, those with a high construct availability score also had a high self-efficacy score. For these two groups the ability to speak to their partners about condoms appears to be linked to feelings of self-efficacy. For Black males, however, talking to a partner about condoms was linked to self-standards and for Coloured females, this variable was linked to attitudes and beliefs about condoms. The stepwise logistic regression analyses of the individual items on condom usage, showed that the ability to discuss condoms with a partner was selected first for all groups, confirming the findings of the meta-analysis conducted by Sheeran *et al* (1999).

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The convincing association between talking to a sexual partner about condom usage and actual condom use has important implications for the design of educational programmes in schools. It highlights the importance of being able to talk about condom usage with a partner as a key factor that appears to influence condom usage across all race and gender groups. This confirms research that shows that AIDS prevention campaigns often fail to change behaviour because they do not take enough cognisance of the social relationships within which sex takes place and it is most frequently these social relationships that determine risk-taking behaviour (Campbell, Mzaidume & Williams, 1998; Connors, 1992; Pliskin, 1997; Sibthorpe, 1992). Talking about sex is a very difficult issue that is deeply culturally embedded and influenced by the gender-specific nature of sexual decision-making. Pliskin (1997) found in her research that the fear of social rejection due to discussing sexual matters was greater than the fear of contracting an STI due to sexual intercourse. Studies in South Africa confirm that not only is introducing the topic of condoms perceived to break the intimacy and romance of the sexual encounter, but suggesting usage implies promiscuity and/or a lack of trust in one's partner (Eaton *et al,* 2003; Meyer-Weitz *et al*, 1998; NPPHCN, 1996; Richter, 1996; Van Dyk, 1994; Varga & Makubalo, 1996; Wood & Foster, 1995).

The results of this study show that being able to talk about condoms with a sexual partner and thinking about condoms prior to intercourse is the factor that most strongly influences usage and that therefore programmes in schools should focus much more on teaching the skills of sexual negotiation (that will include negotiation about condom usage). However, it must be remembered that practicing condom negotiation skills in the classroom might not generalise to real-life situations. This is particularly true in the case of girls. Research in South Africa shows that communication between partners about contraception and condom use is often low or non-existent and girls have little power in relationships, making negotiation very difficult if not impossible (Jewkes *et al*, 1999; Preston-Whyte, 1999; Varga & Makubalo, 1996). This is particularly pertinent if the sexual encounter is coercive, which is a common characteristic of adolescent sexual relationships in South Africa (Jewkes *et al,* 1999; Wood & Jewkes, 1997). Some research has shown that even

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broaching the topic of condom use can result in physical abuse or even rape (Varga & Makubalo, 1996; Wood & Jewkes, 1997; Wood *et al*, 1998).

Teaching adolescent girls to negotiate condom use with their peers may not help them in cases where their sexual encounter is with a man who is a few years older than they are (Pisani, 2000). The differential HIV prevalence rates among adolescent girls and boys is consistent with the notion that many adolescents are having sex with older men in South Africa. DiClemente and Wingood (1995) stress that it is important to focus on how to successfully negotiate condom usage and foster favourable partner norms supportive of consistent condom use within the context of a heterosexual relationship where women are often in unequal positions of power. In addition, adolescents also need to be able to reflect on the social norms and expectations shaping heterosexual relationships in their communities (Rosenthal *et al,* 1991; Wight & Abraham, 2000). They need to be able to anticipate sexual risk-taking situations and also address gender-power issues inherent in these relationships. The use of peer educators can be particularly useful in this type of programme as they are perceived as a more credible source of information and are better at modelling skills such as sexual communication and assertiveness and fostering perceptions of consistent condom use as normative (DiClemente & Wingood, 1995).

A further factor that needs to be considered is that classroom learnt skills can easily be counteracted by messages given in a community situation. It is therefore important to reinforce/supplement information and skills taught in a school context by relevant health promotion messages and skills in a community-based context. DiClemente *et al* (1996) and Main, Iverson, McGloin, Banspach, Collins, Rugg and Kolbe (1994) therefore stress the importance of multiple access points (such as recreation centres, after-school programmes and community based clinics) that should be used as opportunity sites for providing information and teaching relevant skills. This is already starting to happen on a small scale in SA (e.g. expansion of the loveLife[1] programme into community sites), but

[1] loveLife is a programme that aims to change adolescent sexual behaviour. It combines media awareness and education with the development of adolescent-friendly reproductive health services (Stadler & Hlongwa, 2002).

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needs to be expanded further. It is also important that skills-based risk reduction programmes are implemented before the onset of sexual activity and continued throughout schooling.

Wingood, Hunter-Gamble and DiClemente (1993) point out that sexual communication has numerous parameters and stress that there is a difference between sexual communication and sexual negotiation (degree of assertiveness). They conclude that developing skills in negotiating condom use may increase the likelihood of actually engaging in safe sex. This is confirmed by research conducted by Franaini, Sideman, Dexter and Elder (1990) in which they found that assertiveness skills related to requesting a partner to use condoms did in fact generalise to real life situations. Communication with one's partner about STD risk and condom use has been found to be strongly correlated with willingness to use condoms and self-reported use (Reddy *et al*, 2000).

In addition, the difficulties that people experience in negotiating condom use at the interpersonal level are made worse by personal factors, such as self-esteem and self-efficacy for condom use, and cultural taboos against frank sexual discussion between men and women (Meyer-Weitz, Reddy, Weijtz, Van den Borne & Kok, 1998). Thus the skill to negotiate condom use need to be taught in as part of a package that also addresses issues of self-esteem, opens up cultural issues relating to sexuality to discussion as well as teaches wise decision-making.

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Health importance

This research postulates that if an individual places greater value on their health, there is a greater likelihood that this will positively influence healthy behaviour, such as condom use. This is substantiated by the HBM, SLT and TSC (see Chapter 2). Only three of the studies on adolescent condom usage reviewed in Chapter 3, incorporate a measure of general health importance or value (Abraham *et al,* 1996; Breakwell *et al,* 1994;

Rosenthal *et al,* 1992). However, this variable was not found to have a significant influence on condom usage in any of these studies.

In the current research, health importance was shown to be a significant correlate of intention to use condoms for Coloured males and Black females, but not for Coloured females and Black males. The stepwise multiple regression analyses selected this variable fifth for Coloured males and second for Black females. The logistic regression analyses on behaviour indicated that this variable was only significant for Black females, but that the relationship was negative. In other words, the less a Black female respondent felt that her health was important the more likely she was to use a condom. The stepwise analyses confirmed this, with health importance selected as the fourth most important variable influencing condom usage for Black females and the eighth most important for Black males. The variable was not selected for the other two groups. It thus appears as if this variable is most important for Black females, positively influencing their intention to use condoms and negatively influencing actual condom usage. It is difficult to interpret these findings. An important consideration is that health importance, as operationalised in this study, could have been influenced by strong 'demand characteristics' as indicated by its high mean values and low SD values. If this is the case, then this could have affected the relationship of this variable with condom usage and led to either insignificant or low relationships with both intention and actual condom usage.

A further factor that might have affected the relationship between health importance and condom usage is mentioned by Abraham *et al* (1996) in attempting to explain the insignificant relationship found between health importance and adolescent condom usage in their prospective study. They suggest that "health beliefs specified by the HBM may nevertheless be a prerequisite to HIV-preventive behaviour" (Abraham *et al* 1996:651) and suggest that certain beliefs may be so widely accepted that they no longer effectively distinguish between those who do and do use condoms. This concurs with findings of this thesis, namely, that overall agreement with the items that made up the health importance variable was high (as reflected by the high mean and low SD values – see

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Chapter 5), and that changes in these beliefs are unlikely to promote more effective and consistent condom usage among the adolescents targeted in this study, except in the case of Black females.

Intention

In the both the Theory of Planned Behaviour and the Theory of Reasoned Action, intention is seen to be the immediate precursor of behaviour and a prerequisite of behavioural performance (see Chapter 2). These theories posit that other socio-cognitive variables will usually influence behaviour via intention and that a behaviour such as condom use, is more likely to occur if a person has a strong positive intention to perform it. A meta-analysis of 96 studies applying the TRA and/or TPB to condom usage showed a moderate to strong correlation of 0.45 between intention and behaviour (Albarracin *et al*, 2001). This corresponds closely to the correlation of 0.44 found by Sheeran and Orbell (1998) in their meta-analysis of the link between intention and behaviour in studies on condom use. One of the questions that this research attempted to address was whether intention was in fact significantly related to condom use.

Very little of the variance in intention appears to be explained by the variables used in this research, contrary to what one might expect from the TRA and TPB and indicating that other variables not included in this study probably play a role in influencing intention to use condoms for these respondents. In addition, the multiple regression analyses of intention on all the independent variables show different patterns of influence for each race gender group. The only common factor that correlated significantly with intention for all gender race groups was construct availability. Self standards significantly correlated with intention for all groups except for Coloured males and was also selected first in the stepwise multiple regression analyses for Black males and Black and Coloured females. Condom availability only influenced intention to use condoms for Black respondents and not for Coloured respondents and perceived susceptibility to HIV/AIDS Coloured respondents and not Black respondents.

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In this study most respondents appear to have formed strong intentions to use condoms (see Table 5.2) with little variation between the race-gender subgroups. In the bivariate analyses, intention was significantly correlated with condom usage for three of the groups (Coloured males and females and Black females). The logistic regression of behaviour on the model variables, confirm that intention made an independent significant contribution for all groups except Black males. However the contribution made by intention to explaining condom use is considerably smaller than expected from the above meta-analyses (see Tables 5.15 – 5.18). This is confirmed by the stepwise logistic regression analyses of behaviour on the independent variables in which intention is selected as the ninth variable for Coloured males and seventh for Coloured females. Intention appears to have the strongest relationship with condom use for Black females, where it is selected as the third variable in the stepwise logistic regression analyses

This finding is difficult to explain, as one would have expected that even though the study is cross-sectional, there would be a stronger association between behaviour (even though the behaviour measured can be construed as past behaviour) and future intentions (Brown *et al*, 1992). Respondents who have successfully used condoms on their last coital episode would be expected to intend to use condoms in future. This was confirmed by Reinecke *et al* (1996) in a prospective study of adolescent condom use in which they found that past behaviour had a direct unmediated effect on intention to use condoms in the future. A number of other studies of adolescent condom usage have however also found a low or no relationship between intention and condom use. Thus Abraham *et al* (1996) and Breakwell *et al* (1994) in two of the few prospective studies on the cognitive antecedents of adolescent condom use, found no significant relationship between intention and actual condom usage. Reineke *et al* (1996) also found that intention to use condoms was unrelated to behaviour one year later and speculate that this may attributable to unrealistic perceptions of control among adolescents.

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One of the possible reasons contributing to the unexpectedly low correlation between intention and behaviour found in this research could be due to problems with the measurement of intention, as discussed above. However, one would then assume that measurement variables would affect all groups equally and this does not offer an explanation why intention is not significant for Black males and shows such low levels of significance for Coloured males and females and much higher levels of significance for Black females. The reasons for this merit further research.

This questions relating to condom use used in this study did not specify type of partner (e.g. new, casual, steady). According to Sheeran and Orbell (1998), research suggests that intentions may be better predictors of condom use with steady or regular partners rather than casual or new partners. A possible reason for this could be that beliefs and attitudes of casual partners are less well known and therefore result in greater ambiguity in the formation and implementation of intentions to use condoms (Morrison, Rogers Gillmore & Baker, 1995; Sheeran & Orbell, 1998). If many of the adolescents in this study were not in a steady relationship, they might have inferred that intention to use condoms refers to a new or casual partner rather than a steady partner and this might have affected the relationship between intention and behaviour. A further possible explanation could be due to a lack of intention stability in adolescents and also a lack of direct experience with condoms (Sheeran & Orbell, 1998). In their meta-analysis of the link between intention and behaviour, Sheeran and Orbell (1998) found that the link was lower for adolescents than adults and they cite these as possible reasons for the differences found. This could be due to the fact that intentions are less stable among adolescents due to their lack of experience, developmental status or relationship status (see Boldero *et al,* 1992). According to Nickerson (1990), in adolescence the decision to use condoms may be made situationally rather than in advance. In addition, situational factors (e.g. difficulty in obtaining them) may weaken intentions to use them. This is confirmed by Akande (2001) in a study of technikon undergraduate students in South Africa, who found that even though intention was important there was no one-to-one correspondence between intention and behaviour. Akande (2001) confirms the

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importance of contextual factors in determining a behaviour such as condom usage. This also concurs with research conducted by Boldero *et al* (1992) among Australian youth. As already discussed, situational/contextual factors are likely to play a big role in intention to use condoms in South Africa due to documented difficulties that many adolescents have in obtaining condoms. If these had played a role in influencing intention to use condoms in this study, then one would expect a significant correlation between condom availability and intention to use condoms. This was the case for Black respondents, but not for Coloured respondents. It is difficult to offer an explanation for this.

Norms

One of the factors assumed to be particularly important in determining sexual behaviour is the influence of the 'normative system', namely, the social and inter-personal pressures that influence decision-making (see Chapters 2 and 3). Norms were included as a variable in 32 of the studies reviewed in Chapter 3 (see Table 3.2). The results of these studies present a diverse picture, with one third finding that norms significantly influenced intention to use condoms rather than condom use directly, one third that norms did not significantly influence condom usage and one third that they significantly influenced usage. In three of the studies partner norm was included as a separate variable and was found to significantly influence condom usage (Ford & Norris, 1995, Murphy *et al,* 1998; Pendergrast *et al,* 1992). Brown *et al* (1992) speculate that perceptions of peer norms perhaps influence intention and initial behaviour, but that subsequent behaviour is determined by other factors. According to the TRA and the TBP, norms should influence behaviour via intention and should not influence behaviour directly. In their meta-analysis of studies using the TRA and TPB on condom usage, Albarracin *et al* (2001) found that the multiple correlation coefficient in regression analyses of intention to use condoms on norms was .70. They report that this is slightly larger than meta-analytic reports by Sheppard, Hartwick and Warshaw (1988) and Van den Putte (1990) and slightly lower than the .76 reported by Ajzen and Fishbein (1973). However, Albarracin

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et al (2001) found that in cross-sectional studies in which they treated behaviour reported as past behaviour, the influence of norms on intention was very small.

In this study, norms only had a significant influence on intention to use condoms for Black females. It appears that norms influence condom use directly rather than via intention and correlate significantly with condom usage for all the groups except Black males. However, the contribution of norms relative to the other independent variables tested in this study, appears to be small. Thus in the stepwise logistic regression analyses, norms were only selected for Coloured males and females and their contribution to condom usage was very small. This confirms findings of Basen-Engquist and Parcel (1992) in their study of factors affecting adolescent condom usage in which they found social norms to be the weakest predictor of both intention and behaviour. Both Akande (2001) and Skinner (2001) in studies among South African youth found that normative influences on condom use were low. Skinner (2001) speculates that a possible reason could be that social norms, such as the role of power, the nature of loving relationships and so on, play an important role in condom use behaviour in South Africa. These are perhaps not reflected in the measures of subjective norms used in the current study (Skinner, 2001). It is also possible that the influence of norms on condom usage will differ according to the purpose for which condoms are used. Catania *et al* (1989) discuss the possibility that different factors will affect condom usage for disease control versus birth control. In this study, although AIDS was mentioned in the introduction of the questionnaire, we do not know whether some respondents were thinking about condom use for birth control and others for disease control. Future studies on adolescent condom use in South Africa should attempt to distinguish between reasons for condom use and how determining factors differ according to these reasons.

The fact that social norms were relatively unimportant in explaining condom usage, when compared to the other variables in the study, suggests that programmes aimed at enhancing condom use among this group of adolescents should not place a heavy emphasis on peer norms. However, it is possible that perceived partner norm might play a

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more important role than other normative influences. Therefore, further research to explore the influence of partner norm versus a combined normative score is merited.

Perceived susceptibility to HIV/AIDS

Virtually all current models of health protective behaviour stress that there is a relationship between perceived susceptibility to a disease and precautionary behaviour. Both the HBM and SCT highlight that one of the key determinants of any health behaviour is perceived susceptibility to disease. In the case of HIV, higher levels of perceived susceptibility are hypothesized to be associated with decreases in risk behaviour and thus with increased condom usage (Catania *et al*, 1989; Donald *et al*, 1994; Falba & Jofre-Bonet, 2002; Rutenberg *et al*, 2002). Low perceived vulnerability to HIV/AIDS is assumed to reduce the motivation to practice safer sex. The degree of perceived susceptibility has also been found to be related to self-efficacy to practice healthy behaviour. Thus, for instance, research has found that a wife's ability to ask her husband to use a condom is significantly increased if she feels that she is at risk of HIV/AIDS (Wolff & Blanc, in press).

In their meta-analysis of the social-cognitive correlates of heterosexual condom use, Sheeran *et al* (1999) found a small significant correlation (r = .06) between condom use and perceived susceptibility to HIV, indicating that condom use is associated with the belief that one is personally at risk of HIV infection. DiClemente *et al* (1992) found that the perception that condoms are effective in preventing AIDS was one of the most influential determinants of consistent condom use in their study of minority middle-school adolescents. Donald *et al* (1994) found that a higher perceived risk of becoming infected with HIV/STDs was associated with using a condom and Agha, Kusanthan, Longfield, Klein and Berman (2002) found that low personal risk perception was the most important reason for not using a condom with regular partners in a study conducted in eight countries in Sub-Saharan Africa. With non-regular partners dislike of condoms was the most important reason for not using condoms. Some research done in South

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Africa indicates that higher perceived vulnerability to HIV/AIDS and anxiety about personal risk is linked to both intended and actual behaviour change (Strebel & Perkel, 1991; Van Aswegen, 1995; Van Wijk, 1994).

However, a number of other studies with adolescents and young adults have shown that perceived susceptibility to HIV/AIDS does not appear to impact on condom usage (Breakwell *et al*, 1994; DiClemente, 1991; DiClemente *et al*, 1992; DiClemente & Fisher, 1992; DiClemente *et al*, 1996; Edem & Harvey, 1995; Weisman *et al*, 1989). This was confirmed by a study by Gerrard, Gibbons and Bushman (1996) in which they found that perceptions of HIV risk are minimally linked to preventive behaviour and that other factors were much stronger predictors of condom use. Goldman and Harlow (1993) found that perceived risk was negatively related to AIDS-preventive behaviour in a sample of young college students, which suggests that if a person does feel more vulnerable, he/she is less likely to use condoms.

There has been no systematic survey of perceived risk to HIV/AIDS among young people in South Africa (Rutenberg *et al*, 2002). However a number of qualitative studies have shown that many young people do not see themselves at high risk of infection (NPPHCN, 1995; Varga, 1997). A study by Skinner among youth near to Cape Town showed that most respondents did not link the use of condoms to reduction of HIV/STI risk (Skinner, 2001). On the other hand, there are indications that more young people are willing to consider using condoms and that condom use among young people is increasing (Rutenberg *et al*, 2002) and that this could be a reflection of changing views on susceptibility to HIV/AIDS.

In this study, perceived susceptibility to HIV if a condom was not used correlated significantly with intention to use condoms as well as condom usage for Coloured females and males in the regression analyses, but not for Black females or males. In the stepwise multiple regression analyses of intention on the independent variables, perceived susceptibility was selected as the second most important variable for Coloured females and fourth most important for Coloured males. Thus perceived susceptibility to

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HIV/AIDS appears to play a bigger role in both intention to use condoms as well as condom use in the case of Coloured respondents when compared to Black respondents. However, even in the case of Coloured adolescents, perceived susceptibility to HIV infection without condom usage does not appear to play a large role in influencing condom usage when compared to other variables (e.g. construct availability). A possible explanation for this could lie in the cross-sectional study design and that respondents who used a condom at last intercourse might correctly assume themselves to be at less risk for HIV/AIDS and vice versa (Fisher & Fisher, 1992a, 1992b; Goldman & Harlow, 1993; Weisman *et al*, 1989). If this were the case, then one would expect a low or negative correlation between condom use and perceived susceptibility to HIV/AIDS (Gerrard *et al*, 1996). A longitudinal study design might deliver different results.

It is difficult to interpret the different findings for Black and Coloured respondents in the current study. Possible reasons could relate to different levels of information about the disease in the two race groups. This could be due to the fact that less of the historically Black schools have guidance/lifeskills periods in which HIV/AIDS information is imparted and also that Black learners are more likely that Coloured learners to deny risk.

The results of this research suggest that educating adolescents about the importance of using condoms for prevention of HIV/AIDS, will not necessarily lead to increased condom use. This does not necessarily indicate that risk perceptions are unimportant, but rather that there are other barriers that perhaps prevent adolescents from using condoms (Weinstein & Nicolich, 1993). Perceiving risk does not necessarily seem to correlate with the ability to do something about the risk. It is likely that gender-power and other factors intervene in making it difficult for adolescents to translate perceived risk into increased condom usage in a South African context. Eversley *et al* (1993) suggest that interventions probably need to focus on increasing interpersonal assertiveness and risk communication skills rather than on simple education programmes that focus on teaching about risky behaviour. The significant contribution of construct availability to condom usage for all groups in this study supports this suggestion.

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Self-efficacy

Self-efficacy is generally assumed to be an important factor influencing health behaviour. According to the SLT and TPB behaviour-specific self-efficacy/perceived behavioural control (i.e. the belief and confidence that a person can successfully perform specific behaviours in particular contexts) is an important determinant of behaviour (Ajzen & Madden, 1986; Bandura, 1994). The Theory of Subjective Culture and Interpersonal Relations (Triandis, 1977) also posits that self-efficacy is one of the facilitating conditions that influences health behaviour. In the TPB, self-efficacy is assumed to influence behaviour both via intention and directly. In the data analysis for this research, the influence of self-efficacy on both intention as well as behaviour was tested.

There is mixed evidence from studies using one or more of the theories underpinning this research on adolescent condom usage regarding the influence of self-efficacy. A number of studies related to condom usage among a variety of different adolescent groups have shown that self-efficacy significantly influences condom usage (Adih & Alexander, 1999; Basen-Engquist & Parcel, 1992; DiClemente *et al*, 1996; Pendergrast *et al*, 1992; Richard *et al*, 1991; Rotheram-Borus *et al*, 1995; Schaalma *et al*, 1993; St Lawrence, 1993; Wulfert & Wan, 1995). Two South African studies with young adults also confirm that self-efficacy for condom usage is linked to higher reported condom usage (Peltzer, 1999; Reddy *et al*, 2000). DiClemente *et al* (1996) found self-efficacy to assert condom use to be a key determinant of consistent condom use among adolescents in their study. Adolescents who had high self-efficacy to assert that condoms be used during sexual intercourse were almost 11 times more likely to be consistent condom-users relative to their less assertive peers. This relationship was consistent across gender and age. In other studies self-efficacy was found to influence behaviour via its interaction and/or influence on intention (Godin *et al*, 1997; Reinecke *et al*, 1996). Studies have also shown that health promotion interventions that enhance self-efficacy foster healthy behaviour (Gilchrist & Schinke, 1983; Maibach & Murphy, 1995)

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On the other hand, other studies have found no significant relationship between self-efficacy and condom use (Catania *et al*, 1989; Laraque *et al*, 1997; Lollis *et al*, 1997; Murphy *et al*, 1998; Terry, 1993). Breakwell *et al* (1994) found that self-efficacy negatively influenced condom use in their study. Specifically, lower levels of self-efficacy were associated with greater condom use. They speculate that confidence issues might be separate from control issues in condom use. DiClemente *et al* (1996) found that older adolescents of both genders with high levels of self-efficacy were less likely to be consistent condom users relative to younger adolescents with similar levels of self-efficacy. They speculate that as adolescents get older other cultural influences take on greater salience and that this is probably particularly the case for girls (DiClemente *et al,* 1996). Further research is therefore needed to investigate and clarify the nature of sexual self-efficacy and to look at control versus confidence components of self-efficacy as well as at pertinent developmental and cultural factors affecting self-efficacy among adolescents.

A further possible explanation for the lack of a significant relationship between self-efficacy and condom use found in some studies could be due to a gap between what adolescents believe they can do and their actual skills or ability to use a condom. Even when adolescents do have the skills to use a condom, other variables come into play (for example gender power issue) that could make it difficult to do so. Murphy *et al* (1998) found that males and females in their study both had high self-efficacy for condom use and could actually demonstrate that they could do so. However, 30 - 50% of their acts of sexual intercourse were unprotected in the three months prior to the study. Rosenthal *et al* (1991) found that confidence in the ability to take sexual precautions did not predict sexual risk-taking (including condom use) and relate this to the spontaneous nature of sexual activity. Confidence in dealing with sexual precautions is a matter of pre-planning rather than impulsiveness. In some studies self-efficacy was significant for girls but not for boys (Donald *et al*, 1994; St Lawrence, 1993).

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The results of the current research indicate that self-efficacy only made a significant independent contribution to intention to use condoms for Coloured males, but not for the other race gender groups. The stepwise multiple regression analyses of intention on the other independent variables selected self-efficacy as the most important variable for this group, but despite this it showed only a small to medium positive correlation with intention[2] (partial R-square = .23). On the other hand, in the logistic regression analyses of behaviour on the independent variables, self-efficacy made a significant independent contribution to condom use for all race gender groups except Coloured females. The stepwise logistic regression analyses selected self-efficacy first in the case of Black and Coloured males and seventh in the case of Black females.

The tree diagrams depict how self-efficacy influences the other independent variables and condom usage. In the case of Coloured males, self-efficacy appears to positively influence construct availability. The higher the construct availability score, the greater the likelihood of condom usage. Thus self-efficacy enhances the ability to talk about condoms with a sexual partner, which in turn increases the likelihood of condom use. One would have expected that self-efficacy would similarly influence construct availability in the other groups, and especially in the case of the female respondents for reasons already discussed previously.

The results of the current study indicate that self-efficacy has a greater influence on condom use in the case of males than females and that this influence is direct rather than via intention. This finding is contrary to what one might expect. As discussed previously, because condom use can be described as a behaviour for the males and a goal for the females, one would assume that self-efficacy would play a larger role among female respondents, as getting their partner to use a condom requires greater self-efficacy than in the case of males (Fishbein *et al*, 2001; Skinner, 2001). It is difficult to explain why this was not the case in this study. One possible explanation could lie in a study of

[2] I am using Cohen's (1992) guidelines for interpreting the size of correlations as suggested by Sheeran *et al* (1996). Thus $R^2 = .10$ is small; $R^2 = .30$ is medium and $R^2 = .50$ is large.

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Ugandan adolescents by Abraham *et al* (1995), who found that women who felt most able to discuss sexual histories with their partners were less likely to intend to use condoms with a new partner. They speculate that this may mean that women are relying on their communication skills to differentiate between 'safe' and 'risky' partners. This corresponds with O'Leary *et al*'s (1992) finding that high self-efficacy in relation to the ability to assess a sexual partner's risk status through questioning was associated with higher levels of unprotected intercourse among US adolescents. Kegeles *et al* (1989) concur with this and found that girls who felt they had the power to use condoms reported less perceived susceptibility to HIV. Goldman and Harlow (1993) found that the greater a person's sense of purpose and control, the less vulnerable he/she feels to AIDS and the less likely to take precautions. Thus in the case of Coloured females, it may mean that they are relying on other ways of identifying risky partners and thus perceived self-efficacy to use condoms is not significantly influencing their insistence on condom use by their sexual partners. Another possible reason for self-efficacy being a less important variable for women than men could lie in their lack of direct control over condom usage, which might negatively affect their perceived self-efficacy to use condoms (Kasen *et al,* 1992). According to Sheeran & Orbell (1998) this might result in women being less able to act on their intentions to use condoms than men

The differing patterns of influence of self-efficacy on condom usage for males and females in this study illustrate the importance of acknowledging and working with the socio-cultural context that influences the gender power base of sexual relationships (Campbell, 1995a, 1995b). Women do not always have control over the behaviour of their male partners even if they have show high levels of self efficacy and this highlights the need to target men to become responsible for their sexual behaviour. This study clearly shows that self-efficacy plays an important role in condom usage by men. Targeting male self-efficacy appears to have been ignored in most AIDS prevention programmes. Most programmes aim at enhancing the self-efficacy of women to negotiate safer sex (and this often includes condom usage). When men are targeted, the information is frequently aimed at them as part of a couple rather than as individuals, and

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the information is often not gender-specific. According to Campbell (1995b: 205), "Perhaps in the lack of attention to men, there is an underlying assumption that men really do not care about safer sex practices and that men will not be motivated to change their behaviour". Men need to become very specific targets of HIV/AIDS prevention programmes and their power in sexual relationships needs to be acknowledged and worked with. This means that they need the self-efficacy to change what is traditionally seen as 'male' behaviour, namely, not using condoms and having multiple partners. Condoms should be introduced to boys as a means of controlling important parts of their sexuality so that they do not have to rely on their partners to prevent HIV and STDs (Rix, 1996).

These results suggest that the relationship between self-efficacy and condom use is complex. They substantiate Adih and Alexander's (1999) study on the determinants of condom use among youth in Ghana, in which they suggest that self-efficacy has an indirect but synergistic effect on condom use.

A number of studies that used a combination of social-cognitive variables found that self-efficacy had the strongest influence on condom usage (Adih & Alexander, 1999; DiClemente *et al*, 1996; Mahoney *et al*, 1995; Richard *et al*, 1991). Contrary to these studies, although self-efficacy was shown to be an important factor in this research, it was not the most important factor. The findings of this study, however, concur with those of a number of other studies that self-efficacy does appear to have an important influence on adolescent condom use (Basen-Engquist & Parcel, 1992; Pendergrast *et al,* 1992; Rotheram-Borus, 1995; Schaalma *et al*, 1993; Skinner, 2001; Wulfert & Wan, 1995). This suggests that the teaching of skills that will enhance adolescents' ability and perceived ability to deal with partner resistance relating to condom use should be included in the lifeskills curriculum (Bryan, Aiken & West, 1996; Fisher, Fisher, Misovich, Kimble & Malloy, 1996).

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A possible factor that could have contributed to a lower impact of self-efficacy on condom usage in this study is the fact that the measure used assessed potential or hypothetical capabilities at some unspecified time in the future rather that assessing present capabilities (Maibach & Murphy, 1995). In addition, self efficacy levels have also been shown to vary according to type of sexual partner. Thus college-age females were found to have higher levels of self-efficacy for using a condom with a casual partner than a main partner (Grimley *et al*, 1995). It is possible therefore that type of sexual partner could have likewise affected the self-efficacy levels in this study.

The findings of this study point to the need to conduct further research into the role of self-efficacy based on type of sexual partner (casual versus regular). They also highlight the need to focus more strongly on enhancing condom use self-efficacy of male adolescents.

Self-standards

According to Fishbein *et al* (1992:7), for a person to perform a specific health behaviour such as condom use, he/she must "perceive that performance of the behavior is more consistent than inconsistent with his of her self-image, or that its performance does not violate personal standards that activate negative self-sanctions". One would thus assume that an adolescent who perceives him/herself to be the type of person that uses condoms, would be more likely to in fact use them. This variable is not often used in studies of adolescent condom usage and none of the studies reviewed in Chapter 3 included this variable.

The results of the current study indicate significant differences in the self-standard scores of condom users versus non-users for all race gender subgroups. Thus respondents who felt that they were the kind of person that would use condoms, were more likely to use condoms. The multiple regression analyses showed that self-standard was a significant correlate of intention to use condoms for all subgroups, except Coloured males. However, it almost reached significance for this group as well. The stepwise multiple

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regression analyses of intention on the independent variables selected self-standard first for Black males and females as well as Coloured females and sixth for Coloured males. It explained 21% of the variance in intention for Black males, and 13% and 17% for Black and Coloured females respectively.

Self-standards also influence condom usage directly and the logistic regression of behaviour on the independent variables showed a significant relationship between these two variables for all race gender subgroups. The variable appears to be more important for males than females. This is substantiated by the stepwise logistic regression analyses of behaviour on the independent variables, in which self-standards was selected fourth for Black and Coloured males and ninth and eleventh for Black and Coloured females respectively. In the case of Black males the tree diagrams indicate that norms influence self-standards and this in turn influences condom usage via its influence on construct availability. The variable was not selected for any of the other race gender subgroups.

Despite the fact that this variable only comprised one question, it still appears to have a significant influence on condom usage as well as intention to use condoms for most adolescents. This has implications for school-based interventions. The challenge is to research and develop ways of changing self-standards to make the use of condoms part of a positive image of self. Most current lifeskills programmes do not include this as part of their curriculum. There is therefore a need to develop programmes that include the promotion of condom within the broader context of a positive male and female sexuality (Rix, 1996). Exactly how to operationalise and implement this taking into account cultural factors in a South African context merits further research.

One of the aspects that does appear to be important is to design messages that tap into what Kline, Kline and Oken (1992) call 'culture as enabler' rather than 'culture as resistance' to condom usage. Programmes need to target positive cultural concepts linked to manhood (for example the man as protector of the family, collectivism, the man as carer and nuturer) and link these to the importance of using condoms. Make using condoms part of a positive message about what men are will help promote them as part of

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male sexuality. Boys should be taught that condom use signals respect and care for a partner rather than mistrust (Rix, 1996). At the same time more active involvement of women is also necessary and the results of this study highlight the necessity of making condom usage part of the self-standard of women as well as men.

6.4.3 Comments on the model

In the following section, the relative influence of the variables used in this study will be commented on in order to establish which of the independent variables hold the most promise for interventions focusing on improving condom usage.

A useful way of analysing the variables tested in this research is to apply the framework suggested by Sheeran *et al* (1999) in a meta-analysis of social-cognitive correlates of heterosexual condom use. They used the AIDS Risk Reduction Model (ARRM) of Catania, Kegeles and Coates (1990) as a framework for organising the various social-cognitive variables found to correlate with condom usage in the studies they reviewed. The ARRM uses the term *stage* to characterise three markers in the process of changing condom use behaviour, namely: (a) labelling, (b) commitment, and (c) enactment (Sheeran *et al,* 1999). The variables used in this study can usefully be organised according to these three stages. The first stage is the *labelling stage,* in which a person recognises and becomes aware of the threat of AIDS and that their behaviour could put them at risk of infection. The following variables from this study would fall in the labelling stage: (a) threat appraisal variables (perceived susceptibility to HIV/AIDS, worry about HIV/AIDS), (b) measures of sexual experience (number of sexual partners, intercourse frequency, age at first intercourse) and (c) health importance.

The second stage is the *commitment stage* during which a person should end up making a firm commitment to using a condom (Sheeran *et al,* 1999). Commitment to using a condom is seen to be strongly determined by positive attitudes towards condoms, supportive norms, perceived self-efficacy to use condoms, previous condom use and

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intention to use condoms (Sheeran *et al,* 1999*).* Independent variables from this thesis that would fall into this stage are intention, beliefs, attitude, norms, self efficacy, affect, and self-standards.

The third stage, namely the *enactment stage*, is a post-intentional stage, and includes preparatory behaviours that a person undertakes to make sure that they perform a particular behaviour (Bagozzi, 1992; Gollwitzer, 1993; Sheeran *et al,* 1999). Tones (1982) calls these 'facilitating factors', Akande (2001) labels them 'threshold conditions' and Kashima *et al* (1993) 'contextual factors'. It is generally assumed that if the intention to use condoms exists, then facilitating factors assume importance. These include the social interaction skill of obtaining a condom and negotiating usage. The importance of interpersonal variables in condom use is underlined by Grimley *et al* (1997), who found that condom use needs an additional process of change when compared to other health behaviours. They found that assertiveness for condom use is necessary for individuals to adopt and maintain consistent condom use.

Another way of classifying this type of variable would be as behavioural conditions that have to be satisfied in order to use a condom (Kashima *et al*, 1993). Kashima *et al* (1993) found that the proportion of condom users increased based on the extent to which the behavioural conditions of availability and agreement with a partner were satisfied. In the current study the independent variables of condom availability and communication about condoms (construct availability) could be classified as enactment stage variables.

The tree diagrammes (see Chapter 5) confirm that enactment stage variables, and in particular construct availability, have the strongest influence on behaviour for all race gender groups. At the second level, commitment stage variables, in particular, self-standards, self-efficacy, intention, beliefs and attitudes influence condom usage. Whereas there appears to be a common enactment stage variable, namely construct availability, for all groups, the commitment stage variables differ according to race and gender. Thus for Black males, self-standards are important; for Coloured males, self-efficacy; for Black females, intention and for Coloured females, beliefs and attitudes.

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The importance of the enactment stage variables is further confirmed by the fact that condom availability was shown to have an important independent influence on condom usage for all groups except Coloured males in the logistic regression analyses. These findings concur with a study conducted among Australian adolescents by Boldero *et al* (1992), that highlighted the importance of contextual factors. They found that communication with sexual partner, sexual arousal and condom availability were significant predictors of condom use. The importance of contextual factors is further supported by a range of other studies (Biglan *et al,* 1990; Boldero *et al,* 1992; Catania *et al,* 1989, 1992; DiClemente & Fisher, 1992; Ford & Norris, 1995) as well as by Akande (2001) in a study conducted among South African youth.

The importance of contextual factors/enactment stage variables is further highlighted in the current study by the fact that there was not a strong relationship between intention to use condoms and condom use. This substantiates other studies that have examined the relationship between intention and behaviour and have reported a wide range of correlations (Sheppard *et al,* 1988). The social cognitive theories providing the framework for the current research do not directly address how intentions are translated into action. This research has shown that it is important to include these type of variables in research of this nature and proposes that there is a direct link between many of these variables and behaviour. Further research that leads to a more detailed analysis of the processes underlying condom usage is merited.

Two groups of contextual factors emerged in the current research as playing a particularly important role in condom use, namely couple factors (in particular the ability to negotiate condom usage) and factors related to the availability of condoms. This study however, suggests that the relationships between the variables tested are complex and might have a synergistic affect on condom use (Adih & Alexander, 1999). The importance of these contextual factors suggests that theories such as the TRA and TPB could be improved by including some of the processes that are immediate precursors of behaviour and would appear to help translate intention into behaviour (Sheeran *et al,* 1999).

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The fact that enactment stage or contextual factors appear to play the most important role in condom usage suggests that other enactment stage variables not included in this research might also be important predictors of condom use. Future research should therefore focus on events and circumstances that occur immediately before a sexual encounter (Boldero *et al*, 1992). This could include factors such as level of sexual arousal (Boldero *et al*, 1992; Jaccard, Helbig, Wan, Gutman & Kritz-Silverstein, 1990) and the use of alcohol or drugs. Further research is needed that focuses on identifying salient enactment stage variables and designing appropriate intervention programmes to address these factors.

The finding that attitudinal and normative factors played less of a role in condom use in this study than could be expected from the TRA and TPB concurs with findings of Fisher *et al* (1992) in which they found similar trends among a sample of 9th grade students. They speculate that situational factors may play a bigger role than attitudinal and normative factors due to the fact that patterns of sexual behaviour are not yet firmly established among this age group and that "if an opportunity to have sexual intercourse presents itself to these young people, they may engage in this behavior with or without a condom and irrespective of their attitudes and norms regarding condom use" (Fisher *et al* 1995:263).

The different patterns of influence of the independent variables on condom usage according to race and gender highlights the need to address different targets in intervention programmes according to the race and gender group concerned. This might be difficult to do in practice, given the fact that it is possible that if one introduced an additional variable such as social class, even more factors might come into play. However, based on this research, it is clear that programmes to change the condom use behaviour of high school students need to have a number of different messages. One message is unlikely to promote health enhancing behaviour of all adolescents (Fishbein *et al*, 2001; Maibach & Parrott, 1995; Reddy *et al*, 2000). The goal should therefore be to

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develop common messages that target intra-group similarities rather than inter-group differences. At the same time, programmes need to make sure that they also address the key factors shown to influence condom usage for each of the subgroups.

The findings of this study provide support for using an integrated social cognitive framework for understanding condom usage among adolescents. The correct classification rates of the logistic regression analyses of behaviour on the model variables ranged between 45% and 52% (see Tables 5.15 – 5.18) and the R-squared values of the multiple regression analyses of intention on the independent variables ranged from .31 to .41. According to Abraham *et al* (1998:305), "when social cognitive models can reliably predict 19-43 per cent of the variance in behaviour they are identifying psychological characteristics which, if optimally promoted, can make an important difference to the prevalence of behaviour in the studied population". Thus even though this was a cross-sectional study, the findings suggest that the key independent variables used in this study provide a useful target for interventions aimed at condom usage and that they merit further research.

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6.5 Implications for the design of interventions to increase condom usage

The findings of this research have several implications for the design of interventions to promote condom use among adolescents in the Western Cape. Some of these have already been discussed above. In this section I will focus more broadly on lifeskills programmes as well as making condoms available to young people.

6.5.1 Lifeskills Education

Schools provide an ideal venue for primary preventive health education, which should include sexuality, lifeskills and HIV/AIDS education. Interventions that aim to increase condom usage among adolescents will be most effective if they focus on each of the constructs identified as significant in this research. The focus should be on those variables

that were shown to be most important in the regression analyses and tree diagrams. Thus the findings suggest that interventions emphasising norms, beliefs and attitudes are likely to be less successful than those that focus on the teaching of skills, making condoms available, addressing self-standards and promoting feelings of self efficacy.

Programmes need to further ensure that self-standards are targeted. In particular conceptions of masculinity that include the use of condoms need to be fostered. In addition, there should be a special focus in all lifeskills programmes on increasing intention to use condoms, on fostering positive beliefs and attitudes toward condoms and on enhancing self-efficacy of all learners (male as well as female).

The results of this research suggest that programmes that actively teach adolescents the skills needed to use condoms are likely to be more effective than knowledge-based interventions. Programmes should include the teaching of negotiation skills, assertiveness, communication skills, decision-making, teaching learners how to use condoms and access condoms, and addressing gender-power issues that impact on condom usage. Ideally these should be taught both separately as well as integrated and reinforced across the curriculum.

This research suggests that programmes need to include the teaching of very specific condom related skills (i.e. how to talk about condoms with a sexual partner) rather than focusing on generally enhancing self esteem and assertiveness skills. It is however important to recognise that in socially significant relationships safer sex practices, especially condom use will be less attainable as they are tied to conceptions of trust, romance and love (Sibthorpe, 1992). Programmes thus need to take into account the fact that advocating condom use is often viewed as an acknowledgement of risky behaviour and promiscuity and that adolescents may be scared that talking about use implies that they or their partner has HIV. Thus lifeskills programmes need to also target the salient beliefs that underpin non-usage.

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Although many researchers advocate the use of peer led programmes to enhance condom use and that peers are particularly effective and appropriate for helping teach the skills needed to ensure condom use, this is not supported by this research (DiClemente *et al*, 1996; Wight & Abraham, 2000). This does not, however, preclude using peers in lifeskills programmes. Further research into this area is needed to establish which referent groups are most important for condom usage.

This study shows that by the age of 15 most of the adolescents were already sexually active. Ideally prevention programmes should reach these adolescents before sexual risk behaviours become entrenched. It is important to prevent the initiation of risky behaviour and therefore crucial that programmes in schools are implemented before onset of sexual activity. As risky sexual behaviour becomes entrenched, it becomes increasingly difficult to change (DiClemente *et al,* 1996). From the results of this study it is clear that programmes aimed at achieving health sexual behaviour need to be initiated at the primary school level before the onset of puberty and continue until learners leave school.

These results also have implications for the social marketing of condoms among adolescents. Social marketing campaigns need to target:

- Skills – messages: I can negotiate use; I think about condoms before sex
- Self-standards: Real men wear condoms. Wearing condoms is the manly thing to do.
- Self-efficacy: I am able to use condoms and negotiate with my partner
- Affect: I feel positive about condoms
- Attitudes and beliefs: Here the focus should be on fostering positive attitudes and beliefs, for example, 'I think and believe that using condoms is a good thing', 'Wearing condoms shows that I really care about my partner'.
- Intention: I intend to use condoms and am able to negotiate condom use.

Finally it is crucial to involve young people in helping design messages and programmes that are salient and useful to them (UNFPA, 2001). They should form part of the

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planning, implementation and evaluation of lifeskills programmes offered in the schools, something that rarely happens at present in South Africa.

6.5.2 Making condoms available in schools

This research clearly shows that condom availability is a core correlate of condom usage, especially for the male respondents in the study. This suggests that making condoms available in school could be an important strategy for increasing use.

A number of studies, mainly in the USA, have evaluated the effectiveness of condom availability programmes in schools (Furstenburg *et al*, 1997; Guttmacher *et al*, 1997; Kirby *et al*, 1999; Schuster *et al*, 1997; 1998). The results indicate varying degrees of success of these programmes. Kirby *et al* (1999) in a study in Seattle, found that despite students taking a large number of condoms from the dispensers in the schools, this did not affect their condom use. It also did not increase sexual activity rates. Similarly a study by Furstenburg *et al* (1997) showed only a minimal increase in condom usage. However, a study in California reported that 34% of the students who used condoms on last intercourse reported obtaining them from the school (Schuster *et al* 1997, 1998). From this research it appears as if condom availability programmes do not result in increased sexual activity and appear in most cases to lead to at least a modest increase in usage.

Given the findings of this research as well as the studies cited above, it appears as if making condoms available in schools is a strategy that should be strongly considered. To enhance effectiveness, however, it is important that this occurs as a result of a collaborative and consultative partnership with parents, community and learners and also that it is accompanied by lifeskills education in the school that teaches both the skills necessary to negotiate condom usage as well as imparts the knowledge that condoms are necessary to prevent the spread of HIV/AIDS. In addition, it is important that peer support and education programmes are used in addition to providing condoms.

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The importance of having a condom available when needed underscores the need to not only provide condoms in schools but also to address the difficulties adolescents have in obtaining condoms from both public and private sector outlets. Research in South Africa as well as Botswana highlights the fact that many adolescents perceive public sector personnel as critical of their sexual behaviour and that they do not want to access condoms at clinics (Abdool-Karim, S.S.; Q. *et al,* 1992; Abdool-Karim, Preston-Whyte *et al,* 1992; Meekers, 2001). In order to improve access, they should be made available at outlets other than government clinics (for example youth centres) and clinic staff should be trained to make clinics more youth friendly and to de-stigmatise condom use. Research also indicates that females are more reluctant than males to obtain condoms from friends or any other source as they fear for their reputation (Meekers, 2001). It is therefore important to not only provide condoms in easily accessible venues, but to also address these gender-based issues. Enhancing the ability to talk about condoms with a sexual partner should also focus on how to obtain condoms.

6.6 Conclusion

The aim of this research was to investigate factors affecting condom use among sexually active grade 11 adolescents. It succeeded in identifying a number of key factors that influence condom usage and should be the target of interventions aimed to increase usage. It also highlighted the importance of enactment stage variables in adolescent condom usage.

Although research is starting to show the value of theory-based approaches to sexuality and HIV/AIDS education and particularly those that are based on social-cognitive theory, there is a lack of research on how to translate theory into acceptable, replicable and sustainable classroom practice (Kalichman *et al*, 1996; Wight & Abraham, 2000). This study highlights some of the issues that need to be addressed in designing sexuality and HIV/AIDS programmes in schools in South Africa. Further research is needed into how best to operationalise those factors shown to have an important influence on condom

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usage in this study in a classroom situation. This should include the collaborative development of sexuality education programmes that includes researchers, teachers, curriculum services and learners. In this regard the intervention mapping technique described by Bartholomew, Parcel and Kok (1998) could prove to be a valuable tool.

As already discussed, one of the major shortcomings of this study is its cross-sectional design. There is therefore a need to conduct similar theory-driven prospective studies to evaluate the stability and significance of the key variables identified in this research over time.

One of the findings of this study is that the factors influencing condom usage among adolescents are not uniform, but appear to be contingent on gender as well as race and that these two variables interact. This implies that no single programme, strategy or message will have the desired effect on all young people. There is thus a need to develop responses that are comprehensive and multi-faceted (UNFPA, 2001). Interventions to improve condom usage among adolescents in South Africa must therefore take into account the specific contextual and individual factors that mediate usage for different groups of adolescents. This approach needs to be culture and gender sensitive. The current research highlights some of the factors that appear to be important target points for interventions, namely, construct availability, condom availability, self-efficacy, self-standards, and beliefs. However, these are factors that operate only at an intra- and inter-personal level (i.e. micro-systemic level). For any approach to be successful, it also needs to target factors at a meso- and macro-systemic level (these would include the school system, family, community, policies, and socio-economic factors). "We need to understand that sexual behaviour change is but a narrow segment of the necessities of broader social change in relation to HIV/AIDS. It is only when we understand interventions to be located in the social realm rather than purely the realm of the 'individual', that we can truly move forward" (Kelly & Parker 2000:60). While it is therefore crucial to teach the skills, values and knowledge necessary to ensure condom use, this needs to be accompanied by the appropriate allocation of resources and social

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support to allow consistent and effective use under difficult circumstances. Thus in order to ensure the success of individual-level interventions these must be complemented by meso- and macro-level policy and environmental interventions that strengthen the social norms and support for correct and consistent condom usage (Orleans, 2000).

The results of this research highlight the need for a greater understanding of the complexities underpinning a co-operative behaviour such as condom use. Many of the social-cognitive theories used in this research only partially contribute to explaining a complex co-operative behaviour such as condom use. This research suggests that theories such as the TRA/TPB could be modified by incorporating variables shown to correlate most strongly with condom use in this study, namely, construct availability factors and condom availability. These findings concur with suggestions of Bagozzi (1992), Gollwitzer (1993), Schwarzer (1994) and Sheeran *et al* (1999) that the TRA is limited in that it does not consider processes necessary for the translation of intention into action/behaviour and that these theories over-emphasize the role of intention.

A further area for future research is to investigate how the key variables shown to influence condom usage in this study link with the different stages of behaviour change. Different cognitive variable will assume importance at different stages of behaviour change and it is important to also identify which variables are important in ensuring movement from one stage to the next (Conner &Norman, 1996).

This research has contributed to a better understanding of condom use among adolescents in the Western Cape and will thus hopefully be used in a more effective promotion of condoms among this age group. It indicates clearly that interventions that target preparatory behaviour (more specifically, communicating about condoms and carrying a condom) are likely to promote condom use. The results also highlight the importance of designing interventions that take into account the gender and race/cultural specific factors. Lifeskills programmes that teach condom negotiation skills, help people think about condoms before they engage in sex, promote having condoms available, target self-

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standards, self-efficacy, positive beliefs, attitudes and affect toward condoms are likely to increase use.

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Appendices

A. Guidelines for focus group interview

B. Questionnaire – male version (English)

Questionnaire – female version (English)

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Appendix A

Question guidelines for focus group interviews:

1. Is AIDS a problem among young people in this country?
2. Is AIDS a problem among young people in your community?
3. What do you see as the advantages/benefits of using a condom?
4. What do you see as the disadvantages of using a condom?
5. What else comes to mind when you think of using a condom?
6. Who would support/ approve of your using a condom?
7. Who would disapprove of your using a condom?
8. What things would make it difficult for you to use a condom?
9. What do you think would make it easier to use a condom?
10. How would you describe a man who always uses a condom?
11. How would you describe a man who never uses a condom?
12. How would you describe a woman who always insists that her partner uses a condom?
13. How would you describe a woman who never asks her partner to use a condom?

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Appendix B
Questionnaire – male version

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Adolescent sexual health survey (M)

Please will you help us by filling in this questionnaire. It is not nearly as long as it looks.

We are trying to find out better ways of preventing the spread of AIDS among young people. Your responses are very important to us and will help to keep young people in this country healthy.

This is not a test and there are no right and wrong answers. **PLEASE BE HONEST IN YOUR ANSWERS. DO NOT GIVE US ANSWERS THAT YOU THINK ARE RIGHT OR THAT YOU THINK WE MIGHT WANT.** If you do this, this research will not help us stop the spread of AIDS. We need to know what young people **really think** to develop the best programmes to fight AIDS

You are not asked to give your name on the questionnaire and nobody will know who filled in this questionnaire. All the information you give us will be kept private.

Please take your time and answer carefully. In questions where there are boxes, please mark the box next to the answer you want to give.

Please do not write to the right of the line going down the right hand side of the page.

Once you have finished filling in the questionnaire, please put it in the envelope.

THANK YOU VERY MUCH FOR YOUR HELP!

For office use only

☐☐☐☐
quest. number

☐☐

☐7
lang

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Before we begin, there are a few things we need to know about you:

For office use only

1. How old are you ? ..... *years* 8 ☐☐

2. What is your sex? *male* ☐ *female* ☐ ☐

3. What was your racial classification under the previous government?

Asian ☐ *Black* ☐ ☐

Coloured ☐ *White* ☐

4. Which of the following languages are spoken in your home? Please mark as many as necessary.

Afrikaans ☐ *English* ☐ ☐☐

Xhosa ☐ *Zulu* ☐ ☐☐

other (please give details) ..... ☐☐ 17

5. Which of the following do you or your family have at home? Please mark as many as necessary.

Telephone ☐ *Television* ☐ ☐☐

Motor car ☐ *Electricity* ☐ ☐☐

Radio ☐ *Bicycle* ☐ *Piped water* ☐ ☐☐

☐

6. How many people, besides you, sleep in the same room as you at night when you are at home? .....*people* ☐☐

Below are some statements about your health. For each question mark the box that most closely corresponds to what you feel.

7. I think it is more important to enjoy myself than to worry about my health

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 27

8. My health is actually not that important to me

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 28

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9. I think that is very important to care for my health

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*	**For office use only**
☐	☐	☐	☐	☐	☐

Now we are going to ask you some questions about condoms. We would like you to answer these questions <u>even if you have never used a condom</u>. If you have never used a condom, tell use how you think you would feel.

10. In future, I will make sure that I use a condom if I have sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*	
☐	☐	☐	☐	☐	☐

11. If you have sex in future, how often will you use a condom?

always	*sometimes*	*now and again*	*rarely*	*never*	
☐	☐	☐	☐	☐	☐

Imagine you were about to have sex. <u>How likely is it that the following would happen</u>? If you have never had sex, tell us what you think would happen if you were to have sex.

12. a. You would not have a condom with you

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*	
☐	☐	☐	☐	☐	☐

b. Your sexual partner would not want you to use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*	
☐	☐	☐	☐	☐	☐ 33

c. You would be too scared to ask your sexual partner if you can use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*	
☐	☐	☐	☐	☐	☐ 34

d.. You would be too embarrassed to use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*	
☐	☐	☐	☐	☐	☐ 35

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e. You would feel that it is wrong to use a condom because of what your religion tells you

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

f. It would be difficult to use a condom because of drugs or drink

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

Here are some more questions about condoms. Even if you have never used one, please tell use your views

13 a. I know exactly how to use a condom

strongly agree	*agree*	*neither agree not disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. I will find it difficult to put on a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

c. I feel that I do not quite know how to put on a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 40

For each of the following questions, please mark the boxes that show what you think

14. a. If I would use a condom, I would be able to feel less during sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 41

b. I do not mind if I feel less during sex:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 42

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15. a. If I would use a condom, my sexual partner would think that I do not really love her

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. I do not mind if my sexual partner would feel that I do not really love her

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

For office use only: ☐

16. a. If I would use a condom, my sexual partner would think I have been sleeping around

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. I do not mind if my sexual partner would think I have been sleeping around

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

17. a. If I would use a condom, my sexual partner would think I have a sexually transmitted disease or AIDS:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 47

b. I do not mind if my sexual partner would think I have a sexually transmitted disease or AIDS

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 48

18. a. If I would use a condom, it would feel like I am not a real man:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 49

b. I do not mind if I would feel that I am not a real man

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

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19. a. If I would use a condom, my friends would laugh at me:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. I do not mind if my friends would laugh at me

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

For office use only: ☐

20. a. If I would use a condom, it would prevent **me** from getting AIDS:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. It is unnecessary to prevent myself from getting AIDS

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 54

21. a. If I would use a condom, it would prevent **my sexual partner** from getting AIDS:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 55

b. It is unnecessary to prevent **my sexual partner** from getting AIDS

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 56

22. a. If I would use a condom for sex, it would prevent my sexual partner from becoming pregnant:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 57

b. It is not important to prevent my sexual partner from becoming pregnant

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

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23. **a. Most of my friends** think I should **not** use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. When it comes to using condoms, I want to do what most of my friends think I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

For office use only: ☐

24. a. **Most people who are important to me** think I should **not** use condoms:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. When it comes to using condoms, I want to do what most people who are important to me think I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 62

25. a. **My parents** think I should **not** use condoms

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 63

b. When it comes to using condoms, I want to do what my parents think I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 64

26. a. My culture says: I should **not** use condoms

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 65

b When it comes to using condoms, I want to do what my culture says I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

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27. a. My girlfriend thinks I should **not** use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. When it comes to using condoms, I want to do what my girlfriend thinks I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

For office use only: ☐

28. I am the kind of person who will use a condom if I have sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

29. In future, I **do not** intend to use a condom if I have sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 70

30. a. I would **not** be able to use a condom after I have drunk alcohol or taken drugs:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 71

b. I would **not** be able to use a condom, if my partner does not want me to use one

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 72

c. I would **not** be able to delay having sex if I do not have a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 73

d. I would stop to use a condom no matter how sexually aroused I am

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 74

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For office use only:

e. I would find it very difficult to go to the clinic to fetch condoms

strongly agree | *agree* | *neither agree nor disagree* | *disagree* | *strongly disagree*

☐ ☐ ☐ ☐ ☐ ☐

f. I would be able to go to the pharmacy to buy condoms

strongly agree | *agree* | *neither agree nor disagree* | *disagree* | *strongly disagree*

☐ ☐ ☐ ☐ ☐ ☐

g. I would **not** refuse to have sex if my sexual partner does not want me to use a condom

strongly agree | *agree* | *neither agree nor disagree* | *disagree* | *strongly disagree*

☐ ☐ ☐ ☐ ☐ ☐

h. I would **not** be able to use a condom without spoiling the mood

strongly agree | *agree* | *neither agree nor disagree* | *disagree* | *strongly disagree*

☐ ☐ ☐ ☐ ☐ ☐ 78

i. I would be not able to discuss using a condom with my sexual partner

strongly agree | *agree* | *neither agree nor disagree* | *disagree* | *strongly disagree*

☐ ☐ ☐ ☐ ☐ ☐ 79

31. For me to use a condom if I have sex, would be:

very easy | *easy* | *neither easy nor difficult* | *difficult* | *very difficult*

☐ ☐ ☐ ☐ ☐ ☐ 80

32. How likely do you think it is that you could get AIDS from having sex without using a condom?

very likely | *likely* | *neither likely nor unlikely* | *unlikely* | *very unlikely*

☐ ☐ ☐ ☐ ☐ ☐ 1

33. How often do you worry about getting AIDS?

very often | *often* | *uncertain* | *not very often* | *never*

☐ ☐ ☐ ☐ ☐ ☐

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34. It is unlikely that I will get AIDS if I use a condom

strongly agree	*agree*	*uncertain*	*disagree*	*strongly disagree*	For office use only:
☐	☐	☐	☐	☐	☐

Mark the block that best reflects what you think for <u>each of the following words</u>:

36. **If I would use a condom, it would be**:

	AGREE	**UNCERTAIN**	**DISAGREE**	
stupid	☐	☐	☐	☐
difficult	☐	☐	☐	☐
dangerous	☐	☐	☐	☐
not enjoyable	☐	☐	☐	☐
embarrassing	☐	☐	☐	☐
wrong	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
not macho	☐	☐	☐	☐
selfish	☐	☐	☐	☐ 12

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36 **A man who always uses a condom is:**:

For office use only:

	DISAGREE	UNCERTAIN	AGREE	
stupid	☐	☐	☐	☐ 13
bad	☐	☐	☐	☐
not a real man	☐	☐	☐	☐
dirty	☐	☐	☐	☐
not loving	☐	☐	☐	☐
shy	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
wrong	☐	☐	☐	☐
selfish	☐	☐	☐	☐ 21

36. **A woman who always makes sure that her partner uses a condom is:**:

	AGREE	UNCERTAIN	DISAGREE	
stupid	☐	☐	☐	☐
bad	☐	☐	☐	☐
sleeps around	☐	☐	☐	☐
dirty	☐	☐	☐	☐
not loving	☐	☐	☐	☐
shy	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
wrong	☐	☐	☐	☐
selfish	☐	☐	☐	☐ 30

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39. **When I think about using a condom, I feel**:

	AGREE	UNCERTAIN	DISAGREE	For office use only
stupid	☐	☐	☐	☐ 31
bad	☐	☐	☐	☐
scared	☐	☐	☐	☐
not caring	☐	☐	☐	☐
not loving	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
embarrassed	☐	☐	☐	☐
tense	☐	☐	☐	☐
dirty	☐	☐	☐	☐ 39

40. Do you have a condom available so that you can use it when you have sex?

Yes ☐ *No* ☐ ☐

REMEMBER: Nobody you know will see your answers and nobody will know who answered this questionnaire.

41. Have you ever had sexual intercourse? *Yes* ☐ *No* ☐ ☐

42. How old were you when you first had sex? .....*years* ☐☐

I have never had sex ☐

43. Did you use a condom the first time you had sex? ☐

Yes ☐ *No* ☐ *I have never had sex* ☐

44. With how many people have you had sex in your whole life? .....*people* ☐☐

45. How many weeks ago did you last have sexual intercourse?.....*weeks*

I have never had sex ☐ ☐

46. Do you have a sexual partner at present? *Yes* ☐ *No* ☐ ☐ 48

University of Cape Town

47. Have you ever used condoms? *Yes* ☐ *No* ☐

For office use only:

☐ 49

48 How often do you use condoms with someone that you **do not know for a long time**?

every time I have sex *nearly every time* *sometimes* *occasionally* *never*

☐ ☐ ☐ ☐ ☐ ☐

I have never had sex ☐

49. How often do you use condoms with **a regular sexual partner** (someone that you have being out with for some time)?

every time I have sex *nearly every time* *sometimes* *occasionally* *never*

☐ ☐ ☐ ☐ ☐ ☐

I have never had sex ☐

50. Did you use a condom the last time you had sex?

Yes ☐ *No* ☐ *I have never had sex* ☐ ☐

51. Have you ever **discussed** condoms with your sexual partner?

Yes ☐ *No* ☐ *I have never had sex* ☐ ☐

52 How often do you **think about** condoms when you are with somebody that you are having sex with?

never *hardly ever* *sometimes* *quite often* *every time*

☐ ☐ ☐ ☐ ☐ ☐

I have never had a sexual partner ☐

53. How often do you **discuss using condoms** when you are with somebody that you have a sexual relationship with?

every time *quite often* *sometimes* *hardly ever* *never*

☐ ☐ ☐ ☐ ☐ ☐

I have never had a sexual partner ☐

54. How **easy** do you find it to **talk** to your sexual partner about condoms?

very easy *easy* *quite easy* *quite difficult* *very difficult*

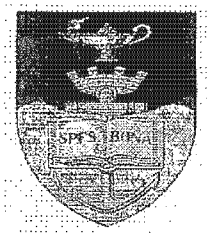
☐ ☐ ☐ ☐ ☐

☐ 56

I have never had a sexual partner ☐

THANK YOU VERY MUCH FOR YOUR CO-OPERATION!

University of Cape Town



Appendix B
Questionnaire - female version

University of Cape Town
Adolescent sexual health survey (F)

Please will you help us by filling in this questionnaire. It is not nearly as long as it looks.

We are trying to find out better ways of preventing the spread of AIDS among young people. Your responses are very important to us and will help to keep young people in this country healthy.

This is not a test and there are no right and wrong answers. **PLEASE BE HONEST IN YOUR ANSWERS. DO NOT GIVE US ANSWERS THAT YOU THINK ARE RIGHT OR THAT YOU THINK WE WANT**. If you do this, this research will not help us stop the spread of AIDS. We need to know what young people **really think** to develop the best programmes to fight AIDS

You are not asked to give your name on the questionnaire and nobody will know who filled in this questionnaire. All the information you give us will be kept private.

Please take your time and answer carefully. In questions where there are boxes, please mark the box next to the answer you want to give.

Please do not write to the right of the line going down the right hand side of the page.

Once you have finished filling in the questionnaire, please put it in the envelope.

THANK YOU VERY MUCH FOR YOUR HELP!

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Before we begin, there are a few things we need to know about you:

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1.. How old are you ? ..... *years* 8 ☐

2. What is your sex? *male* ☐ *female* ☐ ☐

3. What was your racial classification under the previous government?

Asian ☐ *Black* ☐ ☐

Coloured ☐ *White* ☐

4. Which of the following languages are spoken in your home? Please mark as many as necessary.

Afrikaans ☐ *English* ☐ ☐ ☐

Xhosa ☐ *Zulu* ☐ ☐ ☐

other (please give details) ..... ☐ ☐ 17

5. Which of the following do you or your family have at home? Please mark as many as necessary.

Telephone ☐ *Television* ☐ ☐ ☐

Motor car ☐ *Electricity* ☐ ☐ ☐

Radio ☐ *Bicycle* ☐ *Piped water* ☐ ☐ ☐

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6. How many people, besides you, sleep in the same room as you at night when you are at home? .....*people* ☐ ☐

Below are some statements about your health. For each question mark the box that most closely corresponds to what you feel.

7. I think it is more important to enjoy myself than to worry about my health

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 27

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8. My health is actually not that important to me

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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9. I think that is very important to care for my health

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

Now we are going to ask you some questions about condoms. We would like you to answer these questions <u>even if you have never used a condom</u>. If you have never used a condom, tell use how you think you would feel.

10. In future, I will make sure that my sexual partner uses a condom if we have sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

11. If you have sex in future, how often will you make sure that your sexual partner uses a condom?

always	*sometimes*	*now and again*	*rarely*	*never*
☐	☐	☐	☐	☐

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Imagine you were about to have sex. <u>How likely is it that the following would happen</u>? If you have never had sex, tell us what you think would happen if you were to have sex.

12. a. You would not have a condom with you

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. Your sexual partner would not want to use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 33

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c. You would be too scared to ask your sexual partner to use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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d.. You would be too embarrassed to make sure that you sexual partner uses a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

e. You would feel that it is wrong to use a condom because of what your religion tells you

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

f. It would be difficult to make sure that your sexual partner uses a condom because of drugs or drink

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

Here are some more questions about condoms. Even if you have never used one, please tell use your views

13 a. I know exactly how to use a condom

strongly agree	*agree*	*neither agree not disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. I will find it difficult to help my sexual partner put on a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

c. I feel that I do not quite know how to put on a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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Now please mark the boxes that show what you think for each of the following statements:

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14. a. If my sexual partner would use a condom, I would be able to feel less during sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 41

b. I do not mind if I feel less during sex:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

15. a. If I would make sure that my sexual partner uses a condom, he would think that I do not really love him

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. I do not mind if my sexual partner would feel that I do not really love him

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

16. a. If I would make sure that my sexual partner uses a condom, he would think I have been sleeping around

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. I do not mind if my sexual partner would think I have been sleeping around

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

17. a. If I would make sure that my sexual partner uses a condom, he would think I have a sexually transmitted disease or AIDS:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 47

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b. I do not mind if my sexual partner would think I have a sexually transmitted disease or AIDS

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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18. a. If I would make sure that my sexual partner uses a condom, he would feel like he is not a real man:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. I do not mind if my sexual partner feels that he is not a real man

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

19. a. If I would make sure that my sexual partner uses a condom, my friends would laugh at me:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. I do not mind if my friends would laugh at me

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

20. a. If I would make sure that my sexual partner uses a condom, it would prevent **me** from getting AIDS:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. It is unnecessary to prevent myself from getting AIDS

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 54

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21. a. If I would make sure that my sexual partner uses a condom, it would prevent **him** from getting AIDS:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. It is unnecessary to prevent **my sexual partner** from getting AIDS

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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22. a. If I would make sure that my sexual partner uses a condom for sex, it would prevent me from becoming pregnant:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. It is not important to prevent myself from becoming pregnant

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

23. a. **Most of my friends** think I should **not** make sure that my sexual partner uses a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. When it comes to making sure that my sexual partner uses condoms, I want to do what most of my friends think I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

24. a. **Most people who are important to me** think I should **not** make sure that my sexual partner uses condoms:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

b. When it comes to using condoms, I want to do what most people who are important to me think I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 62

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25. a. **My parents** think I should **not** make sure that my sexual partner uses condoms

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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b. When it comes to using condoms, I want to do what my parents think I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

26. a.My culture says: I should **not** make sure that my sexual partner uses condoms

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b When it comes to using condoms, I want to do what my culture says I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

27. a.My boyfriend thinks I should **not** make sure that he uses condoms

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

b. When it comes to using condoms, I want to do what my boyfriend thinks I should do

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

28. I am the kind of person who will make sure that my sexual partner uses a condom if we have sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

29. In future, I **do not** intend to make sure that my sexual partner uses a condom if we have sex

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 70

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30. a. I would **not** be able to make sure that my sexual partner uses a condom after I have drunk alcohol or taken drugs:

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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b. I would **not** be able to make sure that my sexual partner uses a condom, if he does not want to use one

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

c. I would **not** be able to delay having sex if my sexual partner does not have a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

d. I would stop to make sure that my partner uses a condom no matter how sexually aroused I am

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 74

e. I would find it very difficult to go to the clinic to fetch condoms

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

f. I would be able to go to the pharmacy to buy condoms

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

g. I would not refuse to have sex if my sexual partner does not want to use a condom

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

h. I would not be able to make sure that my sexual partner uses a condom without spoiling the mood

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐ 78

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i. I would not be able to discuss using a condom with my sexual partner

strongly agree	*agree*	*neither agree nor disagree*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

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31. For me to make sure that my sexual partner uses a condom if we have sex, would be:

very easy	*easy*	*neither easy nor difficult*	*difficult*	*very difficult*
☐	☐	☐	☐	☐

☐ 80

32. How likely do you think it is that you could get AIDS from having sex without using a condom?

very likely	*likely*	*neither likely nor unlikely*	*unlikely*	*very unlikely*
☐	☐	☐	☐	☐

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33. How often do you worry about getting AIDS?

very often	*often*	*uncertain*	*not very often*	*never*
☐	☐	☐	☐	☐

☐

34. It is unlikely that I will get AIDS if my sexual partner uses a condom?

strongly agree	*agree*	*uncertain*	*disagree*	*strongly disagree*
☐	☐	☐	☐	☐

☐

Tick the block that best reflects what you think for <u>each of the following words</u>:

35. **If my sexual partner would use a condom, it would be:**

	AGREE	**UNCERTAIN**	**DISAGREE**	
stupid	☐	☐	☐	☐
difficult	☐	☐	☐	☐
dangerous	☐	☐	☐	☐
not enjoyable	☐	☐	☐	☐
embarrassing	☐	☐	☐	☐
wrong	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
not macho	☐	☐	☐	☐
selfish	☐	☐	☐	☐ 12

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36. **A man who always uses a condom is:**:

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	DISAGREE	UNCERTAIN	AGREE	
stupid	☐	☐	☐	☐ 13
bad	☐	☐	☐	☐
not a real man	☐	☐	☐	☐
dirty	☐	☐	☐	☐
not loving	☐	☐	☐	☐
shy	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
wrong	☐	☐	☐	☐
selfish	☐	☐	☐	☐ 21

37. **A woman who always makes sure that her partner uses a condom is:**:

	AGREE	UNCERTAIN	DISAGREE	
stupid	☐	☐	☐	☐
bad	☐	☐	☐	☐
sleeps around	☐	☐	☐	☐
dirty	☐	☐	☐	☐
not loving	☐	☐	☐	☐
shy	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
wrong	☐	☐	☐	☐
selfish	☐	☐	☐	☐ 30

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38 **When I think about using a condom, I feel:**

	AGREE	DISAGREE	UNCERTAIN	For office use only
stupid	☐	☐	☐	☐ 31
bad	☐	☐	☐	☐
scared	☐	☐	☐	☐
not caring	☐	☐	☐	☐
not loving	☐	☐	☐	☐
unhealthy	☐	☐	☐	☐
embarrassed	☐	☐	☐	☐
tense	☐	☐	☐	☐
dirty	☐	☐	☐	☐ 39

39. Do you have a condom available so that you can use it when you have sex? ☐

Yes ☐ *No* ☐

REMEMBER: Nobody you know will see your answers and nobody will know who answered this questionnaire.

40. Have you ever had sexual intercourse? *Yes* ☐ *No* ☐ ☐

41. How old were you when you first had sex? .....*years* ☐☐

I have never had sex ☐

42. Did your partner use a condom the first time you had sex? ☐

Yes ☐ *No* ☐ *I have never had sex* ☐

43. With how many people have you had sex in your whole life? .....*people* ☐☐

44. How many weeks ago did you last have sexual intercourse?.....*weeks* ☐

I have never had sex ☐

45. Do you have a sexual partner at present? *Yes* ☐ *No* ☐ ☐ 48

46. Have you ever used condoms? *Yes* ☐ *No* ☐ ☐ 49

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47. How often do you use condoms with someone that you **do not know for a long time**?

every time I have sex ☐ *nearly every time* ☐ *sometimes* ☐ *occasionally* ☐ *never* ☐

I have never had sex ☐

48. How often do you use condoms with **a regular sexual partner** (someone that you have being out with for some time)?

every time I have sex ☐ *nearly every time* ☐ *sometimes* ☐ *occasionally* ☐ *never* ☐

I have never had sex ☐

49. Did your partner use a condom the last time you had sex?

Yes ☐ *No* ☐ *I have never had sex* ☐

50. Have you ever **discussed** condoms with your sexual partner?

Yes ☐ *No* ☐ *I have never had sex* ☐

51. How often do you **think about** condoms when you are with somebody that you are having sex with?

never ☐ *hardly ever* ☐ *sometimes* ☐ *quite often* ☐ *every time* ☐

I have never had a sexual partner ☐

52. How often do you **discuss using condoms** when you are with somebody that you have a sexual relationship with?

every time ☐ *quite often* ☐ *sometimes* ☐ *hardly ever* ☐ *never* ☐

I have never had a sexual partner ☐

53. How **easy** do you find it to **talk** to your sexual partner about condoms?

very easy ☐ *easy* ☐ *quite easy* ☐ *quite difficult* ☐ *very difficult* ☐

I have never had a sexual partner ☐

THANK YOU VERY MUCH FOR YOUR HELP!

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